



19<sup>th</sup> INTERNATIONAL CONFERENCE  
ON THE ETHICAL AND SOCIAL IMPACTS OF ICT  
**[New] Normal Technology Ethics**  
Proceedings of the  
**ETHICOMP 2021**

Edited by

MARIO ARIAS-OLIVA  
JORGE PELEGRÍN-BORONDO  
KIYOSHI MURATA  
EVA REINARES-LARA



UNIVERSIDAD  
DE LA RIOJA



Cátedra Telefónica. Aula Smartcities







Edited by

Mario Arias-Oliva

Jorge Pelegrín-Borondo

Kiyoshi Murata

Eva Reinares Lara

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ETHICOMP 2021

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# [New] Normal Technology Ethics

*Proceedings of the ETHICOMP 2021*

*19<sup>th</sup> International Conference on the Ethical and Social Impacts of ICT*

*Logroño, Spain, June-July 2021*



**PROCEEDINGS OF THE ETHICOMP\* 2021**

**19<sup>th</sup> International Conference on the Ethical and Social Impacts of ICT**

**Logroño, La Rioja, Spain**

**June 30 – July 2**

Title	[New] Normal Technology Ethics
Edited by	Mario Arias-Oliva (Complutense University of Madrid), Jorge Pelegrín-Borondo (University of La Rioja), Kiyoshi Murata (Meiji University), Eva Reinares Lara (Universidad Rey Juan Carlos)
ISBN	978-84-09-28671-3
Local	Logroño, Spain
Date	2021
Publisher	Universidad de La Rioja

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Publisher: Universidad de La Rioja, [www.unirioja.es](http://www.unirioja.es)

Cover designed by Universidad de La Rioja, Servicio de Comunicación, and Antonio Pérez-Portabella.

ISBN 978-84-09-28671-3

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*To those who passed away due to the COVID-19 pandemic*





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## **1. Co-Creating Sustainable ICT Future Through Education**

Track chair: Gosia Plotka, Polish-Japanese Academy of Information Technology & De Montfort University; Marta Czerwonka, Polish-Japanese Academy of Information Technology; Gonçalo Costa; Alireza Amrollahi, Macquarie Business School



## **EDUCATIONAL SOFTWARE FOR SPEECH UNINTELLIGIBLE CHILDREN WITH DOWN SYNDROME**

**Katerina Zdravkova, Boban Joksimoski**

University Ss. Cyril and Methodius, Faculty of Computer Science and Engineering (N. Macedonia)

katerina.zdarvkova@finki.ukim.mk; boban.joksimoski@finki.ukim.mk

### **EXTENDED ABSTRACT**

#### Introduction

Down syndrome (DS) is a genetic disorder, which is associated with mild to severe intellectual disability and speech difficulties (Rice, 2005). Children with DS have atypical phenotypic features, including tongue anomalies, low oral-facial muscle tone, and difficulties in motor planning, resulting in severe acoustic alterations and disability of articulating some sounds (Carl, 2020). Heavy struggle with saying words and sounds was noticed among 85% of 1620 surveyed children with DS (Kumin, 2006). Being aware of their speech production deficit, they become frustrated and start using multimodal communication, combining manual signs, voice, facial expressions, and gestures (Toth, 2009). Unlike the problems with speech articulation, children with DS show excellent skills in gesture acquisition and production, compared to their peers with typical development (Deckers, 2017). Niki, the boy who successfully played the memory game (Zdravkova, 2020) and his mother managed to become proficient in Macedonian sign language (SL), establishing an easier mutual communication for the first time. This accomplishment raises the following questions: will the imposing of SL be beneficial for speech unintelligible children with DS; can educational games support understanding and acquisition of SL; how to design and assess children with DS who frequently do not master reading (Martin, 2009).

Enabling human rights, including the right to access information, to enjoy a decent life and express freely are vital to human welfare, dignity and active participation in community (UNICEF, 1989). Everyone is entitled to all these rights, embracing mentally or physically disabled, who are usually not self-reliable. Any focused, well-planned, and carefully implemented activity that improves the interaction with and among the speech unintelligible, without forcing them to leave their comfort zone and feel anxious due to the incompetence to adapt to new obligations can positively contribute to the improvement of the quality of life of these people. Since 1950s, many methods and assistive technologies intended to supplement or replace a wide spectrum of speech and language disabilities, have been developed as part of the augmentative and alternative communication (AAC) (Elsahar, 2019). Implementation of MAKATON, a sign language system that enables augmentative and alternative communication proved that their communication and socialization significantly improved (de Almeida Barbosa, 2018). All these arguments confirm that SL can be a valuable interaction alternative for speech unintelligible, including children with DS.

A plethora of applications are dedicated to SL interpreting. Popular Hand Talk Translator ([www.handtalk.me](http://www.handtalk.me)), a 3D interpreter, which translates text and audio into American and Brazilian SL has already been used by half billion deaf and hard of hearing. Microsoft Translator ([translator.microsoft.com](http://translator.microsoft.com)) enables text-to-speech translation, and it has already been experienced by US students. It successfully converts raw spoken language and stutters into fluent American English. Microsoft also made similar feats, presenting a Kinect based system for SL translation (Chai, 2013). The Kinect sensor was later abandoned in favour of Intel Real Sense devices that provide similar features.

Applications that focus on providing educational framework for SL are less popular than SL translators/ interpreters. This is especially problematic when enabling learning of SL for children with intellectual and speech disabilities. To assess the gamified education approach for children with DS, five popular applications in terms of downloads that focus on learning a SL have been assessed on several clear and distinguishable features. One aspect that is of interest for children with DS, is to create engaging environment and track the progress, usually by encouraging gamification features. Another important feature is the primary goal of the application, to enable an alternative way of communication or to establish it. The applications that rely on iconographic navigation (like ASL Fingerspelling game) are suitable for those children, who have no communication skills. The results are presented in Table 1 on the following page. They prove that educational games can significantly or partially improve interaction of both speech unintelligible and children with DS.

Table 1. SL acquisition applications and implemented approaches for visualization and learning

Application	Availability	General features	Navigation and UI	Suitability for children with DS
SL ASL - Pocket Sign	Android, iOS	Video and image based, quizzes, progress tracking	Combination of text and iconography	Completely
ASL American Fingerspelling game	Android	Card and image-based content, quizzes, progress gamification	Combination of text and iconography	Completely
Sign Language: ASL Kids	iOS, Android	Video and image based, quizzes, progress tracking, gamification	Mainly iconographic	Completely
Hands On ASL Fingerspell with SL	Android, iOS	Learning fingerspelling, 3D hand models, quizzes and progress tracking	Text based	Partially
Mimix3D SL	Android	3D avatar, progress tracking, text to SL translation	Text based	Partially

### Designing educational software for sign language acquisition

Educational software for children with DS enabling acquisition of Macedonian SL is designed as a sequel of three games that complement each other. The goal of the first game is to demonstrate the sign language by enabling recognition and presentation of alphabets of Macedonian standard and sign language (Figure 1); the second aims to empower the acquisition of the most frequent words; the most advanced will support the creation of simple sentences.

Demonstration segment of the first game has already been created, following the nine recommendations of educational games for children with DS (Zdravkova, 2019). The application was created in HTML, powered by CSS framework for adding styles and colors, and React JavaScript library for user interface. It is currently available as a desktop application with optimized version for mobile phones and tablets. It presents SL alphabet with one hand (Figure 2), separate presentation of each letter (tab “Изучи ја азбуката”, Figure 3, left screen), matching of letters presented with SL and their written equivalent (tab “Погоди”, Figure 3, central screen) and a memory game with several levels (tab “Меморија”, simple level, Figure 3, right screen). All the written content on the screen is associated with a pre-recorded message with natural voice, bypassing illiteracy of many children with DS.



Figure 1. Home page of the Web application

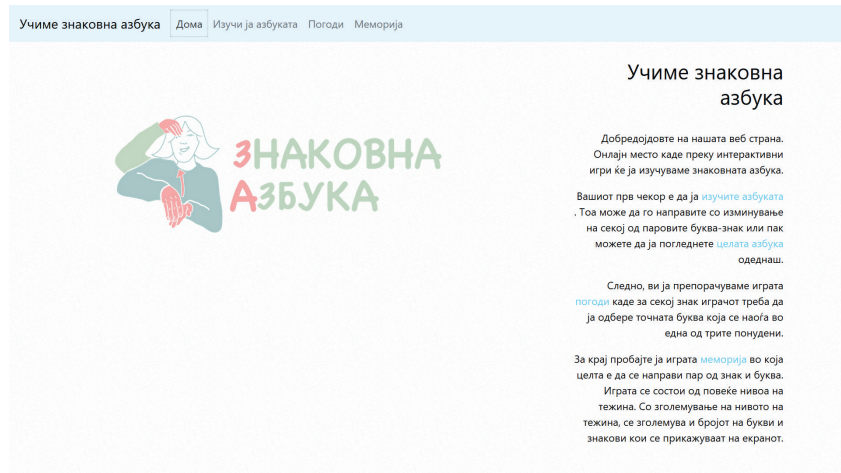


Figure 2. Web site and mobile application presenting part of the Macedonian sign language

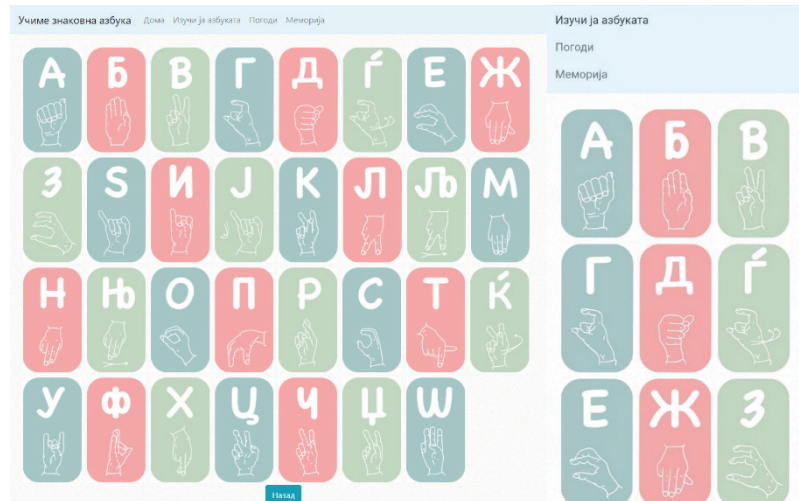
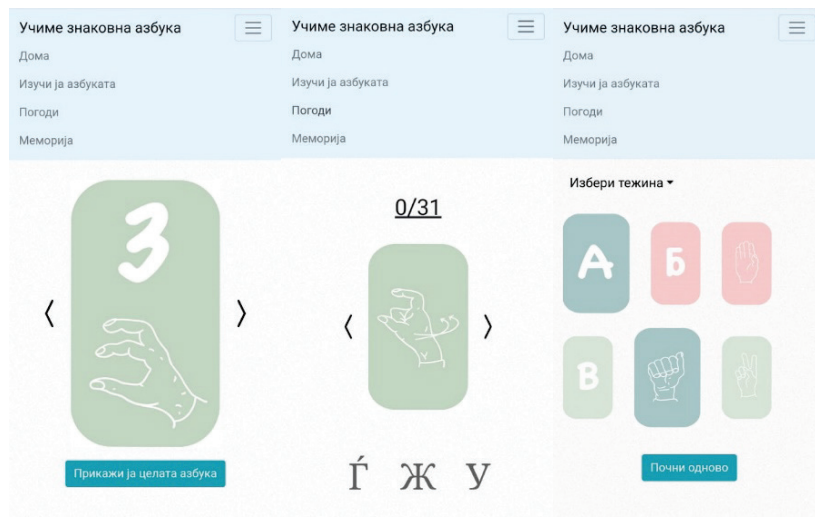


Figure 3. Presentation of both alphabets on one card, matching sign language character with the corresponding letter and memory game with one successfully matched pair



In the next two games, the acquisition of frequent words and phrases will be enabled. Static and dynamic signs will be presented using 3D avatar visualization (Joksimoski, 2015). The assessment will initially be made by embedding the concept of memory games, based on matching an image with the corresponding sign. There are multiple approaches that can be utilized to achieve this. One approach is to use standard cameras and perform real-time analysis of the video, a field of active research. The second approach is to use specific sensors, like depth-based cameras (e.g., RealSense, Kinect).

Most of the children from day-care centre for children with DS in Skopje are speech unintelligible. They deserve equal rights to communicate and express their needs and feelings. The main prerequisites to assess the gamified approach are fulfilled. All the children with DS are eager to use multimodal communication, they are competent for gesture acquisition and production and they like playing mobile games. The day-care centre is currently closed due to Covid-19 pandemic. To start the evaluation of the application, the link has been sent to several children who are supposed to try it with assistance of their families. Except Niki, who is already familiar with the sign language alphabet, and who proudly presented his skills, other children had no interest to even try it. Therefore, the presentation is postponed for the reopening of the centre. Children feedback and suggestions by the language specialists will be crucial to make the improvements to current version and to offer it after the corrections and the enhancements on GooglePlay.

**KEYWORDS:** Down syndrome, educational software, sign language, verbal apraxia.

**ACKNOWLEDGEMENT:** This work is part of the project “Contribution to inclusive education of children with Down syndrome”, which is partially financed by the Faculty of Computer Science and Engineering (FSCE) at the Ss. Cyril and Methodius University. The authors thank Teodor Nikola Mladenovski, BSc at FSCE, who developed the application and Nina Pjevac, BArch at Manchester School of Architecture, who designed the images.

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## **SOCIAL AFFORDANCES AND ETHICAL CHALLENGES IN MEDIATED COLLABORATIVE PLATFORMS**

**Peter Vistisen, Thessa Jensen**

Aalborg University (Denmark)

vistisen@hum.aau.dk; thessa@hum.aau.dk

### **EXTENDED ABSTRACT**

In the wake of the COVID-19 pandemic, a wave of rapid digitalization swept over institutions all over the world. One of the ubiquitous changes is the adaption of digital collaboration tools to mediate meetings, teaching, collaborations, and social gatherings. In an education perspective this happened in the middle of the school year, leading to a focus on quickly mediating the curriculum, creating workspaces, and different possibilities for interaction between teacher and learner. Less structured efforts were made in mediating a community of learners, and a feeling of togetherness despite being apart. The issue of mediating culture and community through digital platforms is the focus of this paper. We argue this is a critical issue of both current, and future situations of local lockdowns or reduced traveling due to sustainable agendas.

In this paper we examine and compare three of the prominent, and broadly adopted online collaborative platforms regarding their sociability and functionality in the context of teaching and community building: Zoom, Microsoft Teams, and Discord. The study is based on a participatory action research perspective (Chevalier & Buckles, 2013). We have been teaching and ‘hanging out’ the platforms during the two semesters of 2020 which has been affected by the pandemic. The empirical basis of the study is done with inspiration to Hine’s (2000) virtual ethnographic practice, and interviews with students and fellow teachers and researchers.

While the three platforms have similar functionalities, they differ on certain aspects. Zoom is a conference tool, Teams a group work and teaching environment, while Discord originally was thought of as a teaching platform, but now is best known as a gamer and fandom communication platform. Our main hypothesis is that while the platforms almost have feature-by-feature parity, the differences are to be found in the way the platforms afford different actions and cultures through miniscule, but important, differences in how the same feature set is implemented.

Murray distinguishes between four affordances in her grid: procedural, participatory, encyclopedic, and spatial (Murray, 2012). She poses four questions to the analysis of the artifact: What does it do? What can I do? What are the boundaries of this domain? Where am I in relation to the whole? When comparing the three platforms in this regard, we how small features are implemented slightly different, but with rather significant implications for the user’s interaction with both the software and with each other. As an example, while both Zoom and Microsoft Teams support chat functionality, Zoom allows participants to chat privately or choose to write out to everybody directly in the meeting. Microsoft Teams, on the other hand, allows for private chats as separate chat boxes, separate from the meeting, creating two virtual spaces existing simultaneously. In Discord, there is a mix of the two, where indigent voice and text chats are visible to all, but with full visibility of who are connected to what. Thus, a teacher or learner is able to see, who is present and interacting at any time.

In the full paper we further examine how the affordances of the three platforms differ in terms of their respective functionality. But while the three platforms show feature-by-feature similarities when they

are analysed with the grid of affordances, we argue their main differences become obvious when examined through the emerging lens of social affordances.

Social affordances - how a feature is more than the sum of its parts

The differences among the platforms can be interpreted as the properties of the environment that act as socio-contextual facilitators relevant to the learner's interactions with the environments – what Krejns & Kirschner (2001) has labeled 'social affordances. When perceptible, social affordances invite learners to act in accordance with the perceived affordances i.e., to enter a communication episode and participate through the proper discursive premises.

While the focus on the learner is relevant in an educational setting, sociability and social affordances need to be assessed in a larger context. Not only the interaction of learners among themselves and with the teacher, but as the building of a community of learners for a specific course, semester, or project workgroup. It is the community building through the platforms' functionality, usability, and social affordances, which is the focus of our exploration.

Much of the use and design of online platforms for education depend on the pedagogical approaches, the teachers would like to enable. Davis and Chouinard present six ways on how affordances afford especially for artifacts in social settings (Davis & Chouinard, 2016): requesting and demanding are bids, artifacts place on the subject; encouraging, discouraging, and refusing are ways, the artifacts respond to the desired action of a subject; allowing bids on both the subject, to act, and the artifact to respond to the desired action.

While Zoom is mainly a conference tool, which should enable lectures and certain kinds of discussions among the participants, it is not meant as a tool for sociability. People can meet and network, but a community has to be in place before a Zoom meeting can enable a further development of a given community. Because Zoom lacks the possibility to save ongoing discussions and build an archive of any kind, it needs a work or learner culture to be in place.

While Microsoft Teams has the possibility to keep an archive and participants are able to develop as a work group, not many affordances are presented for building a community beyond the educational necessities. The platform is all about giving the teacher control of the learning environment, missing the opportunity to let learners develop a learning community and thus a learning culture on their own. Also, the platform converges different technologies into one place, which is very different from the approach of Zoom or Discord.

Discord is on a whole other level of sociability, mostly through the transparency of participation, which lets new participants decide, where they would like to meet with whom. What is missing, is the possibility to keep a searchable archive of files and information. Something, which would be necessary to keep on a different platform. Interestingly, this is exactly how Discord is used as by gamers and fans. The game or object of fandom is kept on gaming sites or fandom platforms, while the discussions and community building are done on Discord.

This highlights the intersubjective nature of social affordances, which Davis & Chouinard calls a 'network of relations' that both enable (via features) and constrain (through discursive practices) technological capacities (Davis & Chouinard, 2016). Comparing Zoom, Microsoft Teams and Discord, and potentially other collaborative platforms, through this lens reveals a web of relations among user perceptions, attitudes, and expectations – situating the differences between the platforms as relational processes among users, designers, environments, and the situations mediated.

### Ethical challenges in ICT design and use – discussion of affordances

Building on the concept of social affordances, the paper examines further empirical examples from both observing the platform, as well as interviewed uses reflections on their use. We point to an ethical challenge for the three platforms in their way of supporting an existing work and learning culture. Zoom and Teams both depend on existing communities, which need other platforms to maintain their community culture. This other platform could be Discord, which already is used by fandom and gamer communities to support and develop communities. These communities create content, share their knowledge and experiences, as well as events on other platforms like Youtube, Twitter or Reddit, while their core community is found on Discord. In doing so we argue, that most crucial factor in the success of digital collaborative platforms is not 'what' the technology affords of user interactions, but 'how' the technology affords said interactions. In this 'how' we find the ethical demand of considering how the discursive space is formed by acknowledging the full complexity of the persons enacting their practice through the chosen digital platforms (Løgstrup, 2000; Vistisen & Jensen, 2013).

We conclude by arguing, that the selection and implementation of digital collaborative platforms needs to take the mantra: together despite being apart as a main objective in their design decisions. The culture of a work or learner community needs to be transferred and transformed, when work and teaching becomes digital.

**KEYWORDS:** social affordances, ethical design, online platforms, education, participatory culture.

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## **DEVELOPING AN EDUCATIONAL BRICK FOR DIGITAL ETHICS - A CASE STUDY-DRIVEN APPROACH**

**J. Paul Gibson, Yael Jacob, Damian Gordon, Dympna O'Sullivan**

Institut Mines-Télécom (France), Institut Mines-Télécom (France),  
Technological University of Dublin (Ireland), Technological University of Dublin (Ireland)

Paul.Gibson@Telecom-SudParis.eu; Yael.Jacob@Telecom-SudParis.eu;  
Damian.X.Gordon@TUDublin.ie; Dympna.OSullivan@TUDublin.ie

### **EXTENDED ABSTRACT**

In this paper we present the concept of re-usable educational bricks for the teaching of digital ethics. After describing the motivation behind the concept, we provide an overview of a standard template that can be used in the design of such a brick. Finally, we conclude with a concrete example of a brick based on a case study which examines the use of “intelligent pills” in the health industry.

#### Motivation

The importance of well-integrating ethical aspects into computing programmes and modules/courses, as highlighted by Grosz, B. J., et al. (2019) is well-established; and we are inspired by the research of Chuck Huff and C Dianne Martin (1995) which places emphasis on empathy, and students imagining the consequences of their own work and actions. Furthermore, we wish to encourage a more multi-disciplinary approach to teaching digital ethics as discussed in A.H. McGowan (2012). Our long-term goal is to provide a central repository (platform) of useful re-usable/adaptable education bricks for the teaching of digital ethics, following an “open” model - Iiyoshi, Toru, and M. S. V. Kumar (2010) - such as seen with the creative commons approach. This platform will manage teaching material following good software engineering practices - as outlined in J. Paul Gibson, and Jean-Luc Raffy (2011) – for improved maintainability and sustainability.

In order to demonstrate the viability of such a platform we are currently developing a small set of six example bricks. The concept of an educational brick marries closely with that of learning objects, which Wiley (2000) defines as "small (relative to the size of an entire course) instructional components that can be reused a number of times in different learning contexts". It also fits well with the concept of 'distributed pedagogy' as used by Grosz, B. J., et al. (2019). We hope that with this small set we can generate enough of a critical mass of academic users in order to build and maintain the repository. In this paper we briefly present one of these bricks.

#### A standard template for the educational bricks

The need for a standard template is vitally important particularly given the fact that the development of the bricks is being undertaken transnationally, with different bricks being drafted in different countries, and subsequently being reviewed and redrafted in other countries (including in the project partner organisation countries of France, Ireland, Italy, Sweden, and Switzerland).

The repository will – if the initial case studies prove to be effective – provide a rich set of features for searching for bricks, adding bricks, adapting/evolving different versions of bricks, composing bricks,

etc. To help standardise and regularise the format and content of the bricks, the template includes two (2) main sections: classification for searching purposes, and pedagogic issues for administrative purposes

With respect to classification, we have four (4) subsections:

1. Ethical Issues
2. Academic Domain
3. Application Domain
4. Interdisciplinarity

For each of these we provide a set of standard taxonomies for classifying the bricks and case studies.

With respect to pedagogic issues, we have six (6) subsections:

1. Academic Load
2. Pre-requisites
3. Learning Objectives (Ethical, Computing and Transverse)
4. Teaching and Evaluation Approach(es)
5. Support Material (For Teachers and Students)
6. Links to Other Bricks.

Intelligent pills: the (educational brick) case study

One of the first bricks developed is one looking at “Intelligent pills” (also known as “smart pills” or “robot pills”). These are a combination of a drug and a device, which can be described as “an oral tablet that incorporates some type of medical device, such as a microchip, that, for example, controls the release of the active pharmaceutical ingredient after ingestion” (Avery and Liu, 2011). This educational brick is aimed at 3<sup>rd</sup>/4<sup>th</sup> year engineering students who have chosen to specialise in information system management and development. As such, they participate in a module concerned with the architecture of complex systems, and apply their learning to developing a prototype system with a real industrial client, as part of a significant team project. In recent years, many of the team projects have incorporated technologies from the Internet-of-Things (IoT). Furthermore, the system requirements have become more and more demanding with respect to data protection and privacy (related to the GDPR in Europe). Finally, the students are becoming increasingly aware of the problem of such systems malfunctioning and the impact on the users.

As part of this module, the students are introduced to published research on general digital ethics issues - Ann Cavoukian et al. (2009), Gauthier Chassang (2017), Nancy Leveson (2020) . They are also introduced to ethical issues through mainstream media reports on a wide range of technologies in different application domains. One of these studies is concerned with “smart pills” - Buffy Gorrilla (2017), Sandy Wash (2017). The students are then asked to research the main issues, and are provided with references to general papers on IoT and ethics - Ahmed AboBakr and Marianne A. Azer (2017), Josephina Antoniou and Andreas Andreou (2019) - and specific papers on medical ethical issues - Vinton G. Cerf. (2020), Kobi Leins et al. (2020), Brent Mittelstadt (2017), Julie Myers et al. (2008), Lily Hay Newman (2020), Ziad Obermeyer et al. (2019), Mark Stone (2019), and Daniel Wood et al. (2017).



Through discussion with teaching colleagues and students, there was general agreement that the “intelligent pills” provided an excellent case study with which to develop an educational brick on digital ethics. After playing around with various teaching ideas, the design of the brick was specified using the standard template, as follows. The student workload would be 9 hours contact time + 9 hours independent work. The pre-requisites are foundational knowledge of software engineering and networked/distributed system architectures. The computing learning objectives are: how to read documentation of IOT devices and evaluate whether there is coherency between natural language descriptions, formal technical specifications and the hardware. The ethical learning objectives are: consider who is responsible for the privacy of the sensor data; and the implications of the sensor being faulty/buggy. The transverse learning objectives are: communication skills and interaction with the media. The teaching domains are software engineering, architecture and IoT. The application domain is health. The ethical issues are security and privacy of data. The interdisciplinarity is with journalism and biology. The delivery mechanism/teaching approach is based upon students being involved in a debate with a journalist concerning whether the technical and ethical issues have been well-addressed in the general media. This will involve role-playing, following the advice from Diana Adela Martin et al. (2019). The evaluation is indirect – the students are evaluated through their project work, and one of the criteria is whether they have adequately considered the ethical issues. (The brick is currently being evaluated and refined, for first deployment in the first semester of 2021.)

**KEYWORDS:** Internet-of-Things, Smart-Pills, Security, Privacy, Teaching.

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## TEACHING VALUES IN DESIGN IN HIGHER EDUCATION – TOWARDS THE NEW NORMAL

**Eva Eriksson, Wolmet Barendregt, Elisabet M. Nilsson, Rikke Toft Nørgård**

Aarhus University (Denmark), Eindhoven University of Technology (The Netherlands),  
Malmö University (Sweden)

evae@cc.au.dk; w.barendregt@tue.nl; elisabet.nilsson@mau.se; rtoft@tdm.au.dk

### EXTENDED ABSTRACT

We can see an uprising trend in various initiatives around the world in order to increase awareness of the role that values play in design (see e.g., Knobel & Bowker, 2011; Nathan et al., 2008). Although this has been a strong research tradition, e.g., initiatives such as value sensitive design (Friedman, 1996; Friedman & Hendry, 2019), values in design (Nissenbaum, 2005), values at play (Belman et al., 2009; Flanagan & Nissenbaum, 2014), values-led participatory design (Iversen et al., 2012), we now also see this trend in higher education curricula (Hendry et al., 2020). Identifying ethical and social dilemmas is currently becoming a part of the explicit learning goals in a growing number of university courses aiming to contribute to sustainable and ethical development. However, there is still a lack of educational resources to support such teaching, and a clear articulation of what characterises progression towards becoming a responsible and ethical designer is largely missing.

In response to this, we have initiated a project<sup>1</sup> aiming to develop open educational resources made available online targeting teachers in higher education who wish to teach their students about the role values play in design, and through that create conditions for students to become responsible and ethical designers of future technologies. Our approach to this is *not* to design a full curriculum or course on ethics and values in design, but rather an inspirational repository of different educational resources. The resources may be incorporated at various stages in existing courses and curricula and are designed to easily be appropriated to fit the specific educational context and subject in question. However, although the main aim of teaching values in design is to educate responsible and ethical designers of tomorrow, one question remains – *how do you know when your students have become responsible and ethical designers?*

In order to answer that question, we have developed a research-based model for understanding and articulating progression in teaching values in design (see Figure 1). By combining efforts from previous research, we have identified three core pillars of teaching values in design: I) Ethics and Human Values, II) Designers and Stakeholders, and III) Technology and Design, each pillar containing developed teaching and assessment activities aimed at nurturing responsible and ethical designers. The teaching activities are connected with the levels of competency as described in the SOLO taxonomy (Biggs & Collis, 1982) to enable progression in learning from novice to advanced. Furthermore, the model is structured according to the different phases in a design process in order to indicate when teaching activities for fulfilling particular learning goals preferably could be implemented. The model is a further development of ideas presented in a previous paper (Barendregt et al., 2020), and is here presented in a more elaborated version building on results from piloting activities. We propose this model as a

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<sup>1</sup> See the project website: [vase.mau.se](http://vase.mau.se), 2021-03-02.

common language for discussing, developing and determining learning goals and educational resources focused on values in design.

Figure 1. A model for understanding and articulating progression in teaching values in design in higher education (Teaching values in design, 2021).

Pillars	Design Phase	Solo Taxonomy Level			
		Unistructural ●	Multistructural ●●	Relational ●●●	Extended Abstract ●●●●
Ethics & Human Values	Values Theory	Identify values and name approaches to ethics (e.g., consequentialism) and values in design (e.g., Value-Sensitive Design).	List, describe, and combine different approaches to ethics and values in design.	Analyze, compare, and argue for how values are manifested in design.	Interpret, evaluate, and critically reflect on values and their manifestations in design.
	Research	Recognize and define the notions around researching designers' and stakeholders' roles and values (e.g., indirect & direct stakeholders).	List, characterize, and report on designers' and stakeholders' roles and values.	Elicit, interpret and contrast designers' and stakeholders' roles and values.	Judge, reason about, and critically reflect on designers' and stakeholders' roles and values.
Designers & Stakeholders	Synthesis	Recognize and define the notions around interpreting and combining different designer and stakeholder values into a design direction (e.g., value manifesto).	List, characterize, and report on notions around interpreting and combining different designer and stakeholder values into a design direction.	Interpret, adapt, and plan one's design direction based on the identified designer and stakeholder values.	Reason about, reflect on, and criticize the newly developed design direction based on the identified designer and stakeholder values.
	Ideation	Identify methods for ideating with values (e.g., envisioning).	List and describe methods for ideating with values.	Adapt and apply methods for ideating with values.	Critically reflect on the results of the ideation with values.
Technology & Design	Evaluation	Identify methods for evaluating designs in terms of values (e.g., public evaluation).	List and describe methods for evaluating designs in terms of values.	Adapt and apply methods for evaluating designs in terms of values.	Critically reflect on the evaluation of the designs in terms of values.

The model has been applied in the development of a collection of teaching and assessment activities, which have been piloted in various national and educational contexts. The teaching activities range from lectures on theoretical grounding of values and ethics to exercises in identifying one's own values as a designer to those of stakeholders, how values are manifested in products and further how to envision the implications and long-term effects of designs. The assessment activities support summative, formative, ipsative and authentic assessment forms, and range from identifying real world examples of values in products, to students creating value manifestos. The model has been crucial in the iterative development work of both teaching and assessment activities. Piloting is still underway, but so far 1,563 students have tried one or more activities within 38 courses during 2018-2021.

Through the application of the model, we conclude that becoming a responsible and ethical designer is a matter of reaching a high competency level regarding paying attention to ethics and human values, people and stakeholders, and technology and design, before, during and after the design process. By formulating examples of concrete learning goals, we illustrate how the model can be used by teachers to articulate, determine and compare learning goals, so that learning goals are aligned and complement each other from one competency level to the next.

Furthermore, by combining attitudes and values with knowledge and skills in line with the OECD Learning compass 2030 (OECD, n.d.), we argue that in order to be a responsible and ethical designer of tomorrow's technologies, students need to reach the relational and extended abstract levels as described in the SOLO taxonomy (Biggs & Collis, 1982). Therefore, when teaching for educating responsible and ethical designers, teachers need to support the students in the process of "coming to know", "becoming able to act", as well as in the process of "obtaining an identity" (Barnett, 2005; Barnett 2009). This approach acknowledges that principles and beliefs influencing one's design

choices, judgements, behaviours and actions in regard to the individual, society and environment, and is vital for an autonomous critical reflective engagement in the development of technologies.

It is the hope of the authors that this emerging model of progression in teaching values in design can serve as a guidance for teachers across different educational and cultural contexts in regard to what to expect from students at different levels of competency. We also hope that the model and the hands-on teaching activities that have been developed may potentially encourage and create initiatives for teachers to better incorporate and address values in design at their courses aiming to contribute to sustainable and ethical development – and that this is a path towards a *new normal*. Looking ahead, we invite other teachers, researchers and practitioners to critique, revise and discuss the model.

**KEYWORDS:** values in design, assessment, responsible design, ethics, higher education.

**ACKNOWLEDGEMENT:** We thank all the students and teachers who have piloted the teaching materials included in the open educational resource. The research is co-funded by the Erasmus+ Programme of the European Union (2018-1-SE01-KA203-039072).

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## **2. Diversity and Inclusion in The New Normal**

Track chair: Shalini Kessar, Southern Utah University; Teresa Pintado, Complutense University of Madrid; Graciela Padilla Castillo, Complutense University of Madrid





## **PRODUSAGE AND ACTIVE ROLE OF THE AUDIENCE FOR WOMEN'S EMPOWERMENT. BRIDGERTON CASE**

**Asunción Bernárdez-Rodal, Graciela Padilla-Castillo, Aysel Zeynalova**

Complutense University of Madrid (Spain)

asbernar@ccinf.ucm.es; gracielp@ucm.es; aysezey@ucm.es

### **EXTENDED ABSTRACT**

*Bridgerton* is a television series created by Chris Van Dusen, produced by Chris Van Dusen, Betsy Beers and Shonda Rhimes. Its first season premiered worldwide on 25 December 2020 on Netflix. The first season has eight episodes, as is the norm for all Netflix series, and a second season is already confirmed thanks to the fact that it racked up 82 million views in the first month of its premiere (Zorrilla, 2021). If it follows the structure of the collection of novels written by Julia Quinn, from which the original idea stems, the series could have up to 8 seasons, as there are 8 different books, each centred on the 8 Bridgerton children. The action takes place in London, around 1810, among the high society parties. It begins with the presentation of the young brides to the Queen of England and the appearance of a gossip bulletin, signed by an anonymous author: Lady Whistledown.

The plot, which at first sight does not seem very original, is adapted to our reality, offering original and necessary touches that form the basis of this investigation. On-screen, Shonda Rhimes innovates once again with a choral and multiracial cast, which she has previously imposed on all her series and which made her stand out especially from the first season of *Grey's Anatomy* onwards. Rhimes proposes blind casting so that actors and actresses are not chosen on the basis of physical characteristics imposed by the script. Thanks to this, the Queen of England, the Duke of Hastings (Sir Simon Basset), and his stepmother are black, breaking with history and with other fiction set in this era, always with Caucasian actors. Outside fiction, the promotion of the series has been original and humorous, on Twitter and Instagram, with the usual tone of the official Netflix account. However, viewers have created content based on the series, which has become more viral than Netflix's official publications. Specifically, the hashtag #bridgertonmusical, created by the user and singer @abigailbarlowww, has accumulated more than 122.7 million views to date, surpassing the audience figures for the series itself and standing as an excellent example of the importance of co-creation of content and the active role of the audience in cultural production.

With these precedents, this paper aims to study the Netflix series with three objectives: 1) to analyse the original ideas offered by Bridgerton in terms of its female and multiracial cast; 2) to compare this proposal with the series previously produced by Shonda Rhimes and look for the proposals of female empowerment that she always bets on; and 3) to study the cultural produsage or co-creation of content of the audience of the series in TikTok, commenting on the typologies of proposals and the messages of female empowerment that they promulgate. These three objectives will be addressed with a qualitative methodology in three phases: 1) longitudinal study of the concepts of cultural produsage, audience co-creation and empowerment; 2) commentary on the figure and filmography of Shonda Rhimes; and 3) exploration of the most used hashtags of the series on TikTok, listing the proposals, formats, tone and scope.

### About the life and work of Shonda Rhimes

Shonda Rhimes was born in Chicago in 1970 to a family of five siblings and parents in academia: her mother was a professor and her father a manager at the University of Chicago. She graduated from Dartmouth College and won a scholarship to the University of Southern California for a master's degree in film and television screenwriting. After graduating, he was unemployed for several months and had only very short-term jobs. The exception was the documentary *Hank Aaron: Chasing the Dream* (1995) and the short film *Blossoms and Veils* (1998), acquired by New Line Cinema. Soon after, he got his break as a screenwriter for the 1999 TV movie *Dorothy Dandridge*, which made actress Halle Berry famous. And from there to teen films with two titles: *Crossroads: To the End* (starring Britney Spears) in 2002, and *The Princess Diaries 2: Royal Engagement* in 2004. It did not find its place and the titles did not perform at the box office as expected.

Until the first episode of *Grey's Anatomy* aired on 27 March 2005, and her CV changed forever. The series, meant to be a mid-season break or transition product, won over audiences and quickly gained its own space. It moved from Sunday to Thursday, a prime time slot in the American prime time. It revived the medical series, along with *House, M.D.*, which had not enjoyed such splendour since *ER*. It made Shonda Rhimes one of the 100 most influential people in the world, according to *Time* magazine's ranking. All thanks to a choral and multiracial series, with the young and inexperienced doctors learning about the profession and about human and love relationships.

The success of the series would lead to the appearance of a sequel or spin-off. Dr. Addison Montgomery left *Grey's Anatomy* for her own show, *Private Practice*. In fiction, she moved from Seattle to Los Angeles. In reality, the then husband of the lead actress, an ABC executive, proposed to Shonda Rhimes that she create a whole new series, as *Grey's Anatomy* had done. It was made to show off actress Kate Walsh and Rhimes was happy because she was also producing it with her company, ShondaLand.

### On audience co-creation and the active role of audiences

Hatch and Schultz (2010) were pioneers in defining the 4 basic pillars of the co-creation process: dialogue, access to information, transparency and risk. They propose a simple model of co-creation in two dimensions: engagement between the company and its stakeholders and information provided by the company. They conclude that there is a growing interest on the part of companies in offering multiple channels that allow them to create a commitment or link between the company and its stakeholders; generating dialogue with their publics through the channels through which the company is accessed. On the other hand, they confirm that stakeholders are increasingly demanding more information about organisations and brands, even with the risk that this may entail for the corporate image.

In a similar vein, Ramaswamy and Ozcan (2016) concluded that in the traditional brand value creation process, companies viewed their audiences as passive recipients. However, in the latest brand co-creation processes, all stakeholders play a more active role. They contribute their opinions to the creation of brand value together with the company. The authors recommend that company managers set up brand experiences where individuals can carry out co-creation actions to increase brand value. The same authors, in another paper from the same year (Ramaswamy and Ozcan, 2016) focused on developing the concept of "joint experience of agents in the creation of brand value". They delved into how to involve different stakeholders, personally and collectively, in brand value creation, expanding the way in which the firm connects brand value creation opportunities with brand resources.

In this context, digital engagement platforms are fundamental, specifically designed as a system of people, elements, interfaces and processes that favour the development of interactive environments to intensify the joint experience and action of co-creators and generate mutually valuable results for all participants and agents in the brand value co-creation system. It is interesting how they insist on the difference between "agent" and "actor", understanding that the "agent" has the capacity to act motivated by its engagement as an individual who reproduces and transforms its structural environment through its relationships with the same environment and with the other agents interacting in that environment.

Hsieh and Chang (2016), meanwhile, integrated perceived psychological benefits and distinctive motivations into consumers' brand co-creation process from self-determination theory (Deci and Ryan, 1980) and implicit self-esteem theory (Greenwald and Bnaji, 1995). They found that: (1) high self-connectedness to the brand facilitates brand co-creation engagement; (2) both autonomy and perceived personal competence or aptitude in brand co-creation tasks are positively associated with brand co-creation engagement; and (3) brand co-creation tasks that bring a perception of relatedness or affinity among co-creation team members also facilitate brand co-creation engagement to be established, which, in turn, increases purchase intention and other positive attitudes toward the brand.

Erdem et al. (2016) studied the control companies have over their own brands; the new relationships they are establishing with consumers; the risks of co-branding; and the threats of this new process for brand management. They consider it essential to study whether co-creation affects the growth of brands and whether brand ownership is diluted. They also address the question of how companies should develop integrated communications strategies to better reflect the wide variety of digital options. Tajvidi, Wang, Hajli and Love (2017) also propose a model of brand co-creation in which consumers' relationship with each other and with brands positively affects the sense of belonging to a community and facilitates brand co-creation in electronic environments. Following the precedent of Prahalad & Ramaswamy (2004), they assume that co-creation of brand equity is deeply rooted in the concept of co-creation of value. They take up Prahalad & Ramaswamy (2004) definition of co-creation as the collaboration between a customer and a supplier in the activities of co-design, co-design and co-development of new products. They point out that the academic literature traditionally recognises that value can be created in the co-creation process, when customers move from being a passive audience to being a social partner in the co-creation process, and that value can be created in the co-creation process when customers move from being a passive audience to a social partner in the co-creation process. In this way, they accept that value creation between customers and suppliers is based on a unique experiential environment in which customers engage in dialogue and interaction with their suppliers, as well as access to their resources (Prahalad and Ramaswamy, 2004).

On active social media audiences: tiktok

By the start of 2020, 45% of the world's population are social media users (We are Social and Hootsuite, 2020). This represents a market of 3.5 billion people. At the same time, 67% of the world's population has a mobile device and 57%, or 4.3 billion people, have access to the Internet (We are Social and Hootsuite, 2020). In other words, the number of social media users still has a long way to go to match the Internet user-mobile device owner-social media active user data. In fact, between 2018 and 2019, internet users worldwide rose by 9.1%; social media users rose by 9%; and social media users on mobile devices rose by more than 10% (We are Social and Hootsuite, 2020).

On the other hand, internet users in 2019 spent 48% of their browsing time on social networks and chose, in descending order: Facebook, with over 2.111 billion users; YouTube, with over 1.9 billion

users; Instagram, with over 1 billion users; and Twitter, with over 325 million users (We are Social and Hootsuite, 2020). In April 2012, Facebook acquired Instagram for USD 1 billion and became owned by Mark Zuckerberg's company (Visa, Serés and Soto, 2018). This puts Facebook and Instagram together well ahead of their first direct competitor, YouTube, in terms of number of users.

At the same time, and in the wake of the global COVID-19 epidemic, the number of social network users continues to grow worldwide: Facebook (2.45 billion users), YouTube (2 billion), WhatsApp (1.6 billion), Facebook Messenger (1.3 billion), WeChat (1.15 billion), Instagram (1. billion), TikTok (800 million), QQ (730 million), QZone (517 million), Weibo (497 million)... The Chinese social network TikTok, formerly Musical.ly, has turned out to be the social network that has benefited the most from social-health confinement, almost doubling its users in the first half of 2020. Its success has led Instagram to quickly implement reels, short videos similar to TikTok's, as well as stories and videos on IGTV, so that its number of followers does not decrease.

TikTok was born in September 2018. It is a free software, developed by the Chinese company ByteDance, chaired by Yiming Zhang. Formerly called Musical.ly, it has broadened its perspectives and allows the creation, editing, viewing and forwarding of short videos. Typical video lengths range from 3 seconds to 60 seconds, although some users can make videos up to 3 minutes long and live. The keys to TikTok's success are varied and numerous but of particular interest to this research are these features:

- There is no need to have an account or register. Anyone, by downloading the app, can watch videos, download them, forward them, press likes or report them.
- It offers simple and viral challenges, seeking the co-creation of the public, so that they can imitate them by following the original idea.
- It does not demonise plagiarism, but virality: you can make a video with the background, audio and music of another user, or you can make a duet with him/her with a shared screen.
- Video editing is very simple, with numerous filters, always free and completely openly available. They are on the platform itself and the user does not need any other image, video or audio editing software. No previous technical knowledge is required either (Padilla, 2021).

Thanks to this, as indicated above, the *Bridgerton* series lives a parallel and viral life on TikTok based on the content created by its viewers, and which delves into the feminist and multiracial character of the series.

**KEYWORDS:** TV series, social media, TikTok, co-creation, *Bridgerton*, Shonda Rhimes, female empowerment.

**ACKNOWLEDGEMENTS:** This research has been carried out as part of the competitive research project: "Prodesage cultural en las redes sociales: industria, consumo popular y alfabetización audiovisual de la juventud Española". R&D project of the Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia 2018-2022. Reference: FEM2017-83302-C3-3-P. Ministry of Economy and Competitiveness, Government of Spain.

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## COVID-19 IMPACT WHILE SOLVING THE WOMEN IN TECHNOLOGY PIPELINE

**Shalini Kesar**

Southern Utah University (USA)

kesar@suu.edu

### EXTENDED ABSTRACT

The goal of this paper is to present discuss and reflect on lessons learned from outreach projects in 2020. It also explains how due to COVID-19, projects were redesigned to provide technology activities from in person to a virtual platform. The motivation for this paper is to reflect on various outreach project conducted by the author that is part of on-going research to create women in technology pipeline. It also drives it motivation from the U.S. Bureau of Labor Statistics predicts that technology field will be one the highest-growth in job numbers between now and 2030. Despite the priority on inclusion and diversity in the technology area, the gender gap still remains in this field. In 2018, the author conducted research, a collaboration with Microsoft (2018). The study conducted by Microsoft that began with focus groups of 44 middle school and high school girls. The girls shared their views, experiences, and feelings towards STEM in a candid environment, laying the groundwork for a quantitative survey of 6,009 girls and young women from ages 10-30 examining attitudes toward STEM, school and the workforce pipeline. The research was bolstered with a number of interviews with experts dedicated to supporting girls and young women in STEM. The key findings included: 1) "Girls and young women have a hard time picturing themselves in STEM roles. They need more exposure to STEM jobs, female role models, and career awareness and planning; 2) Girls don't initially see the potential for careers in STEM to be creative or have a positive impact on the world. But even a little exposure to real-world applications of STEM knowledge dramatically changes their outlook.

In addition, mounting evidence showing gender disparity in STEM, including computing, has raised debates on the underlying reason for this gap. Some associate it with social and infrastructural factors, lack of mentors and role models, and lack of awareness about the changing paradigm of this field. Studies indicate that a traditional mindset with thoughts such as 'computing is boring' and 'it's only for boys' plays a major factor in the decision making of young girls when considering a degree and/or career in this field. In today's world, the computing field is drastically changing to include creativity and multidisciplinary studies. To enhance awareness about this changing field, collaborative projects comprising of researchers and organizations are taking measures to modify classroom curriculum and after school hands-on activities in order to integrate creativity for an effective learning environment. By changing the traditional mindset and helping with developing appropriate dispositions such as positive self-perceptions and greater confidence, we can help girls to embrace and aspire towards higher education and career opportunities. For example, a recent study's goal was to "inform our work in this area and to share learning with schools, government leaders, non-profits, employers and others. What we learned is that conditions and context can make a significant difference to girls, young women, and their interest in STEM and the solution doesn't necessarily require a curricula overhaul".

In the last 13 years, the author has covered over 20 rural counties of southern Utah and East Nevada. The core philosophy of the outreach project is based on motivate the high school girls, increasing their awareness about technology opportunities in education. Consequently, increasing gender diversity with the technology field. This paper highlights the outcomes and impact in both collaborations and involving undergraduate students in the projects. Due to COVID-19, one of the outreach projects,

Southern Utah Girls in technology (SUGIT) was designed for a virtual platform using Google Classroom. It was a method to provide opportunities for all high school girls. SUGIT 2020, was accessible to high schools for a few weeks (instead of a one-day conference in 2018) that included 17 workshops (STEM, cybersecurity, computing, programming, Math, and IT Certificate) and 20 motivational videos. Series of workshops were released on Google Classroom. For details of the workshops (see [www.outreachmad.com](http://www.outreachmad.com)). Interviewees included industry members, past outreach participants, parents, SUU community members, sponsors, and industry members. The motivational interviews provided a great opportunity to inspire, and share stories about success, challenges and need for diversity to the high school girls registered for SUGIT. The motivational videos and workshop's theme were linked with the need and importance of women in technology field

Students and educators registered from southern Utah and beyond. Over 85 people registered (approx. 60 high school girls). Registration included people from Utah, Idaho, Montana, Texas, California, Florida, India, and Canada. Due to COVID-19, SUGIT 2020 was designed for a virtual platform using Google Classroom. It was a method to provide opportunities for all high school girls. SUGIT 2020, was accessible to high schools for a few weeks (instead of a one-day conference in 2018) that included 17 workshops (STEM, cybersecurity, computing, programming, Math, and IT Certificate) and 20 motivational videos. Series of workshops were released on Google Classroom. For details of the workshops (see [www.outreachmad.com](http://www.outreachmad.com)). Interviewees included industry members, past outreach participants, parents, SUU community members, sponsors, and industry members. The motivational interviews provided a great opportunity to inspire, and share stories about success, challenges and need for diversity to the high school girls registered for SUGIT. The motivational videos and workshop's theme were linked with the need and importance of women in technology field.

This paper discusses the background, the planning, implementation and lesson learned, especially during COVID 2019, while increasing awareness about opportunities in education and career in technology. It specially discusses how the insights mentioned in the collaborative white paper by Microsoft (2018) was reflected in the activities designed for SUGIT 2020. The insights include: 1) Provide more exposure to positive role models and mentors they can both relate to and aspire to be; 2) Demonstrate a path forward in terms of turning an interest in STEM and computer science into success in school and in a career; 3) Support extracurricular STEM activities that teach girls how to create and build confidence; 4) Provide hands-on experiences and real-world examples; 5) Emphasize the creative aspects of STEM and computer science; 6) Demonstrate the dramatic impact that STEM and computer science jobs have on the world; 7) Encourage parents, teachers and others influential in a girl's life to support and foster interest in STEM and computer science and 8) Listen to what girls say about their challenges and desires.

**KEYWORDS:** Outreach, Diversity, Inclusion, Girls, Technology, Education, Awareness.

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## TURKISH TV SERIES AND SOAP OPERA'S FEMINIST REINVENTION. THE CASE OF *MUJER (KADIN)* IN SPAIN

Asunción Bernárdez-Rodal, Graciela Padilla-Castillo, Aysel Zeynalova

Complutense University of Madrid (Spain)

asbernar@ccinf.ucm.es; gracielp@ucm.es; aysezey@ucm.es

### EXTENDED ABSTRACT

#### Introduction

*Mujer (Kadın)* is a Turkish TV series, broadcast in Spain by Antena 3. It is an adaptation of *Woman*, a Japanese *dorama* written by Yuji Sakamoto. This was one of the reasons why it was thought that the series would not appeal to Turkish audiences, but the audience figures proved the opposite. The episodes of the series broke records for several consecutive weeks, registering between 26.5% and 28.7% share. The series has three seasons and 81 episodes. The first two seasons have already been broadcast in Spain, with excellent audience figures: always between 10 and 20% audience share, more than 2 million viewers on average in each episode, and leader in its time slot on most of the nights it was broadcast. Its main character, Bahar, is suddenly widowed and struggles to raise her two young children, Nisan and Doruk. Her understanding of motherhood is shaped by her own mother, who abandoned her as a child, and that is why she wants to be a loving, close mother who engages in dialogue.

The aim of the work is to explore the plot lines of the series and its exploitation in Turkey and Spain, taking into accounts the feminist social context of each country, the competition of television series in each grid and their presence in social networks. To achieve this objective, a mixed quantitative and qualitative analysis is used, combining the synopsis with the promotion of the series on social networks. Among the main conclusions, we found that: *Mujer (Kadın)* is one of the most feminist TV series in Turkey and triumphs in Spain for telling a universal story that arouses empathy, moving away from the subject matter of other Turkish series, with its marked invitation to women's empowerment on all screens.

#### On the paradigm shift in television consumption

In June 2020, for the first time, digital advertising investment in Spain exceeded investment in traditional television (InfoAdex, 2020). Of the funds invested in controlled or conventional media, 38.6% went to digital communication. Within the sector, *Display* and *Video* formats (including social networks) received the highest expenditure (InfoAdex, 2020). To these data, revealing a new communication paradigm, we had to add unconventional or below the line communication, which continues to grow exponentially every year and which includes investment in branded content, influencers and native advertising.

This new environment has been definitively consolidated in March 2021, when InfoAdex has published the complete data for 2020 and has been able to compare January 2020 with January 2021. The *Digital* sector is consolidated in the first position of advertising investment for the entire Spanish territory and is the only one that has not decreased in investment, in the sad year of socio-health crisis and confinement. Within *Digital*, we find *Social Networks*, whose investment figure increased by 2.5%,



reaching 38.7 million euros (InfoAdex, 2021). *Television* is once again the second sector in terms of advertising investment, with 116.4 million euros, which is 19.8% less than the 145.2 million euros in the same period in 2020 (InfoAdex, 2021). *Radio* is in third place, with an investment of 23.3 million euros and a decrease of -26.7%; and *Newspapers*, with 15.6 million euros of investment, recorded a fall of -33.2% on the previous year's figure. Also declining are *Exterior*, with a drop of 62.4%; and *Magazines*, with an investment 33.5% lower than in 2020 (InfoAdex, 2021).

At the same time, Movistar, HBO and Netflix are stealing viewers from traditional television every day with unbeatable prices, extremely and varied catalogues, quality in-house productions and secret algorithms that prescribe the products we might like and detect, in our binge watching, the series that need to be produced to succeed. In order to maintain its space and not fall to the VOD platforms, free-to-air Spanish television is reinventing itself, looking for new products. In this search, Turkish series have stood out in the last three years on Atresmedia and Mediaset channels.

Atresmedia is the communication conglomerate that includes Antena 3, the Spanish TV channel that broadcasts *Mujer (Kadın)*. Its website (<https://www.antena3.com/series/mujer/>) offers a multitude of content for the audience: the complete *Chapters* (on the Atresmedia Player platform, with a free subscription), a description of the *Characters*, a selection of *News* (in video and text format) and a compilation of *Best Moments*. In the *Characters* section, the following outline presents the cast and the main relationships of the plot:

Image 1. Diagram of the characters in *Mujer (Kadın)*



Source: <https://www.antena3.com/series/mujer/personajes/>

As mentioned in the introduction, this proposal studies the progress of the story with its dissemination on social networks, and an important part of this content is also published on the website. Specifically, for this study, we are interested in pointing out the most feminist publications and the numerous news items about this and other Turkish series that Atresmedia has broadcast: *Fatmagül*, *Amor de contrabando*, *Ezel*, *Sıla*.... They also announce the acquisition of the rights to more series and arouse the interest of the audience: *Hercai*, *Amor prohibido*, *Las mil y una noches*, *Fugitiva*, *Cennet*, *Mar de amores*... The proposals are very numerous; they are broadcast on various channels of the platform; and the added content (especially mini-videos) help to maintain the intrigue.

### On the reinvention and resurrection of the soap opera

The soap opera was adopted in Latin America and gave rise to a new genre. Bermúdez (1980, p. 7) calls it the 'little sister' of the radio soap opera and points out that initially, it was of interest to illiterate people. Forero (2002, p. 103) prefers to bring it closer to the *folletín* because of the common elements of its stories: Manichean good and bad, misunderstandings and misunderstandings, rich and poor and a great hidden secret. Martín Barbero prefers to call it *folletín* (saga) and explains its beginnings as follows: "In the mid-nineteenth century, popular demand and the development of printing technologies made stories the launching pad for mass production. The osmotic movement was born in the press, a press that in 1830 had begun to move from political journalism to commercial enterprise. This is the birthplace of the pamphlet, the first type of text written in the popular mass format. A cultural phenomenon much more than a literary one, the *folletín* is a privileged space for studying the emergence not only of a means of communication aimed at the masses, but also of a new mode of communication between the classes" (Martín Barbero, 1995, p. 32).

The same author adds that *folletín* does not come from the popular novel, published by episodes in a newspaper, but that the term indicated a place in the newspaper: "The *basement* of the front page, where the varieties, literary criticism, theatre reviews, advertisements and culinary recipes, and not infrequently news that disguised politics as literature, ended up. What was not allowed in the body of the newspaper could nevertheless be found in the *folletín*, and this condition of origin, as well as the mixture of literature and politics, would leave its mark on the format" (Martín Barbero, 1995, p. 33). In 1836, the newspaper became a commercial enterprise and the owners of *La Presse* and *Le Siecle*, Parisian publications, introduced advertisements for words and stories written by fashionable novelists (Martín Barbero, 1995, p. 33). The stories gained space and importance and earned for themselves the name of *folletín*. The author says that the aim was to "reorient newspapers towards the general public by lowering costs and taking advantage of the possibilities opened up by the technological revolution brought about by the rotary press" (Martín Barbero, 1995).

Beyond the name or the birth, it is necessary to move on to the content of the soap opera. Forero (2002, p. 104) remarks that a soap opera must have a reparation of the *otherness*. This term covers: "The situation in which someone thinks they are one thing and in reality they are another: the girl thinks she is an orphan, but she is the daughter of a millionaire; the bad guy thinks the secretary is his ally, but in reality he is the son of someone he eliminated, who has come to seek revenge; the beggar is in reality a millionaire who looks out of his disguise, and so on" (Forero, 2002). Cabrujas (2002, p. 51) adds that the soap opera is "a system of communication of a human being consisting of a person". It is more than drama because the characters create a whole world. Its protagonist is usually a woman, always a victim, totally or partially. She must appear helpless and have a candid face. She is honest, hates no one and will only break the unjust law for a noble cause (Cabrujas, 2002, p. 56). That cause is precisely the otherness of which Forero (2002) spoke and the basis of the 'dramatic noun', extended in space and time.

Other authors speak of 'conflict' instead of *otherness*. Nash and Oakey (1978, p. 3) defined it as the force of drama. They added that stories should present a problem that the characters suddenly face; and they have to overcome it or be overcome by it. The plot should develop the unfolding of those problems. If that otherness or conflict were resolved in the first chapter, it would be a closed story with an introduction, knot and denouement. The soap opera is far from that, as it lasts for many episodes. It resorts to a *rhizomatic* or flaky narrative structure (Gordillo, 1999, p. 32). The story is prodigiously dilated, it acquires a multitude of plots and the difficulties are multiplied a hundredfold, even if staggered solutions appear. If the TV series is liked, it is stretched as much as possible. If it is not as successful as expected, the protagonists will soon end up where they belong. However, this

solution is very anomalous, as soap operas are designed to have short-, medium- and long-term followers. Their scriptwriters dominate the prolonged discourse because they know how to trap the audience and coil them indefinitely around their desire to follow the story (González-Requena, 1999, p. 121).

To achieve this, soap operas have characters that evolve very slowly and have a rather limited arc. The classic main character is a young girl who is in an environment that is not her own. This makes her vulnerable and a victim of multiple injustices (Forero, 2002). She has to confront an evil man or woman who is the complete opposite of her. However, she has a great incentive: love. Every soap opera protagonist traditionally falls in love with a classic, handsome, educated and cultured leading man from a social class and occupation very different from her. Their love story develops slowly and with many complications, because he is slow to fall in love and has to face all the people around him who disapprove of the relationship, including the evil one. Forero (2002) introduces a third character. She is the housekeeper, fairy godmother and confidant of the protagonist. She knows the *otherness*, the great secret that can lead to the *anagnorisis* or unmasking of the villain or villainess. Her value is fundamental because of her unconditional support for the disgruntled main character. Once the story has been resolved, she usually dies so that the ending is not entirely happy.

Puppo (in Escudero and Verón, 1997) adds some important characteristics of the characters described above: “The characters are feminised and masculinised according to a series of traits that are socially accepted: women are victims and men are perpetrators, men pursue power and women pursue happiness and love, women pursue noble feelings and men pursue sex. Thus there are ambitious and self-interested women who by this trait fall within the domain of masculinity and there are men who do everything for their beloved and who fall within the domain of femininity”. *Mujer (Kadın)* comes to break these norms in this female empowerment. From the title itself, we know that the protagonist does not need her husband, who is supposedly dead, and that she alone can get by with two small children.

The result of combining these characteristics of roles and narrative structures, more old-fashioned or more renewed is the *telenovela* (in Spain and Latin American) or soap opera (the English name). Its audience tends to be predominantly female and it was historically broadcast in the morning or afternoon television slot. *Mujer (Kadın)*, and all the most successful Turkish series in Spain, also break this paradigm and the channels broadcast them in the evening prime time, with 2 or 3 episodes, spread over one or two nights a week. The structure is always episodic, with 30 to 45 minute instalments and normally two or three advertising blocks per episode. The most important thing is that each episode ends with a shock or unexpected twist, forcing viewers to watch the next episode. Peñamarín (1995) attributes its long-lasting success to the “flexibility to adapt to new topics of interest and to include the preferences of the audience, the languages, the situations that frame their lives, even altering the script on the fly to incorporate collective events into the plot”. Moreover, “it is important for its success that the serial sounds real, that it speaks a language in common with its audience, that it presents credible situations that can intrigue and involve them, that it is not false, outdated, boring or predictable” (Peñamarín, 1995, p. 12). Beyond its content, the author refers to the universal themes it deals with and adds that the telenovela “dramatizes the conflict between the logic and morality of feelings and the logic and morality of social and practical life” (Peñamarín, 1995, p. 13). We are interested in all these ideas because *Mujer (Kadın)* has reinvented some of these concepts and has done so in a feminist key.

**KEYWORDS:** TV series, Turkish TV series, *Mujer, Kadın*, social media, female empowerment, feminism, motherhood, active audience.

**ACKNOWLEDGMENTS:** This research has been carried out as part of the competitive research project: “Produsage cultural en las redes sociales: industria, consumo popular y alfabetización audiovisual de la juventud Española”. R&D project of the Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia 2018-2022. Reference: FEM2017-83302-C3-3-P. Ministry of Economy and Competitiveness, Government of Spain.

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### **3. Ethical Trends and Technological Opportunities after Covid-19**

Track chair: Ana Isabel Jiménez-Zarco, Open University of Catalunya; Monica Cerdan Chiscano, Open University of Catalunya; Pilar Martinez Ruiz, Castilla La Mancha University; Alicia Izquierdo Yustas, Burgos University



## **“YOU MUST HAVE YOUR WEBCAM ON FOR THE ENTIRE DURATION OF THE EXAMINATION”: THE TRADE-OFF BETWEEN THE INTEGRITY OF ON-LINE ASSESSMENTS AND THE PRIVACY RIGHTS OF STUDENTS**

**Damian Gordon, J.Paul Gibson, Brendan Tierney, Dympna O'Sullivan, Ioannis Stavrakakis**

Technological University of Dublin (Ireland), Institut Mines-Télécom (France),  
Technological University of Dublin (Ireland), Technological University of Dublin (Ireland),  
Technological University of Dublin (Ireland)

Damian.X.Gordon@TUDublin.ie; Paul.Gibson@Telecom-SudParis.eu; Brendan.Tierney@TUDublin.ie;  
Dympna.OSullivan@TUDublin.ie; Ioannis.Stavrakakis@TUDublin.ie

### **EXTENDED ABSTRACT**

The impact of COVID-19 has been widespread and far-reaching, and one domain that has experienced severe disruption is the university education sector, where the entire apparatus of teaching and assessment for many programmes of study had to move on-line in a matter of days<sup>2</sup>. This was accomplished notably through enormous co-operation between staff and students in educational institutions (Adnan and Anwar, 2020). The negative economic impacts of COVID-19 on university students has been highlighted in terms of poor access to online resources, delayed graduation and lost internships with this effect felt more keenly by students from low socioeconomic backgrounds (Aucejo, 2020). However, an issue that has been less reported is how the crisis highlighted mismatches between on the one hand the regulations and requirements of the educational institutions, and on the other hand the privacy rights (and needs) of the students.

In this research we are investigating the challenges associated with the potential for students and teachers to inadvertently share aspects of their private lives as part of on-line teaching and assessment. This could include sharing visual information about their private residences; or sharing audio information that might reveal too much information about their private lives. These might also arise if the staff or students are *required* by their educational institute to always have their webcams on during lessons or assessments. This can blur the differentiation between public spaces and private spaces, which philosophers like Jürgen Habermas (1991) and Hannah Arendt (1998) have explored through questions of ownership and property. Asking questions such as; who owns resources in these spaces? And what is truly private? There are also a number of other “divides” worth exploring: race, social status, gender, etc. For example, in the context of gender, female students and staff tend to be more cautious about sharing their webcams, as they are far more likely to be harassed and exposed to aggressive behaviours in an on-line setting (Chawki and el Shazly, 2013).

This issue is one of a rapidly growing number of computer ethics issues that have been emerging recently, to such an extent that a number of third-level institutes across Europe are collaborating to explore some of these key ethical challenges, and to develop educational content that is both based on pedagogically sound principles, and motivated by international exemplars of best practice to highlight these matters as part of the Erasmus+ Ethics4EU project<sup>3</sup> (O’Sullivan and Gordon, 2020).

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<sup>2</sup> <https://www.timeshighereducation.com/hub/keystone-academic-solutions/p/impact-coronavirus-higher-education>

<sup>3</sup> <http://ethics4eu.eu/>

Educational institutions that require students to use webcams to be active during online assessments often use software called e-Proctoring systems to monitor the activities of the students during the assessment process. These systems replace a human invigilator (or *proctor*) who ensures that all of the necessary examination regulations are adhered to, and cheating is prevented in a brick-and-mortar educational setting. There are a growing number of such systems available, such as Remote Proctor NOW (RPNOW), eProctoring, SMOWL and ProctorExams (González-González, *et al.*, 2020), and these e-Proctoring systems typically can be either manual or automated, where manual proctoring (also known as *Live Proctoring*) is remote invigilation where a person is actively supervising the test-taker throughout the assessment, whereas automated proctoring uses technologies such as machine learning and facial detection to monitor both the test-taker and their technologies, including laptops, tablets, and mobile phones. These systems raise a number of security and fairness considerations (Langenfeld, 2020). It is worth noting that students do not always have full control over the environment in which they take their examinations, whether in student residences or in a family home, if someone enters the room that they are in, or a noise is heard in the background, some of the automated systems will log the student out, and others will even summarily fail them. Also, many of these systems require that students display some form of identification (e.g. passport or driving license) to validate the initial system login process, this represents a significant security concern, as it is possible in some of these systems for third-parties to intercept the video and audio information being transmitted (notably, intruders have been able to gain access to Zoom classrooms (known as “Zoombombing”) due issues with Zoom’s cybersecurity).

This leads to a range of serious questions about the recording and retention of this data, and particularly around the issue of ownership of that data. Even if it were possible to establish legally who the data is owned by (potentially the students, the platform suppliers, the educational institution, or some combination of these stakeholders), the ethical ownership of this data is far less clear. A concomitant consideration is around the issue of consent; how can it be given if the ownership of the data is difficult to establish, and how can it be meaningful if it isn’t clear how this data will be used in the future?

The use of as machine learning and facial detection techniques in these systems can be viewed as a matter of serious concern, especially since on 30<sup>th</sup> June 2020, the Association for Computing Machinery (the professional body for computer professionals) called for the cessation of all use of facial recognition technologies, as they produce “*results demonstrating clear bias based on ethnic, racial, gender, and other human characteristics recognizable by computer systems*” (ACM, 2020). Andrejevic and Selwyn (2020) examined the issue of facial recognition in the educational context, and raised concerns around the dehumanising nature of this technology, which can lead to the foregrounding of gender and race, as well as concerns around the dangers of using the data from these systems in automated decision support systems.

These systems cannot fail but bring to mind the notion of a *Panopticon*, a building design (and a system of control) that allows all people in that building to be observed by a single observer. Developed by English philosopher and social theorist Jeremy Bentham in the 18<sup>th</sup> century, the concept has been viewed as the blueprint for a tool of oppression and social control by philosophers like Michel Foucault (1977) and Gilles Deleuze (1992), who see such systems as a means of control by groups of people (including students) through disciplinary power. These issues are echoed in television shows like Patrick McGoohan’s “*The Prisoner*” and Lawrence Hertzog’s “*Nowhere Man*”, not to mention movies like Radha Bharadwaj’s “*Closet Land*” and J. M. Coetzee’s “*Waiting for the Barbarians*”. Allen (2012), Tufekci (2017), Zuboff (2019) and Vatcha (2020) further explore the nature of digital surveillance, and such considerations should be incorporated into the decision-making processes of educational institutes when they are considering the use of e-Proctoring systems.



Researchers S.E. Eaton and K.L. Turner (2020) highlight concerns about the relationship between e-Proctoring systems and student mental health, and conclude that more research needs to be done to explore their relationship. Regehr and McCahan (2020) note that e-Proctoring systems have been used to an unprecedented level during the COVID-19 crisis, which has resulted in a number of scalability and technical challenges, including connectivity issues for students, which has contributed significantly to their stress levels, and opens up the possibility of sharing exam questions between students taking the same examination at different times. Coghlan, *et al.* (2020) philosophically analyse e-Proctoring systems, and they highlight some of the dangers of these systems, such as in one case when a student's credit card details were accidentally displayed on their computer screen. They conclude that educational institutes must be accountable when mistakes occur, but that the students also bear some responsibility for their choices.

Given the abrupt nature of the move to on-line teaching that was dictated by COVID-19, educational institutions were not necessarily in a position to fully consider the ethical ramifications of their decisions or to update their policy documents. Many also were not in a position to obtain so-called "wet signatures" for explicit consent forms from students for this new approach, or for the use e-Proctoring systems. Student groups and Digital Rights advocates have begun to raise significant concerns about these systems, and the mandatory use of webcams in on-line teaching and assessment. A news article by Nir Kshetri in "The Conversation" on November 6th, 2020<sup>4</sup> points out that in America organisations such as the Electronic Frontier Foundation have filed numerous petitions to academic institutes and legislative bodies to call for educational administrators and teachers to end the use of these systems, and categorised their use as "spying".

Some have argued that the best way to deal with these issues is to avoid them altogether, so to change the type of assessment to one that doesn't require invigilation, for example, using open-book examinations which are mainly focused on applying knowledge as opposed to assessing basic recall (Remtulla, 2020). In situations where this is possible, it is a viable approach, although since the introduction of the Bologna process in 1999 (which impacted higher education in 29 European countries), with its emphasis on learning outcomes, it is more challenging to develop more open and individualised assessment approaches (Murtonen, *et al.*, 2017; Zeide and Nissenbaum, 2018).

An important element that seems to be missing from much of the research heretofore is the inclusion of diverse students' voices in the analysis, and this research will incorporate contributions from students to this debate.

**KEYWORDS:** Digital Ethics, Privacy, e-Proctoring, Webcams.

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## **SOCIAL MEDIA ANALYSIS, THE CASE STUDY OF THE IMAGE OF A HERITAGE CITY**

**Maria Ángeles García-Haro, Maria Pilar Martínez-Ruiz, Ricardo Martínez-Cañas,  
Pablo Ruiz Palomino**

University of Castilla-La Mancha (Spain)

angeles.garcia@uclm.es; mariapilar.martinez@uclm.es;  
ricardo.martinez @uclm.es; Pablo.ruiz@uclm.es

### **EXTENDED ABSTRACT**

Today, Spain has one of the most competitive tourism sectors in the world, according to the World Tourism Organization (2020). However, the geographical distribution of tourism in Spain presents important differences between autonomous communities and provinces (Jorrín, 2017). The fact that most travelers choose these destinations means that inland cities face a clear comparative disadvantage with respect to coastal cities.

In this regard, the central cities of Spain represent tourist destinations with rich cultural and heritage attractions that have yet to be discovered. In terms of natural and cultural heritage, Cuenca is one of the most beautiful and richest provinces in Spain. Since its inscription to the World Heritage List in 1996, Cuenca has become one of the main monumental complexes in Spain. However, the Castilian-La Mancha province has seen both its number of inhabitants and tourists decrease. Since 2011, the province of Cuenca has lost around 20,000 inhabitants and its population density is 12.10 inhabitants per square kilometer, which is below the European Union's 12.5 threshold for a desert zone (CuencaNews, 2018).

Cities in the interior of Spain are challenged to stop depopulation and reinforce their competitive position as tourist destinations (CastillaLaManchaMedia, 2017). In order to aid these efforts, scholars need to study and analyze new tourism promotion techniques that will attract more visitors to World Heritage Cities. As Munar and Ooi (2012) indicated, tourist destinations often rely on historical and cultural resources to achieve a competitive advantage in an increasingly complex environment. These new techniques will allow tourism companies to not only innovate, but also contribute to more sustainable tourist destinations, given the close relationship between sustainable development and innovation in tourism (Elmo et al., 2020). As Fayos-Solà and Cooper (2019) indicate, sustainability is crucial for destinations' competitiveness, as it encompasses the protection and conservation of natural resources, socio-cultural heritage and life. Consequently, tourism needs new innovative approaches to ensure its economic, social and environmental sustainability and growth.

In this regard, the health and economic crisis caused by COVID-19 has drastically transformed the paradigm of all economic sectors, and especially tourism. In the last semester, the sector registered its worst data in history, with a 97% drop in visitors and 750,000 jobs at risk (Aranda and Salvatierra, 2020). The coronavirus crisis has changed tourists' travel habits by encouraging them to make more proximal and last-minute trips, as well as follow other clients' opinions when making decisions (Alonso, 2010). In particular, rural tourism shows a certain optimism in the face of the crisis, since the average hotel occupancy this summer has been 54%, 14 points more than the previous year. With their natural environments and lack of crowds, rural destinations have an opportunity to expand their touristic footprint and stem the tide of depopulation (Alonso, 2020). In this sense, social networks can be an

important means for tourism companies to inform, advise and entertain consumers as part of the so-called “new normal” (Montes, 2020).

Social media represent an innovative way to balance sustainability with growth (Budeanu, 2013), as they facilitate numerous approaches to the social, environmental and economic aspects of daily activity. For example, social media can help to reduce transport and energy consumption, offer new investment and employment opportunities, according to the OECD (2007), facilitate two-way communication between organizations and local communities, and encourage the exchange of tourist experiences and the promotion of a culture.

Managing a sustainable tourist destination requires an understanding of how the destination’s image factors into tourists’ decision-making process (MacKay and Fesenmaier, 2000). Because of the development of the Internet – and social media in particular – a destination’s image now largely depends on the information generated by other consumers, providers and travelers (Llodrá-Riera et al., 2015). Specifically, social networks have become one of the best tools for promoting a destination to other tourists (Ricou, 2018). By allowing people to evaluate and express their experiences (Munar and Ooi, 2012), social media have changed the ways in which people travel and make tourism decisions (Shen, Sotiriadis and Zhou, 2020), which has ramifications for heritage destinations. Given this enormous reach and diffusion, heritage destinations must be able to effectively manage and promote their tourism image on these web platforms in order to make themselves attractive to travelers.

Despite the rapid growth of studies on the use of social media in tourism marketing, there is still a need to study the impact of content shared on social networks within the scope of the tourism sector (Dedeoglu, 2018). In particular, scholars need a greater understanding of the role that the image plays in specific destinations, since the dimensions and constituent elements of the image can vary greatly between different places (Chaulagain, Wiitala and Fu, 2019). While the tourism marketing literature has devoted considerable attention to destination image, there are few studies that have analyzed the image that tourists perceive when viewing a heritage destination online. As McNamara and Prideaux (2011) assert, there is a need for more research on visitors’ attitudes and behaviors in response to World Heritage Sites, which could generate improved marketing strategies (Remoaldo et al., 2014). From this perspective, González and Herrero (2014) point out that the World Heritage Cities of Spain must be more demanding as tourist destinations in terms of their online positioning in the different electronic word-of-mouth tools. Furthermore, as far as we know, the literature lacks complete and robust investigations into the image of Cuenca as a tourist destination (González-Oñate and Martínez-Bueno, 2012).

The present paper strives to address this research gap by delving more deeply into the image of a heritage destination: specifically, by analyzing the image that Cuenca's Heritage City projects on social media. Overall, this research proposes to: (1) examine the role of social media, and especially social networks, as sources of tourist information; (2) analyze the importance of the destination image in tourists’ decision-making, alongside the role of social media in projecting said image; and (3) conduct a detailed analysis on the image that Cuenca projects on the social networks Facebook and Instagram.

**KEYWORDS:** social media, sustainability, World Heritage City, ICT, destination image.

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## CLARIFYING THE MEANING OF VALUE CO-CREATION: A LITERATURE REVIEW

**Maria Angeles Garcia-Haro, Maria Pilar Martinez-Ruiz, Ricardo Martinez-Cañas,  
Pablo Ruiz Palomino**

University of Castilla-La Mancha (Spain)

angeles.garcia@uclm.es; mariapilar.martinez@uclm.es; ricardo.martinez @uclm.es;  
Pablo.ruiz@uclm.es

### EXTENDED ABSTRACT

Social media has become an indispensable means of information and communication between users and companies (Wu et al., 2020) and a key activity in the collaborative planning process through different forms of publication, message and media (Ziyadin et al., 2019). More and more, consumers are creating and distributing online resources, instead of being merely passive recipients of the information that companies send (Buhalis and Sinarta, 2019; Wu et al., 2020). In order to encourage their participation, social media provides the necessary design and evaluation tools for the consumer to get involved in the different stages, ideation, development, commercialization and post-launch of products through the co-creation of value (Zhang et al., 2020). Through this activity, consumers contribute diverse and attractive ideas for the development of new products and services (Buhalis and Sinarta, 2019; Zhang et al., 2020) and, consequently, by possibly better reflecting customer needs, increasing the level of acceptance towards them (Füller et al., 2009; Hoyer et al., 2010), reducing development costs and facilitating the continuity of innovation (Ye and Kankanhalli, 2018). As a result of this process, the consumer is no longer a simple source of information, but rather a resource that must be integrated into the company (Andreu et al., 2010).

The co-creation of value is considered to be the dominant strategy in the development of new products and services (Kotler et al., 2017) and a key concept in marketing and business management (Saarijärvi et al., 2010). In fact, the Marketing Science Institution points out the value of the consumer as the first principle of marketing and considers the use of such activities as an innovation strategy that allows companies to develop new products and services, according to the Research Priorities for the 2020-2022 period. Over the years, the co-creation of value has been examined in numerous sectors and a wide variety of perspectives, theoretical and methodological approaches have been used for its study, making it difficult to understand and mean, leading to numerous debates about what really is, means (Gamble and Gilmore, 2013).

In this sense, and although many authors have tried to provide a clear definition, there is still no precise meaning of the term. The co-creation of value is a highly subjective, multidimensional and dynamic construction in such a way that it has been continuously subjected to a process of change, refinement, conceptualization and re-conceptualization (Agrawal and Rahman, 2019), due to changes in services, the market, value, customers and the behavior of companies (Tronvoll et al., 2011). Despite the fact that there is a growing number of theoretical and empirical publications on the co-creation of value in recent years (Campos et al., 2018), the study of the concept is still far from complete, being difficult to determine its meaning, since the existing research is fragmented due to different explanations and available connotations (Agrawal and Rahman, 2015). As limitations of previous studies suggest, more in-depth research on the concept is required to build and expand existing literary knowledge (Agrawal and Rahman, 2019). Also, it is key to examine in more detail each function of co-creation of value and determine the ways in which organizations can incorporate these functions into their strategy, to



create and strengthen a long-term relationship with customers (Agrawal and Rahman, 2015). Thus, the literature recognizes a lack of understanding in relation to how organizations use value co-creation to build relationships and generate value (Ind et al., 2013), in addition to the need for a “systematic and analytical clarification” and a greater shared understanding “regarding the different definitions (Saarijärvi et al., 2010).

To better understand this complex concept and with the purpose of shedding light on this line of research, this study considers the work of numerous authors in the literature to analyze in depth the meaning of value co-creation. To do this, a double objective is pursued. In the first place, to carry out an exhaustive review of the literature of the most outstanding works on value co-creation that have tried to define the concept, in order to identify the study approaches most used by researchers. In this sense, it is proposed to compile and synthesize the most relevant definitions on value co-creation through the works published between 1996 and 2020. The second objective and based on the results of said review, this work establishes a classification of the different approaches that have examined the meaning of value co-creation that can contribute to homogenize the most relevant works to date and that can help academics to develop personalized research models (Lafferty and Manca, 2015). To date, and as far as our knowledge reaches, an integration of the different approaches that researchers perceive about what co-creation means, has not yet been well addressed in the literature.

This work is structured as follows. The first section shows the theoretical framework, in which the origins of the term co-creation related to value are analyzed and a review of the literature of the most relevant works to date that have provided a definition of the concept is carried out. In the second section, and as a novel contribution to the literature, an enlightening classification of the most relevant study approaches on the meaning of value co-creation is proposed. In the final section, the conclusions and implications in both theory and practice are presented, along with limitations and future lines of research.

**KEYWORDS:** social media, value co-creation approaches, innovation, consumer behavior.

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## **UNDERSTANDING DISABLING BARRIERS THROUGH SOCIAL PRACTICES IN TOURISM**

**Mónica Cerdan-Chiscano, Ana Jimenez-Zarco**

UOC (Spain)

mcerdanc@uoc.edu; ajimenez@uoc.edu

### **EXTENDED ABSTRACT**

Connections between practice theories and tourism studies are relatively rare but useful for understanding tourism consumption challenges (Rantala, 2010; Verbeek & Mommaas, 2008; Lamers & Van der Duim, 2016; Verbeek, 2011). Serving people with disabilities is vital to fully attaining equality and equity. Kastenholz et al. (2015) goes further and states that accessible tourism should be developed in a way that integrates customers with disabilities into the global market, engaging them in the same shared environment as customers without disabilities. Nevertheless, in spite of a growing prevalence of tourism and disability-related research within tourism scholarship, few scholars have examined social practices (Lamers et al., 2017; Souza Bispo, 2016) and tourism and disability. In line with Reckwitz (2002), Shove et al. (2012) and Williams et al. (2018) the body of social practices research into the way things are done in our everyday lives has increased recently. With this regard, the relevant literature has evidenced how heritage tourism experiences have been shown to be particularly beneficial to people with disabilities (McCabe, 2009; Pagán, 2015), especially when these individuals tend to be more socially isolated (Darcy, 2010).

This research started from the premise of ensuring that people with disability who wish to travel receive fair and equal hospitality and tourist service experiences. Although the Convention of Rights of People with Disabilities (United Nations, 2006), endeavours to remove disabling practices, this seems to have had little impact for the time being on ensuring a Heritage tourism visiting experience for all. This is relevant since, as will become evident from our research, access needs are often invisible or ignored by staff in a hospitality context, and thus a major issue for tourists with disabilities is the neglected right to have their choices and human rights preserved.

Thus, our aim is to apply the theoretical approaches of social practices to accessible tourism research in order to gain insights into the access limitations, in terms of the emotional experience of people with disabilities, created by hospitality companies in their encounters with these tourists when they are visiting a heritage site. In our study, we will argue that people with disability may be unintentionally left out of diverse practices, such as the visit to a heritage site. We are interested in ways of changing the aspects of heritage site visits, which include how people with disability can participate in those practices. That is relevant for social change since social practices are meant to be flexible and can be changed over time. Social practices observation explains the way things are done in our everyday lives (Lamers et al., 2017) and can be changed. A social practice-based approach helps us to understand which elements of the social practices enable people and how these practices can be changed to become more enabling. As we shall see, by focussing on the disabling effect of encounters in a tourist context for someone who cannot communicate, for instance, we can show how such encounters impact on an emotional level.

Furthermore, until now, the models studied in social practices have not taken into account the importance of considering the experience of people with disabilities in hospitality and tourism

contexts. Therefore, this study hopes to take on these considerations, giving voice to people with disabilities and providing hospitality managers with a guide on how to adequately seek potential situations in which they can be more present in the cultural experiences of people with disabilities. The study focusses on social practices and helps to facilitate the emergence of positive value outcomes by identifying certain social practices that are likely to ensure the inclusion of people with disabilities. In addition, this article makes connections between theories on social practice, disability research and accessible tourism studies aimed to better understand the key barriers for people with disability when visiting a heritage site.

This research has obtained evidence on how some ways of doing things are exclusionary; disabled people are either disadvantaged, left out or made to feel that they are the 'problem', when obtaining materials, resources or adaptations. Nevertheless, since practices are re-shaped precisely in order to make those practices more accessible, results may be interesting to hospitality and tourism managers as ways of changing the aspects of service provision that dictate how people with disabilities can take part in those practices. More specifically, the findings highlight diverse types of disabling social practice: (i) the lack of resources allocated; (ii) poor staff communication and service encounters; (iii) the lack of information provision as a support tool for participants with communication and learning difficulties; and (iv) the insufficient application of universal design before the stay takes place. More important is the fact that in their encounters with heritage site staff members, people with disabilities felt that having to explain their own conditions and wait for service on certain occasions resulted in exclusionary situations, where they were treated differently because of their condition in comparison with other visitors without disabilities. When this happens, people with disabilities feel forgotten and unequally treated in spite of existing laws and regulations.

As managerial recommendations, we suggest that any tourism setting has to have an accessible plan with a standard way of "doing things", which can shape not just how heritage site staff and visitors interact with the service, but also disabled people's experience as visitors. Therefore, this study has sought to better understand people with disability's experiences from the perspective of social practices in an effort to find patterns of disabling barriers and make heritage settings more accessible for all.

**KEYWORDS:** Disability, tourism, social inclusion, social practices, accessibility.

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## **DIGITAL MARKETING STRATEGIES FOR BUSINESS COMPANIES AT B2B AND B2C MARKETS. WHAT IS THE PERFECT SET OF DIGITAL RESOURCES TO IMPROVE THE CUSTOMER EXPERIENCE?**

**Ana Jimenez-Zarco, Alicia Izquierdo-Yusta, Maria Pilar Martínez-Ruiz**

UOC (Spain), Burgos University (Spain), University of Castilla-La Mancha (Spain)

ajimenez@uoc.edu; aliciaiz@ubu.es; mariapilar.martinez@uclm.es

### **EXTENDED ABSTRACT**

Customer experience is one of the most important elements of a marketing strategy. According to Hsia et al. (2020) Walls et al. (2011), and Lemon & Verhoef (2016), customer experience is a multidimensional construct focused on the client's cognitive, emotional, sensory, social, and behavioral responses.

Gao et al., (2020) explained that customer experience is the result of comparing customer's initial expectations vs the obtained result. If the result surpasses expectations, the experience will be positive. However, in the opposite scenario, the customer experience will be negative. Moreover, Mengoni et al. (2017) pointed out that the customer experience refers to the entire process, from the moment the person identifies the need, to the moment where he/she uses the product and rates it. Therefore, in the customer experience, the importance is not only placed in (1) the product as a source of satisfaction to customer needs but also in (2) the purchase process, where the channel and the environment both play a major role.

At a strategy level, customer experience is considered one of the key elements and priorities for companies (Medberg and Grönroos, 2020), because of its impact on the bottom line, and because it increases customer loyalty and customer advocacy. In this sense, achieving satisfactory experiences across the customer lifetime is essential, because it determines the post-purchase behavior and customer loyalty.

Recently, the digital environment has become a global meeting point, where people and organizations look for information, communicate with one another, and relate to one another. As a consequence, online experience management is essential to ensure business continuity. Thus, nowadays, a big part of the customer experience resides on the online channel, since the customer journey is nowadays omnichannel. Therefore, organizations need to manage the online channel strategically to remain competitive and to achieve their objectives in terms of capturing and retaining customers.

Despite the importance of the online customer experience, its analysis has traditionally been focused on the end-user (B2C). There are very few studies on the relationship between organizations and other types of clients, like business clients (B2B), which are in many occasions the main target audience, or they determine the customer experience for the end-user, being part of the global supply chain. Understanding how consumers make purchasing decisions is critical for companies since they impact their marketing strategy. Companies need to be conscious that the impulsive purchase of a product, (where the placement -for instance, near the checkout counter where they can pick it up on the way out- is key in its purchase), is not the same as another kind of purchase decisions making, where the consumer generally will conduct comparison shopping and demand information about the features and benefits of the product (Chen et al., 2015).

This decision-making process becomes even more complex in the digital context. Despite its benefits, it does not offer the possibility of evaluating some of the product and service characteristics, which sometimes hampers the overall positive purchase experience.

To engage every type of customer, achieving strong long-term relationships and brand loyalty, companies implement new marketing strategies that: (1) are based on the use of some digital resources and (2) deliver value to the customer from the first stages of the buying journey and maintain that value delivery across the entire journey (Womack & Jones, 2015). However, in a global and interactive context, where there are multiple touchpoints with the customer, the marketing strategy becomes even more complicated when the company competes in both B2B and B2C environments.

Therefore, the objective is to identify how companies can design effective marketing strategies addressed to different consumers, with different objectives and purchase behaviors, with a unique but also varied, set of digital resources (Ashley & Tuten, 2015). This paper proposal aims to identify how companies can design effective marketing strategies for B2C and B2B companies.

In this paper, we will review the academic literature to understand the online experience, its determinants, and consequences. We will study consumer behavior changes, and the different marketing techniques and tools like the marketing funnel and lead generation. We will also propose recommended strategies for B2B and B2C environments, and from this analysis, we will understand the value of digitalization to achieve higher customer loyalty and optimized customer experiences.

In a conclusion, we note that digital transformation and customer experience require a portfolio of initiatives, a detailed design, a clear vision, commitment from the board of directors, a digital culture, the creation of customer journey maps, and continuous evaluation systems. Therefore, companies need to keep up to date with new techniques and ways to attract and retain customers. As Jeffrey Gitomer (2015) said, “*You don't earn loyalty in a day. You earn loyalty day-by-day.*” In a moment where competitors are only one click away, there is a battle to earn the heart of consumers, remain competitive, and offer value. Companies need to accept that the future relies on customer experience management and digital transformation.

**KEYWORDS:** B2B, B2C, digital transformation, Consumer journey.

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## **4. Ethics of Emerging Technologies**

Track chair: Mario Arias-Oliva, Complutense University of Madrid; Jorge Pelegrín-Borondo, University of La Rioja; Ramón Alberto Carrasco González, Complutense University of Madrid; Jorge De Andrés Sánchez, Universitat Rovira i Virgili



## THE PATIENT AS 'HEALTH MANAGER' ASSISTED BY SMART TECHNOLOGY: PATIENT EMPOWERMENT OR TECHNOLOGICAL PATERNALISM?

Tania Moerenhout, Katleen Gabriels

University of Otago (New Zealand), Maastricht University (The Netherlands)

tania.moerenhout@otago.ac.nz; k.gabriels@maastrichtuniversity.nl

### EXTENDED ABSTRACT

In this paper, we seek to critically analyze the notion of 'patient-manager' that is gaining popularity in a number of domains. We will apply it to a case of smart technology in order to carefully dissect the notions of patient-manager and patient empowerment, now often used together or as having the same meaning. We propose a conceptual framework to separate the rhetoric of the patient-manager from the notion of patient empowerment. Our broader construed definition of patient empowerment closely adheres to Annemarie Mol's (2008) logic of care. Overall, Mol's distinction between logic of care and logic of choice allows for the description of the fundamental characteristics of patient empowerment (logic of care) that differs from the manager rhetoric (logic of choice).

During the past decade, technology developers, policy makers, researchers, and doctors have increasingly approached patients in terms of *managers* of their health. This conceptual shift is linked to the rise of smart technology. When CEO Tim Cook was asked about Apple's greatest contribution he replied: "We are taking what has been with the institution and empowering the individual to manage their health. [...] But I do think, looking back, in the future, you will answer that question: Apple's most important contribution to mankind has been in health" (Gurdus, 2019, web). Eric Topol, a practicing cardiologist and professor of genomics, writes extensively about patient empowerment through digital technology. He expects smartphones to lead to a more democratic version of medicine, that allows patients to organize and control their own healthcare (Topol, 2015).

We take these observations as our starting point. Our guiding question is: what is the ultimate goal of the empowered patient as a 'health manager'? We will argue that the shift towards a patient-manager leads to a new relation of dependency that is currently neglected, namely the dependency on smart technology or '*technological dependency*' (see Hofmann, 2003). Databased artificial intelligence (AI) offers a plethora of opportunities to monitor patients at home, such as intelligent video monitoring that can also include wearable cameras. At the same time, patients, whose homes are equipped with sensors and/or cameras, can also carry digital self-tracking technologies on the body.

Smart technologies and self-management go hand in hand. But why has the patient increasingly become a manager over the last decade? The discourse of the patient-manager seems first and foremost driven by cost-efficiency. Many academic and policy papers refer to the aging population and increase in chronic diseases to warn about our healthcare system becoming unaffordable (see e.g. Mather, Jacobsen, & Pollard, 2015). The patient-manager is subsequently presented as the solution: the patient is expected to increasingly take care of her/his own health, but it remains unclear how the relation between the care provider and care receiver has to develop and what the role of the care provider is. Smart technology plays a crucial role here: it should assist patients in their health management, in order to reach a higher degree of autonomy. But does this concept entail autonomy or empowerment in an *ethical* meaning? In our presentation, we will analyze the discourse that is used when talking about the patient as health manager and how the concepts of autonomy, paternalism,

and empowerment are interpreted within this framework. We argue that there is an ‘outsourcing’ of care and autonomy to technology that is often neglected in the patient-manager model. We connect this to Annemarie Mol’s work (2008), on the distinction between logic of care and logic of choice, to disentangle the concepts of patient manager and patient empowerment.

The notion of ‘patient empowerment’ has been presented as an alternative to paternalism. Patient empowerment refers to “a philosophy which views human beings as having the right and ability to choose by and for themselves” (Ajoulat et al., 2007). It comes down to giving support to the patient, providing information (education), and encouraging self-reflection (Anderson & Funnell, 2010). In our opinion, the definition of the patient as manager focuses on three ideals or goals related to empowerment that deserve a critical analysis. First, there is a focus on *choice*: a patient should first and foremost be able to choose, much like consumers can choose which products they buy. The emphasis on choice risks creating a burden on patients by transferring responsibility to a great extent to them. As a patient, you become responsible for your choices. This ‘logic of choice’ (cf. Mol, 2008) fails to recognize the reality of patients’ vulnerability. Second, there is an emphasis on *self-management* of health and disease. Although this may be seen as freedom, it can be challenging for patients to take up such responsibility. Patients describe self-tracking as hard work and monitoring one’s medical data can carry strong emotional and evaluative connotations (Ancker et al., 2015). Again, this implies that patients are responsible for their decisions and outcomes. This focus on self-management also relates to *cost efficiency*. The ultimate goal of self-management in the rhetoric of the patient as manager is the reduction of health services utilization through self-management interventions, without compromising health outcomes in patients (Panagioti et al., 2014). However, self-management often includes interventions that cost money: patient education, support for decision-making, and psychological and social support, amongst others.

The management discourse paints a specific picture of what a ‘good’ patient looks like: an independent, autonomous patient-manager who continuously monitors her/his own health using smart technologies, requiring less time and money from professional healthcare organizations by adhering to therapies and complying to a healthy lifestyle. But how autonomous and empowered is the patient-manager in the end? The emphasis on choice, self-management, and cost efficiency raises compelling concerns about autonomy and empowerment. When the patient-manager brushes off doctors’ paternalism, is it replaced by freedom and autonomy? And to what extent do we risk a new form of paternalism, namely technological paternalism, when smart technology is a prerequisite for the patient as health manager? When we speak of patient empowerment, paternalism is to be avoided and patients have to be able to make autonomous choices. Yet, to what extent does the smart technology ‘act’ paternalistically in a way that patients might not easily accept from a healthcare provider if they would send notifications during the day (i.e. too intruding), in the same way that for instance smart pill boxes such as Ellie send reminders and notifications (<https://elliegrid.com/>)? Also, many self-tracking applications have a persuasive design. Telecare and monitoring technologies enabling older people to continue to live independently and ‘age in place’ could introduce a technological dependency that warrants critical and closer scrutiny. Technological dependency and technologically-mediated autonomy become *technological paternalism* when a patient’s preferences or actions are overridden by technology with the goal of benefitting that patient (see Beauchamp & Childress, 2009, p. 215). Technological dependency is not necessarily problematic: it becomes a moral issue when this dependency is not transparent to the user (as app use is often presented as enabling ‘freedom’) or when patients feel they have no choice but to use the technology or to consent to it (e.g. risk of coercion in ageing in place, cf. Mort et al., 2013). In our presentation, we will relate our conceptual framework to Mol’s framework and further elaborate on the three ideals or goals related

to empowerment in the patient-manager discourse and on the risk of technological paternalism in future healthcare.

**KEYWORDS:** Smart Technology, Patient-Manager, Patient Empowerment, Technological Paternalism, Autonomy, Ethical Concerns.

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## THE PAYMENT METHODS IN MEXICO. ARE THEY DISRUPTIVE TECHNOLOGIES?

**Pedro Isidoro González-Ramírez, Juan Carlos Yáñez-Luna**

Universidad Autónoma de San Luis Potosí (Mexico)

pedro.gonzalez@uaslp.mx; jcyl@uaslp.mx

### EXTENDED ABSTRACT

A payment method (PM) is an asset that is used as money. In an economy, the PM is the basic tool for interchanging or acquiring goods and services by transferring monetary assets. There are two kinds of PM: Banknotes and Coins. The process for monetary assets transferring is simple, first the available balance of the individual and second, the mechanism to make the financial transaction (hard cash). However, the mechanisms for paying methods have been evolved, such as debit or credit cards, cashier or personal checks, electronic transfer, mobile apps, etc.

For the proper functioning of payment systems, it is essential to have reliable, efficient, and secure financial instruments. These instruments must provide certainty to economic agents that their financial transactions will be completely secure. The trend in this context has been the adoption of a complicated telecommunications infrastructure and specialized software. In this sense, a problem can be observed on the one hand, developing and emerging countries have difficulties in their implementation, on the other hand, the vague or null financial education of these countries generates a lot of mistrust among economic agents.

According to the report "Financial Inclusion Panorama 2020", the cash transactions in Mexico have increased during the period from December 2010 to December 2018. The report also shows that the balance of banknotes and coins has experienced an average annual growth rate of 7.1% as a percentage of GDP. In this respect, the largest number of transfers was carried out by internet banking (52%), whereas POS terminals registered 975.5 million operations, while ATMs 517.4 million operations, in addition to transfers, registered 350.4 million operations, followed by electronic commerce with 119.8 million operations and checks 50.5 million operations. Although a growing dynamism can be observed in the use of various payment methods, Mexico is still below the same dynamism in comparison with countries with similar per capita income (Del Río Chivardi, Castro Solares, Hernández Godínez, & Cano Vallejo, 2020).

The paragraph above shows the continuing popularity of using cash to transact. As indicated in Hancock & Humphrey (1998), cash has characteristics that make it the most traditional method of payment in the world, they are Practicality, Divisibility, and Acceptance. When a minor transaction is made in cash the resources can be used immediately. However, when a transaction is of a larger amount, the use of cash represents certain disadvantages, such as an increase in the probability of illegal attacks. There is another implicit cost of using cash that can have negative effects on economic activity. This cost refers to the loss or deceleration of transactions, on the one hand, due to the lack of cash in the establishments and on the other hand the non-acceptance of these payment methods by them.

In recent times, two situations have intensified the use of digital financial services in the world: technological advances, supported by generational gaps and the pandemic situation caused by covid-19. Based on Minsait report (2021), eight out of ten people consider that covid-19 has accelerated the process of abandoning cash due to its effect on changing payment habits, 59% also value it as an

irreversible process. This is some way to force banking institutions to exploit the internal market through transfer systems and internet-based payment methods.

The Asociación de Internet MX 2019 points that 75% of Internet users has some financial service. The most used are credit and debit cards (mostly to make transactions online). The report also indicates that only 3% of people have downloaded and used financial systems (mobile apps). In turn, it points out that the main barriers for non-users are lack of liquidity, as well as the perception of not needing any service and lack of trust towards financial institutions. Users of financial services want to get from their financial service lower commissions, complete security, and the fulfilment of promises.

In the academic literature, some factors that explain technology acceptance have been evaluated across time. Several models have been implemented to measure the behavioural intention to use technology such as TPB, TRA, TAM, UTAUT (Davis, 1985; Venkatesh, Morris, Davis, & Davis, 2003). Most of the studies of acceptance consider some technological applied constructs, such as performance and effort expectancy, Job relevance, output quality, etc. This research focuses on the social effects of PM acceptance. Also, this research attempts to find a relation between the factors that measure the social influence of PM acceptance and the disruption on individuals towards using banking technologies to hold transactions.

Social factors in many times can prevent acceptance, this may be due to individual beliefs, lack of information, perceive of risk, among others. This research will consider the full range of the perception of risk construct (Dowling, 1986; Jacoby & Kaplan, 1972) as a part of the social determinant, as Dowling points, that two issues influence the validity and measure of risk, the context of operation and the type of respondents selected. In the case of PM (considered as a bank service) the acceptance must be carried out through the risk context effects in which individuals attempt to use the financial technology and not as a business service or product.

Besides, this research considers as a part of the social determinants of adoption, the degree of the individual ethical perceive. According to Tanwar, Tyagi, Kumar, & Obaidat (2019), most users have concerns about privacy and their rights when using financial technologies. These concerns point to the possibility that malicious people carry out fraud, identity theft, civil liberties, among others. In Mexico, the Federal Official Gazette provides an ethical code for eCommerce and therefore banking transactions. This document "establishes the values and principles that all adhered suppliers must observe in the activities related to electronic commerce, to respect and promote consumer rights, promote a culture of responsible consumption, the promotion of the human rights of consumers, ethical and responsible digital advertising, the protection of vulnerable groups and self-regulation" (Secretaría de Gobernación, 2021).

In the disruption context, the acceptance of banking technologies is transforming the means of making transactions. As is cited in previous paragraphs, Mexico has a lack in the adoption of POS and consumer are mainly familiarized with cash as a method of payment. Hajebrahimi, Kamwa, & Huneault (2018) pointed out that disruptive technologies built new markets and new cost networks while perturbing the existing markets with disruption. Windell & Kroeze (2009) shows that disruption could have negative economic effects in organizations due to the challenges and changes in a global market. We can assume that technologies could be a real inconvenience for the strategic positioning of banking institutions due to the increase in people's mistrust of them. In this sense, it would be relevant to identify the acceptance factors that influence the end-users of these technologies. As a contribution in the theoretical field, a path model will be developed based on statistical methods such as Ordered Probit and Structural Equation Model. Expected outcomes will have important implications in the managerial and economic context.

**KEYWORDS:** Payment methods, Banking, Disruptive Technologies, Ordered Probit.

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## **GAMIFICATION OF SOCIOTECHNICAL IMAGINARIES FOR DISRUPTIVE TECHNOLOGIES**

**Sabine Thuermel**

Technische Universität München (Germany)

sabine@thuermel.de

### **EXTENDED ABSTRACT**

The starting point of the Driverless City and similar innovations is very often a technological imaginary, a purely technical vision embedded in a narrative to convince the public and especially the customers of its merits. Siemens, an industry leader, has aptly named the magazine promoting novel technologies “pictures of the future”. Such pictures of the future may be stabilized by technology and product roadmaps and the widespread adoption of the corresponding offerings by the market. Not only the Driverless City, advocated by vendors of (semi) autonomous cars, but the Smart City is an example of this approach, too. Already in 2008, the vision of a Smart City was presented as follows: “Several decades from now cities will have countless autonomous, intelligent functioning IT Systems that will have perfect knowledge of users’ habits and energy consumption, and provide optimum service.” (Siemens, 2008). Visions like the Smart City demonstrate that “sociotechnical imaginaries are at once descriptive of attainable futures and prescriptive of the kinds of futures that ought to be attained” (Jasanoff et al., 2007, p.1). The focus of all smart systems currently under development is on process efficiency and economic considerations.

Many of such imaginaries are techno-deterministic, abstracting from human needs or just taking a certain perspective as the only one possible. The ethical challenge in these cases is to integrate relevant stakeholders in the process of defining sociotechnical imaginaries. When Sadowski and Bendor are looking at some of Siemens’ competitors which also envision the Smart City as a model of the near future “but one that largely reflects and reinforces existing sociopolitical systems” (2019) they propose to “create counter-narratives that open up space for alternative values, designs, and models”. Analyzing a techno-deterministic future in the case of autonomous vehicles Forlano argues that “speculative design offers ways of resisting, disrupting, and destabilizing the normative visions of linear technological progress toward an inevitable autonomous future” (Forlano, 2019, p. 2811). Wagner and Gałuszka point out in their paper “Let’s play the future: Sociotechnical imaginaries, and energy transitions in serious digital games” (2020), how the imaginaries of energy reflected in serious digital games can shift the energy transition.

In a pluralistic society it would be appropriate, if the relevant stakeholders, or at least their representatives could participate in the design of technical imaginaries. This is even more important in times like ours where the concept of an environment worth living in is undergoing fundamental changes due to the pandemic. Ludic sociotechnical imaginaries constitute one option to explore alternative futures. The aim of such an anticipatory process is “preparing for the unexpected in the world as we know it” (Nordmann, 2014). Serious games could provide a viable alternative to passing ideas around in an informal setting and to brainstorming at the water cooler by experimenting with technical visions. One example already in place is the “Moral Machine” experiment, “an online experimental platform designed to explore the moral dilemmas faced by autonomous vehicles. This platform gathered 40 million decisions in ten languages from millions of people in 233 countries and territories moral decisions made by machine intelligence, such as self-driving cars” (Awad et al., 2018).

Anticipation and speculation in a Smart Society, an alert one to the uncertainties of future developments, could profit from ludic endeavors not only in the case of designing Driverless Cities. The focus would be less on nudging urbanites to accept the current visions of Driverless or even Smart Cities and the like but on experimenting with new ideas already on the radar, utopias and dystopias. Current visions of the Smart City primarily focus on the distribution of scarce resources and on enhancing efficiency. Alternative visions could integrate local and regional values. Social anticipation and imagination may give some indication what cities will look like in the future depending on the core values of different societies and their economic possibilities. Being from Europe I assume urban centers will change a lot due to New Work and E-Commerce. This will also impact the nature of menial work after the COVID-19 crisis. The MIT task force on the work of the future warns that there will be too few low-wage jobs (2020). Thus, it is in our self-interest as societies to be a smart society and plan for the unknown that lies ahead.

Another example could be visions of a future, where we trust technology more than we trust each other. It is characterized by trust-less interactions between humans who have interdependent interests respectively share goals. Their unique way to deal with uncertainties regarding each other is the binding of the will by code and to the corresponding technology platforms. The most prominent example is the blockchain technology. Non-trusting blockchain users can interact with each other without a trusted human intermediary. Blockchain serves as the basis to digital currencies as Bitcoin, to a wide variety of distributed ledgers, where cryptographic tokens represent ownership of material goods as diamonds or land (smart property), and to self-executing smart contracts. Executing a smart contract is decoupled from concluding such a contract between humans or technical agents. As the adherents of the Lex Cryptographia say: "code is law". These contracts may not only be signed by humans but also by software agents. Thus the need for human intermediaries e.g. in the Internet of Things is reduced further. This variant of FinTech and Legal Tech accelerates all kinds of digital business flows. In the future decentralized autonomous organizations (DAO) may be launched based on smart contracts and code. Their autonomy results from the fact that after the instantiation they no longer need their creators. Moreover, they are self-sufficient in so far that they can accumulate capital both digital currencies and physical assets. Their business model consists in charging for digital services provided. As long as they have sufficient funds they can operate in an independent way. An ill-intentioned DAO may cause irreparable havoc. Thus, it is easily understandable why the legal consequences of smart contract, where and under what circumstances they have a legally binding effects, as well as approaches to distributed governance for DAOs are currently hotly discussed subjects. Instead of relying on trust between humans the blockchain based distributed databases intend to provide trustworthy, i.e. incorruptible records of business transactions. Instead of relying on human institutions to enforce contracts contractual partners may rely on blockchain based platforms for self-executing smart contracts. Instead of trusting central banks users of digital currencies trust free market mechanisms supported by blockchain technology. The adoption of these technologies does not result in a trust-free world but in one where we trust technology more than each other. Distrust between human interaction partners in these collaborative networks is the default. In these in environments trust is put solely in the blockchain-based platforms. If these forms of collaborative networks were to prevail, trust-less societies would be the result. In these collaborative networks individual freedom might be maximized possibly to the detriment of others. Competitive or cooperative games where some of the (partly virtual) players are decentralized autonomous organizations (DAO) could alert us on how a future of trust-less humans could look like.

Novel sociotechnical imaginaries could be created where speculative futures testing actual technological developments are created in a unique form of gamification and interaction. Corporate narratives of smart cities and blockchain based services could be replaced by viable fictions realized as

games allowing new perspectives on disruptive technologies to be explored. The process of creating attractive sociotechnical imaginaries does not end in games and role playing, but in the validation of the created imaginaries by their potential users. Thus, anticipation and speculation in a Smart Society, an alert one to the uncertainties of future developments, could profit from ludic endeavors. Such a new way of engaging with technology could foster the creativity of the users and open up new perspectives, a novel way of futures thinking.

**KEYWORDS:** sociotechnical imaginaries, driverless city, smart city, blockchain technology, ludic interactions, smart society.

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## **SOCIAL MEDIA USER EMOTIONS DURING COVID19**

**Jan Strohschein, Ana María Lara-Palma, Heide Faeskorn-Woyke**

TH Köln (Germany), Universidad de Burgos (Spain), TH Köln (Germany)

jan.strohschein@th-koeln.de; amlara@ubu.es; heide.faeskorn-woyke@th-koeln.de

### **EXTENDED ABSTRACT**

Social networks are everywhere and a large part of users even frequents more than one platform (Pew Research Center, 2018). "Due to a constant presence in the lives of their users, social networks have a decidedly strong social impact" (Statista, 2019). However, several studies also suggest that social media usage is not beneficial for users health with symptoms ranging from sleep deprivation to anxiety and depression (Hogue & Mills, 2019; Hunt et al., 2018; Levenson et al., 2016).

This work uses a machine learning approach to study the emotions of a large group of social media users on Twitter during the Covid19 pandemic and compare the results to our previous research that evaluated 10 million tweets from 5000 users between 2015 - 2019.

It is possible to extract emotions of social media users from the text of their status updates as shown by Colneric and Demsar, and Tasoulis et al. (Colneric & Demsar, 2018; Tasoulis et al., 2018). This analysis is based on the work of Colneric and Demsar, who were kind enough to publish the resulting machine learning model. They utilized neural networks to generate a model that is able to detect emotions in English language. Neural networks are a supervised machine learning method and therefore the data needs annotations for the algorithm to learn from. As the authors learned on a massive dataset of 73 billion tweets it was infeasible to manually annotate the dataset. The authors exploited hashtags as annotations, an approach that was successfully used in several other natural language processing studies for sentiment classification (Go et al., 2009; Kouloumpis et al., 2011; Nodarakis et al., 2016), detecting sarcasm (Bamman & Smith, 2015; González-Ibáñez et al., 2011), studying personality traits (Plank & Hovy, 2015) and classifying emotions (Mohammad & Kiritchenko, 2015). As hashtags are selected by the author of a tweet they work well as indicators of their emotions.

Emotions can be modeled in a multitude of ways and popular emotion classification schemes were created by Paul Ekman, Robert Plutchik and Douglas McNair along with Maurice Lorr and Leo Droppleman (Ekman, 1999; McNair et al., 1971; Plutchik, 1982). The classification for this analysis is done with Ekmans scheme of basic emotions as it covers fear, disgust and anger, which have been identified through comprehensive literature research as the most impactful emotions caused by the use of social media and should be investigated further. An example classification that contains only the relevant columns is shown below in Table 1. The status update regards a sport event where an athlete plays his first game for the team and the detected prevalent emotion is joy, followed by surprise.

In our previous work users have been grouped based on the number of status updates they publish and the amount of followers they have. Grouping users was more effective and showed more distinct results when based on the amount of followers a user has and not based on the number of status updates they publish. The prevalent expressed emotions on twitter were happiness and surprise. Over the observed period of time, from 2015 to 2019, the values for happiness remained consistent, while an increase in anger, disgust and fear could be verified for all user groups. Sadness on the other hand

declined, maybe it was transformed into anger or fear. It was noticeable that twitter users with the least amount of followers (<25%) expressed anger and fear most strongly.

Thus, for this work the collected tweets are classified for the expressed emotions and grouped based on the amount of followers an individual user has to allow the comparison with historic data.

Table 1 Tweet Analysis multi-class Classification Example

Text	Anger	Disgust	Fear	Joy	Sadness	Surprise
'Anthony Davis makes his debut with the Hornets dropping 21 points and grabbing 7 rebounds.'	0.0109	0.0028	0.0425	0.7640	0.0551	0.1244

**KEYWORDS:** Social Media, Machine Learning, Natural Language Processing, Emotion Classification.

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## **HOW A BRAIN-MACHINE INTERFACE CAN BE HELPFUL FOR PEOPLE WITH DISABILITIES? : VIEWS FROM SOCIAL WELFARE PROFESSIONALS**

**Yohko Orito, Tomonori Yamamoto, Hidenobu Sai, Kiyoshi Murata,  
Yasunori Fukuta, Taichi Isobe, Masashi Hori**

Ehime University (Japan), Ehime University (Japan), Ehime University (Japan),  
Meiji University (Japan), Meiji University (Japan), Health Sciences University of Hokkaido (Japan),  
Waseda University (Japan)

orito.yohko.mm@ehime-u.ac.jp; yamamoto.tomonori.mh@ehime-u.ac.jp;  
sai.hidenobu.mk@ehime-u.ac.jp; kmurata@meiji.ac.jp; yasufkt@meiji.ac.jp;  
tisobe@hoku-iryu-u.ac.jp; horimasa@waseda.jp

### **EXTENDED ABSTRACT**

Cyborg technologies are regarded as useful tools that can promote daily life and enhance physical and intellectual abilities. Currently, such technologies are extremely useful in assisting people with disabilities. Among them, the development and social utilisation of a brain-machine interface (BMI), or a brain-computer interface (BCI), has shown remarkable progress over recent years, and its utilisation by people with disabilities has steadily been trialled and adopted in developed countries. A BMI promotes communication through signalling from the brain to external devices and vice versa using dedicated hardware and software (Orito et al., 2020). Using these functions, BMI has been adopted to support people with disabilities, such as amyotrophic lateral sclerosis (ALS), muscular dystrophy and cerebral palsy. For example, a BMI device enables paralysed individuals, who are unable to move their bodies at will, to successfully control digital devices and to communicate with others.

However, discussion regarding the utility and ethical issues surrounding the use of BMI systems in social welfare have not been extensive, because BMI devices or systems are not currently widely used by people with disabilities. Not only the physical and psychological risks, but also social ones and ethical implications for social welfare should carefully be considered in advance of the actual use of BMI, to secure users' well-being. In addition, it seems that healthy people tend to consider the simple-minded arguments or benefits of cyborg technologies that can be used for supporting people with disabilities and to miss the disadvantages and risks to them that may take place through the use of such technologies. Of course, there are many beneficial ways in which BMI systems can assist people with disabilities; however, it is not desirable to overestimate these beneficial aspects. To this end, BMI usability for people with disabilities, the appropriateness of purposes and targeted subjects, risks and ethical issues entailed in the operation of the systems should be proactively examined from various viewpoints.

With this in mind, the authors conducted experiments on two healthy social welfare professionals as subjects through fitting them with a non-invasive wearable BMI device and interview survey to investigate the availability, usability and ethical issues of BMI systems for people with disabilities. This research is positioned in the exploratory phase. In such process, it is meaningful to ask the views and opinions of professionals or experts in related areas, and in this study, two professionals with specialised knowledge and experiences in social welfare were invited. In the experiments, the subjects were asked to put the non-invasive BMI device (EEG input device) on their head to operate a robotic arm remotely or without touching it, as if using psychokinesis, as in our previous study (Orito et al., 2020; Orito, Murata and Suzuki, 2020). Moreover, based on the results of these and other studies by

the authors (Murata et al., 2019; Murata et al., 2018; Murata et al., 2017; Isobe, 2013), we conducted interviews with the two subjects, before, during and after experiments, to examine their attitudes to BMI device usage, feelings regarding robotic arm operation, ethical awareness of brain signal collection by a BMI device, and to estimate the benefits and risks surrounding the utilisation of BMI systems for people with disabilities.

The experiments and interviews were conducted in August 2020 at Ehime University in Matsuyama, Ehime prefecture, Japan. All procedures performed for this study were in accordance with the ethical standards of the research ethics committee at the Faculty of Medicine, Ehime University. The attributes of the subjects are shown in Table 1. They were healthy adult professionals; one was a researcher who majored in social security law and social welfare, the second was a social worker. The two subjects were knowledgeable regarding BMI technologies, on the basis of their professional experiences.

Table 1 Experimental subjects (n = 2)

ID	Age	Gender	Occupation	Have you ever heard about a BMI or are you familiar with a BMI?	Expectation/anxiety about the experiment (Weak 0–Strong 7)
1	40's	Female	Professor (Social security law)	Yes. While I didn't know the name of the system, I had heard that ALS and muscular dystrophy patients used such systems. These systems had attracted attention at international exhibitions concerning medical and welfare apparatus, several years ago.	3/4
2	40's	Male	Social worker	Yes. I heard about this type of technology in our communities, several years ago. However, at that time, it seemed that such systems were unsatisfactory in supporting decision making for people with disabilities, due to technological difficulties.	7/1

The interview questions were categorised as follows: (a) privacy and personal data protection, (b) human autonomy and dignity, (c) identity development and personal transformation, (d) the acceptance of body extension in an individual and organisational context, (e) workplace cyborgisation and (f) social responsibility and informed consent. In addition to these, questions related to the BMI experiment and support for people with disabilities were added in this study. Through the experiments, subsequent interviews and follow-up surveys (via by e-mail after the experiment) regarding BMI devices and their usage, the authors gained insightful findings which are categorised below.

1. Agendas towards experimental and practical use of BMI for people with disabilities
  - A. Knowledge and implications derived from previous applications of BMI



- B. Appropriate subjects with disabilities and their cases as well as specific movement during the experiment
- C. Cautions and important notice for experimental and interview surveys for subjects (people with disabilities)
- 2. Possibilities and value of BMI usage for people with disabilities
  - D. Palliative care
  - E. Assistance of support for physical movements aimed to maintain their human dignity
  - F. Expectations concerning those who wish to use implantable BMI and its usability
- 3. Risks and ethical concerns regarding the BMI system for people with disabilities
  - G. Difficulties to maintain equal opportunities; widening gap between the haves and have-nots
  - H. Negative effect of mismanaged body movement and mental status associated with being taken over by a machine
  - I. Mental exhaustion arising from using online tools and the workplace issues
  - J. Privacy, personal data protection
- 4. Physical synchronicity

Interview results allowed the authors to recognise which categories of people with disabilities the BMI system was effective for, what type of support or communication is required, what kinds of ethical concerns relating to BMI system use are important for them. On the other hand, when considering BMI systems for supporting people with disabilities, while the experimental survey and examination of professionals in social welfare was required to analyse the practical and ethical issues in advance, the following question can be raised: 'Is it possible for a healthy person to understand and represent the feelings and sensations of people with disabilities, who cannot express their intentions or have limited physical sensation?' In this study, these fundamental arguments are discussed based on the Eastern theory of body or Eastern theory of mind-body (e.g. Ichikawa, 1993; Yasuda, 2014; Yuasa, 1987; Yuasa, 1993). We suggest that these discussions will provide insightful implications for the use of cyborg technologies for people with disabilities as well as healthy people.

**KEYWORDS:** Brain-machine interface, Support for people with disabilities, Eastern theory of body, privacy.

**ACKNOWLEDGEMENTS:** This work was supported by JSPS KAKENHI Grant Numbers 20K01920 and 19K12528, the Kurata Grants subsidised by the Hitachi Global Foundation, and the Meiji University Grant-in-Aid for the international collaborative research project 'Cyborg Ethics'. We also appreciate Dr. Yoshitaka Moritsugu, and all the participants in the experiments and researchers who support our study. It was certified that all procedures performed in the experiments of this study, which involved human participants, were in accordance with the ethical standards of the research ethics committee set up at the Faculty of Medicine, Ehime University (issued Jan.27.2020, No. 2001001).

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## **MORAL DILEMMAS AND ETHICAL CONFLICTS RELATED TO MOBILE APPLICATIONS FOR SLEEP IMPROVEMENT**

**Ana María Lara-Palma, Montserrat Santamaría-Vázquez, Bruno Baruque-Zanón,  
Hilario Ortiz-Huerta Juan**

Universidad de Burgos (Spain)

amlara@ubu.es; msvazquez@ubu.es; bbaruque@ubu.es; jhortiz@ubu.es

### **EXTENDED ABSTRACT**

The sleep disorders are a variety of conditions that affect the sleep quality, timing or duration of the sleep. There are more than 100 specific sleep disorders and the most frequent are insomnia, apnea, restless legs syndrome (Sleep Foundation, 2020). In the last decade, the prevalence of these disorders seems to be increasing considerably among the population (Acquavella et al., 2020); but during the last year, marked by the covid-19 pandemic, sleep problems have been widely studied and all authors agree with the fact that they have increased. Hung and Zhao (2020) reported that the 18% of the Chinese population studied had a poor quality of sleep, Stanton et al. (2020) informed about un 40,7% in Australia, and Martínez-Lezaun et al (2002) found that the 70% of the Spanish university students had, during the lockdown, worse sleep quality.

At least one of those signs characterizes these disorders: trouble to fall asleep, difficulties to stay awake during the day, imbalances in the sleep schedule or unusual behaviors that disrupt sleep (Sleep Foundation, 2020). The sleep disorders have also several consequences as memory and concentration difficulties, appetite disturbances and difficulties to performance the activities of daily living (Ram, Seirawan, Kumar and Clark, 2010).

In order to improve the sleep quality, the Society of Behavioral Sleep Medicine (Crew et al., 2020) recommend maintain certain level of physical activity and keep the exposure to natural light, since the lack of it induce mood disorders, alter the energy levels, provokes appetite disturbances and change de sleep routine (Wright et al., 2013).

On the other hand, technological solutions like mobile applications appear and they claim to help improve the sleep quality. A rapid search in the main Apps markets shows more than 250 applications, but have these applications proved their reliability and validity?

The objective of this work is to analyze, under an ethical judgement, the literature review about reliability and validity of Mobile Applications focused on sleep disorders, the ethical conflicts generated and the ethical judgment of the users.

Methodology consists, on one hand of an on-line search has been performed in order to collect a set of mobile applications that have effects in their users that are more likely to be supported by any kind of scientific validation study. In order to do this, the main inclusion criterion has been that the applications had to be recommended in the content of a web site belonging to any medical, governmental or at least non-commercial association or agency with content in English language

The search has been conducted in major web search portals (Google and DuckDuckGo) including the key words "sleep mobile app" and filtering out all results that did not belong to any of these non-commercial associations. An additional exclusion criterion used is that apps that are not aimed to improve sleep quality (i.e. only measuring sleep time/quality) are left out of the study.

The results obtained include a total of 31 different apps available either on the Android and iOS operating systems. Among that set, authors have found bibliographic evidence of clinical trials or other studies of effectiveness among its user population for 5 of them. Even if 3 of those are very popular and used by a great number of users (reporting studies of up to 12,151 users), it is a low number given the amount of applications available and taking into account that kind of information is completely unknown for the digital stores users.

On the other hand, taking into consideration another dimension of the use of technologies, what are the users themselves, it is mandatory to opened up some questions regarding their ethical judgment such as perceive risk of use (Khaled and Faqih, 2016; Littler and Melanthiou, 2006; Wiegard and Breitner, 2017), behavioral intention (Balakrishnan and Griffiths, 2018; Lee, Chung and Lee, 2013), sustainable consumption (Mulcahy, Russell-Bennett and Iacobucci, 2020) and performance expectancy (Orji, Mandryk and Vassileva, 2017). Europe has gone into the digital market twenty years ago; during this time, technological improvements have gone noiseless growing up, and, carving up a new knowledgeable generation. Furthermore, TIC's mean a new way of speaking, a new language, new symbols and meaning, new tones and icons, and, consequently, some lacks of right understanding about the rules and values of managing. This implies mistakes and controversies, moral dilemmas and statements about the right or wrong use of this trending usability of TIC's and the behavior caused through its usability.

One of the most disruptive App's, what is, Serious Games, are used by the population (youngest specifically) with a natural and innate talent, and, this is because they manage more quantity of data, information, knowledge and contents immediately, and, because the digital market offer a huge range of possibilities. As consequence, results will collect this new products paradigm analyzed since their value controversial parameters, such as, ethics, security and privacy. Ethics, because is mandatory to research about the conflicts within the validation of the licenses; security and privacy because in the Big Data virtual world is compulsory to respect rules and regulations and guarantee products and services' know-how.

**KEYWORDS:** App, Serious Games, Sleep disorders, Ethics and Morality, Sustainable Consumption.

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## CYBORG ACCEPTANCE IN HEALTHCARE SERVICES

**Ala Almahameed, Mario Arias-Oliva, Jorge Pelegrín-Borondo**

Social and Business Research Lab, Universitat Rovira i Virgili (Spain),  
Complutense University of Madrid (Spain), University of La Rioja (Spain)

ala.almahameed@estudiants.urv.cat; mario.arias@ucm.es; jorge.pelegrin@unirioja.es

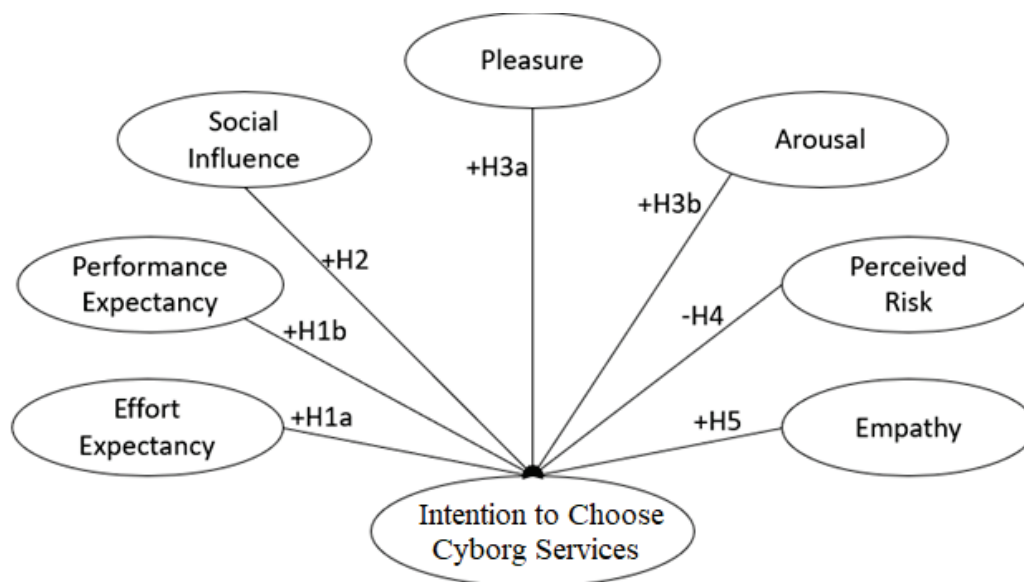
### EXTENDED ABSTRACT

The emergence of the technological implants for therapy and improvement of human capabilities opens a new era in human-machine interaction. The term cyborg (Cybernetic Organism) is introducing the human with new capabilities, by using wearables or by implanting electronic devices into humans' body (Park, 2014). Most of the developed implantable devices across the past decade have been utilized for the healthcare applications, such as paralyzed limbs control, pacemakers, and cochlear (Raatikainen et al., 2015), and some of these devices are being used to enhance human capabilities, such as memory, vision, hearing, physical strength, and moral enhancement (Jotterand, 2014; Reinares-Lara, Olarte-Pascual, Pelegrin-borondo, & Pino, 2016). For instance, the cochlear implants represent the first interaction between human brain and machines to replace the lost sounds by allowing brain to recover the sense of hearing. Also, it could be used to enhance the hearing ability of healthy people (Christie & Bloustien, 2010). On the other hand, technological tattoos, fitness trackers, smartwatches, and smart glasses are representing some examples of wearables technology (Firger, 2015). This development requires to investigate customer behavior toward such technologies. In this sense, the use of technological implants in therapy application has been accepted by society and the use of them to improve human capabilities has been partially accepted. Further investigations are ongoing to be able to understand the factors that could stimulate the acceptance of such technologies (Pelegrín-Borondo, Arias-Oliva, Murata, & Souto-Romero, 2018). In parallel, once these entities (i.e. Cyborgs) become realistic and as proposed, how will humans perceive cyborg individuals in their society? Are they going to accept their existence? Are they going to interact with them normally? And propose that cyborg will become an employee in any service setting, are people willing to accept the services offered by cyborg? Could they prefer it over human services, for instance? Accordingly, the need is to investigate the factors that influence cyborg acceptance as an entity in society.

This research focuses on the factors that could impact cyborg acceptance in healthcare services. In particular, a model (Figure 1) was developed to investigate the intention to choose cyborg as a surgeon to correct a visual impairment in one eye. The model was developed based on previous theories and models that have been used to investigate acceptance of new technologies. The effort expectancy and performance expectancy have been introduced by the Unified Theory of Acceptance and Use of Technology (UTAUT1) for Venkatesh et al. (2003) and its extension UTAUT2 Venkatesh et al. (2012), and they have been used in studying acceptance of being cyborg by Cognitive-Affective-Normative Model (CAN) for Pelegrín-Borondo et al. (2016). In addition, the social influence, which has been introduced by the Theory of Reasoned Action (TRA) for Fishbein and Ajzen (1975) and the Theory of Planned Behavior (TPB) for Ajzen (1991), and used in acceptance of new technology, such as acceptance of Nanoimplants (Pelegrín-Borondo, Juaneda-Ayensa, González-Menorca, & González-Menorca, 2015; Pelegrín-Borondo, Reinares-Lara, & Olarte-Pascual, 2017; Pelegrín-Borondo et al., 2016; Reinares-Lara, Olarte-Pascual, & Pelegrín-Borondo, 2018; Reinares-Lara et al., 2016). Regarding emotional dimension, the research used pleasure and arousal. Pleasure is related to a person's state

of feeling of goodness, happiness, joyfulness, or contentedness in a certain situation. And, arousal is about a person's state of feeling with excitement, alert, stimulation, wakefulness, or activeness in a certain situation (Das, 2013; Mehrabian & Russell, 1974). Positive arousal and pleasure emotions can allow humans to feel with optimism while choosing their plans and goals. In fact, arousal could be seen as preparation toward actions (Russell, 2003). Furthermore, the perceived risk dimension has been used by Pelegrin-Borondo et al. (2017) while studying the acceptance of insideable technologies. In this context, when benefits exceed the risk that is associated with nanotechnologies, the perception of risk may decrease (Gupta, Fischer, & Frewer, 2015; Satterfield, Kandlikar, Beaudrie, Conti, & Harthorn, 2009). Finally, in technology acceptance context, such as human-robot interaction, humans can convey empathy by imitating the facial expression of the other party (Riek & Robinson, 2008). It could be proposed that this way of conveying empathy should be used in the human-cyborg interactions, since the perceived empathy has been found to be a significant determinant of the intention towards humanoid technologies (Homburg & Merkle, 2019).

Figure 1. The Proposed theoretical model



This research used a quantitative methodology, and the online survey was developed using Google Forms. The data were collected from 379 individuals from different Jordanian universities. A total of 53% of the respondents were men, and 47% were women. The PLS-SEM technique was used to test the proposed hypotheses. The proposed model's explanatory power was high ( $R^2 = 0.77$ ). The results confirmed the impact of effort expectancy, performance expectancy, social influence, and arousal emotional dimension on the intention to choose cyborg services. In contrast, pleasure emotional dimension, empathy, and perceived risk were not found to have any significant impact on intention to choose the proposed cyborg surgeon.

This research opens a new line of researches related to the acceptance of cyborg technology as an entity. In this regard, studying the acceptance of cyborg technology will help the companies in promoting their related products (i.e. wearables and implants), and to understand the factors stimulating the acceptance of those products.

The study was conducted in a single country. The differences in culture could affect consumers' intentions toward cyborg technology. According to that, this research should be extended to different

countries for evaluating the impact of cultural differences on the intention to use the proposed services. In the same context, this research proposed a specific use of cyborg technology. The result could vary if the proposed use conducted in different service settings. Therefore, future research could apply this research model to different service settings.

**KEYWORDS:** Cyborg, Healthcare Services, Technology Acceptance, Intention to Choose.

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## EXPLORING CO-DESIGN CONSIDERATIONS FOR EMBEDDING PRIVACY IN HOLOCHAIN APPS: A VALUE SENSITIVE DESIGN PERSPECTIVE

**Oliver Burmeister, Paul d'Aoust, Anisha Fernando, Anwaar Ulhaq, Kirsten Wahlstrom**

Charles Sturt University (Australia), Holochain (Canada), University of South Australia (Australia),  
Charles Sturt University (Australia), University of South Australia (Australia)

oburmeister@csu.edu.au; paul.daoust@holo.host; Anisha.Fernando@unisa.edu.au;  
aulhaq@csu.edu.au; Kirsten.Wahlstrom@unisa.edu.au

### EXTENDED ABSTRACT

This extended abstract extends the authors' prior work in 2019 and 2020 by re-framing an exploration of Holochain as applied to the right to be forgotten through a value sensitive design lens. The work is important as it provides an early analysis and recommendations with respect to an emerging technology.

Information management and governance efforts increasingly address privacy and can be enhanced by the use of an emerging technology called *blockchain*, which are tamper-proof distributed data repositories. Blockchains automate trust and reduce transaction costs; for these reasons, a blockchain may be viewed as a strategic information asset (Vovchenko, Andreeva, Orobinskiy, & Filippov, 2017).

Ethical concerns regarding the design and use blockchain technologies have arisen. This paper will discuss a specific privacy concern (ie the right to be forgotten) with respect to an emerging type of blockchain platform, called *Holochain* and the apps (*hApps*) that may be implemented on this platform.

A hApp "... consists of a network of agents maintaining a unique source chain of their transactions, paired with a shared space implemented as a validating, monotonic, sharded, distributed hash table (DHT) where every node enforces validation rules on that data in the DHT as well as providing provenance of data from the source chains where it originated" (Harris-Braun, Luck, & Brock, 2018, p4). In other words, each hApp node creates its own (small) blockchain for holding verified data which is shared to a DHT (Frahat, Monowar, & Buhari, 2019). The DHT is sharded and distributed to the nodes in the hApp, which validate the shards against their source blockchains (Harris-Braun et al., 2018).

The potential for hApps to embed privacy is promising because of the potential for appropriate consideration of social contexts. Privacy is a wide-ranging concept and is often conflated with security and confidentiality (Mittelstadt, Fairweather, McBride, & Shaw, 2013; Wahlstrom & Fairweather, 2013). Privacy has been defined as controlling data and self-determination (Westin, 1967), restricting access to self and data (Moor, 1990), trading privacy and data as commodities (Posner, 1977), as social goods unique to specific contexts (Burmeister, Islam, Dayhew, & Crichton, 2015; Nissenbaum, 2009), and as being shaped by technologies formed in the infosphere (Floridi, 2005).

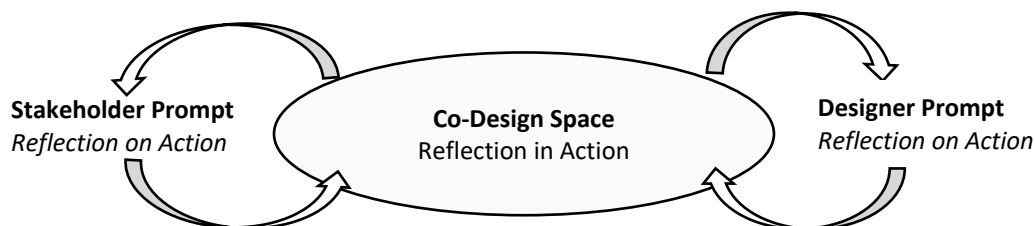
Social contexts give rise to privacy, regardless of the technical nature or medium of the context. Privacy is an intrinsic and pliant feature of social contexts, shaped by social contexts and to a lesser extent, shaping of social contexts (Wahlstrom, Fairweather, & Ashman, 2017). One social context which explicates the ethical tension between privacy and the integrity of data is the right to be forgotten. The right to be forgotten protects legal rights for a person to request data of a personal nature be deleted from the Internet and not indexed by search engines. However, it presents a significant load on costs, implementation efforts and resources for search engine organisations, with questions regarding the global applicability of this European law.

Key privacy by design considerations in hApps can be embedded by creating and configuring contexts that uphold the expectations of social contexts such as in the right to be forgotten scenario. From a developer perspective, there are six design considerations, namely:

1. defining data types as private, public, or public but encrypted in data schemes,
2. participants' access to a hApp's network space can be specified in code given that all public data is visible in this space,
3. use of two sharding methods: each party maintains their own journal, and each separate entry and header in a journal can be viewed, validated and stored by a small sample of other participants,
4. access to private entries on a journal can be approved via use of capability tokens that may be non-transferable,
5. only public data is verified or approved by the network, with the definition of valid data being determined by the developer and the participants' contexts,
6. two new techniques to remove data are theorised with the implementation details pending: withdraw (redact data formerly published) and purge (offer a participant to mark another's data for deletion).

However, while developer requirements are important, the requirement to consider design needs from the community of people running or accessing hApps supports the balancing of data integrity with the right to be forgotten. This ethical tension can be addressed by applying the value sensitive action-reflection model, a value sensitive design tool (Friedman & Hendry, 2019), see Figure 1 below. We suggest using the value sensitive action-reflection model recommended by Yoo et al. (2013) for the co-design hApps in order to address the privacy needs arising in social contexts (like the right to be forgotten). The development of designer and stakeholder prompts is noted as a future research opportunity.

Figure 1: Evolving the Co-Design Space for Holochains; adapted from Yoo, Hultgren, Woelfer, Hendry, and Friedman (2013).



For example, the design needs of the people running or potentially accessing hApps should be considered. One approach to raise these design considerations draws on the core ICT values of privacy suggested by Hultgren (2014): security, ownership, universal usability, autonomy, trust, accountability and human welfare. Hence, when developing a co-design space for hApps, these community-based design considerations could be explored:

1. *Privacy*: This value is of core focus to this social context, and privacy-by-design criteria are embedded as listed in the developer considerations above. However, questions of data ethics

literacy remain regarding the awareness of and implementation of privacy-related data knowledge and skills needed to maintain the integrity of hApps.

2. *Security*: What are potential security risks that need to be considered from a hApp community practitioner's perspective?
3. *Ownership*: As a disruptive approach to managing and storing data, how is this decentralised form of data ownership perceived by potential community users?
4. *Universal Usability*: Can anyone use a hApp or are specific types of knowledge and skills required? How can these competencies be inclusively acquired?
5. *Autonomy*: How can hApp users practice autonomy over managing data choices?
6. *Trust*: What ensures the trustworthiness of hApp and the integrity of data managed in these transactions?
7. *Accountability and Responsibility*: Which stakeholder(s) are accountable and responsible for the integrity of these hApps? What are mechanisms to practice these values?
8. *Human Welfare*: Are there any potential harms propagated or introduced by managing data in hApps?

The consideration of these central ICT values is not an exhaustive list but is recommended as a useful place to start in unpacking the ethical tensions in emerging technologies such as hApps. The potential of these emerging technologies to appropriately address the need for embedding social contexts for privacy and further the contextual relational nature of privacy will be explored in the full paper.

**KEYWORDS:** privacy, value-sensitive design (VSD), blockchain, Holochain.

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## ETHICAL RESPONSIBILITY IN SPACE EXPLORATION

**Zachary J. Goldberg**

Trilateral Research (Ireland)

zachary.goldberg@trilateralresearch.com

### EXTENDED ABSTRACT

The ethical questions arising in the context of current and future space travel and exploration are as abundant as they are complex (Schwartz and Milligan, 2016). This is owing to both the increasing number of technological possibilities opening opportunities for human exploration and exploitation of space, other planets and asteroids in addition to the myriad of relevant scientific and ethical factors that remain unknown about these activities. Much of the literature focusing on an ethics of space exploration has attempted to apply and analyse the traditional (Western) ethical theories of deontology, utilitarianism and virtue theory to the context of space travel and exploration, and then discuss which of these theories would be the most appropriate ethical guide for human activities in space (e.g. McArthur and Boran, 2004; Arnould, 2011; Green, 2014). In this paper I argue that these discussions are invaluable, not because they provide a concrete ethical guide to follow, but because they do not. Understanding ethical theories is only the first step in cultivating an ethic of personal responsibility that focuses on: a) questioning one's abilities to act ethically especially in the context of significant unknowns, b) what it means to be accountable when one transgresses ethical norms. I conclude that cultivating personal responsibility as it is here described is critical for stakeholders involved in current and future human activities in space.

As more money is invested in space, as more people—both professional astronauts as well as tourists—travel to space, as our spaceships are able to venture farther out into the galaxy, as we contemplate mining extraterrestrial resources for use on earth, or consider terraforming and colonizing Mars or other celestial bodies, we are confronted with a myriad of ethical questions, both theoretical and practical:

Does the space environment (including the solar system and beyond) contain anything of inherent value? Do we have an ethical obligation to limit our activities on space entities such as asteroids, comets, moons, or planets? Or are they there for us to research and exploit? Are we ethically permitted to take resources from the moon or other planets for use on earth? Should we preserve pristine space environments? If we discover extraterrestrial life, including microbial, would it deserve our moral consideration? For what reasons? To what extent? If long duration space flight becomes technologically feasible, would it be justifiable to send humans into space for years or decades? What are the risks involved? If we discover that another planet, e.g. Mars, would be habitable if we drastically altered the landscape, also known as terraforming, are we justified in doing so? What challenges would space colonies face both in terms of physical survival but also in terms of psychological hardships? Is the current budget allocated for space exploration justifiable when there are injustices on earth that need urgent attention? How can we clean up the vast amount of space junk in orbit? How can we avoid future missions adding to this pollution? How can we further exploit satellites for earth observation to combat climate change, or to provide digital education to the world's population? Does space belong to no one or to everyone? What are the legal ramifications of this answer? Is outer space akin to the American Wild West where prospectors can claim planetary resources on a first-come first-served basis? If not, which regulatory protocols do we need in place?

How can we foster continued international collaboration in space? Is exploration a good in its own right, or is it only justifiable if it yields actionable research? Are we justified in asking astronauts to engage in such high-risk activity which literally changes their bodies in terms of fluid distribution, loss of body mass, and sleeplessness?

In order to answer such ethical questions, many scholars have appealed to the three most prominent ethical theories of the Western tradition: utilitarianism, deontology and virtue ethics. Indeed, it is sensible to begin addressing the above questions by contemplating how they each fit into our already available ethical frameworks. What are the risks and consequences of further space exploration? Are there inviolable values that can direct and constrain our actions on space? Is the development and cultivation of virtuous characteristics that prepare us to act in an ethical way the best approach when the moral landscape is uncertain and unpredictable?

The crucial issue we immediately confront is that the ethically relevant questions corresponding to space travel and exploration, of which the above examples are only a sample, are both too diverse and opaque for a single ethical theory to solve. Indeed, discussions on which theory is best positioned to respond to these issues have not yielded a satisfactory resolution (e.g. Schwartz and Milligan, 2016). Utilitarianism cannot help us appreciate any intrinsic value beyond utility (i.e. pleasure, happiness, preference satisfaction), deontology does not usually allow for trading off values for significant consequences, and virtue ethics has been criticized as not being sufficiently action-guiding (McElreath, 2017).

Nevertheless, these discussions themselves are extremely valuable as they form a first step in the cultivation of an ethic of responsibility (Gowans, 1994; May, 2006). By recognizing our inability to answer such questions, we simultaneously acknowledge their ethical nuances. Building ethical awareness may be the most important step in eventually taking ethically right or good actions. Indeed, some philosophers concerned with ethics pursued and advocated ethical awareness over the building of ethical theories. Socrates' probing questions for his various interlocutors were not meant to advance a single ethical theory. Rather, his objective was to identify ethical issues that his interlocutors invariably had overlooked. For example, Socrates' examination of Euthyphro takes place just as Euthyphro has deposed murder charges against his own father. Murder was considered at the time to be a religious offense, an act of impiety, but a son taking such actions against his father could also be consider impious. As Socrates plainly points out, before one does something as drastic as reporting one's own father for the crime of impiety, one ought to know what impiety is.

Søren Kierkegaard likewise emphasizes cultivating ethical awareness over following an ethical theory in order to promote the importance of individual responsibility for one's actions. Although it is sometimes interpreted as a story commending unquestionable obedience to God, Kierkegaard's retelling of the Abraham and Isaac story can be interpreted as an allegory of building ethical awareness and individual responsibility (Goldberg 2017, 173-180). Rather than merely accepting the social norm dictating that filicide is unethical, Abraham questions and tests this principle in order to embrace it as a value he endorses. For Kierkegaard, Abraham is a figure of individual responsibility precisely because he endeavors to become more ethically aware rather than simply following an already available list of ethical rules (Mooney, 1996, 51).

Both of these approaches focus on the fact that in acting one must acknowledge one's own agency. It is better to ask "How can I respond in this particular context to those who are dependent on me to do the right thing?" than "What ethical principle should I follow?" As these two questions illustrate, there is clear difference in emphasis from the value of an ethical principle to *my* decision and *my* action emanating from *me* as an agent. In the context of space travel and exploration, the Socratic maxim to become aware of one's own ignorance is paramount. The unknowns are ubiquitous and admitting that

we do not know the ethically right or good action to take is superior to a false sense of confidence about ethical conclusions and blindly following ethical directives. I call this awareness responsibility as it elicits questions about one's own abilities to do the right or good thing as well as questions about what to do when one violates ethical norms. As such it is both prospective and reflexive; the cultivation of an "ability to respond" to a perilous moral landscape and to be accountable for one's ethical transgressions.

**KEYWORDS:** Space ethics, Responsibility, Ethical theory.

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## TOWARDS IMPROVING THE DECISION-MAKING PROCESS OF ARTIFICIAL INTELLIGENCE DEVICES IN SITUATIONS OF MORAL DILEMMAS

Damian Węgrzyn

Polish-Japanese Academy of Information Technology (Poland)

damian@wegrzyn.info

### EXTENDED ABSTRACT

Artificial Intelligence (AI) is already involved in our everyday life. It has an impact on such important issues as safety, human life and health (Stone et al., 2016). Good examples of modern applications of AI are aircraft autopilots, where in critical situations the pilot can take control of the machine using his experience and acquired skills. In many cases, devices with AI even replace people in making various decisions, such as driving cars, making credit decisions, or interpreting medical research results. AI systems that make decisions in various areas can affect many key aspects of human life. This raises many questions related to the ethics of decision-making by AI devices. Researchers want to ensure that these systems are ethical, but this is not easy to achieve. Still, the system developers should enable the AI systems to make ethical decisions (Dennis et al., 2015).

Understanding the reasons behind the choices made by modern AI machines is either difficult or sometimes even impossible. This is due to the complexity of the processes that constitute the final choice, such as deep learning using artificial neural networks (ANN). Therefore, there is a need to urgently look at particularly crucial decisions. Teaching the machines morality is undoubtedly a difficult task. There are scenarios that cannot be predicted or programmed. Furthermore, there are situations - the so-called moral dilemmas - in which even a man has doubts about what to choose. AI software architecture uses measurable metrics that are not designed for objective moral evaluation. This is because morality is a concept that includes aspects that are not measurable. While the distinction between what is good and bad has at its base an arbitrary or customary set of norms, the definition of many acts is already burdened with subjectivism. In situations of moral dilemma, making choices is often determined by feelings, benefits, or internal prejudices. This is undoubtedly not the case in AI systems. In many cases, the solution is the optimization of decisions, although in real situations it does not always work, because it leads towards the principle of equality, and not necessarily justice. As of today, we are unable to teach AI to make fair choices because we do not have an unchanging evaluation within this basic concept of ethics that is out of context or person. In extreme cases, the use of the process of optimization of choices, without their constant analysis and relation to reality, may lead to making biased or wrong choices.

Even making ethical decisions is a controversial issue. When we consider extreme moral dilemmas in which even people have doubts about the final decisions, we are faced with a problem that is impossible to solve algorithmically, i.e. choosing the lesser evil or the greater good. Values assumed to be immeasurable are elusive for modern technological solutions. As a proposal to improve decision-making in situations of moral dilemmas, this paper proposes the application of the fuzzy logic theory. This solution is already used in making choices by AI systems, but so far not applied to ethical choices in situations of crucial moral dilemmas.

Nowadays, developers provide AI devices with specific decision rules in situations of moral dilemmas. This requires establishing and defining ethical norms of behaviour in specific difficult situations. In

order to train ANN, a large set of unambiguous examples should be collected. Crowdsourcing is used for such purposes, especially when designing autonomous AI devices. However, in unpredictable new cases AI systems are on their own and have to make choices.

The decision-making process of AI systems based on complex ANN is not transparent. Therefore, it is not known on what basis the machine made a specific decision, and how to explain it. This is known as the black box problem (Winfield, 2017). Nonetheless, AI system designers should make AI device decisions more transparent in an ethical context. Full transparency cannot be ensured, but there is room for greater transparency on how to quantify ethical values in programming and determine the choices ultimately made by AI. By detailing the decision possibilities that AI can make, uncontrolled and dangerous decisions of AI systems can be avoided, especially in situations of ethical dilemmas. It must be assumed that AI systems can follow unethical paths, just like people when learning moral principles. Therefore, engineers should constantly improve their definition of morality, and quantify it.

This paper analyzes also the moral status of AI devices. It covers topics related to transparency, privacy and AI awareness. Next, it discusses AI as an element of responsible innovation based on ethics by, in, and for design. The list of the current official recommendations in the literature that deal with AI's ethical dilemmas is also provided, including the standards of European Union's Roboethics Special Interest Group, South Korean Robot Ethics Charter, reports of German Ethics Commission, the BS8611 standard by British Standards Institute, and IEEE's Ethically Aligned Design. Examples of projects focused on the ethics of AI behaviour are also presented.

On the one hand, ethical standards and recommendations suggest that AI systems should not be guided by individual characteristics, such as age, gender, or physical or mental constitution in critical choices between the preservation of two persons' lives (Di Fabio et al., 2017). On the other hand, there should be a choice of the lesser evil or the greater good. In such assessments, it will be helpful to use the fuzzy logic theory. This paper also presents the basics of the fuzzy logic theory. Moreover, behaviours that introduce uncertainty and imprecision in decision making, subjectivism, context, and imprecision in defining and assessing moral attitudes will be presented, too. Next, the concept of moral dilemmas and their types will be briefly discussed, with the emphasis on the problem of human nature as a factor influencing choices in a moral dilemma.

To improve AI decision-making processes in situations of ethical dilemmas, the concept of decision preferences is first explained, and the sets of preferences constituting choices in moral situations are discussed. There are examples of AI systems based on fuzzy logic in the literature. For instance, the proposal of a pedestrian recognition model that incorporates fuzzy logic into a multi-agent system, in order to deal with cognitive behaviours that introduce uncertainty and imprecision in decision making, confirm the high effectiveness of this method (Anderson and Anderson, 2018, Xue et al., 2017). However, these are not ethical decisions. First of all, these methods are based on various personality models that represent features of human nature. In the case of the decision-making process of AI devices, e.g. autonomous vehicles, this is not allowed due to the requirements of applicable standards. In the case of ethical decisions, sets defining unmeasurable values (e.g. from crowdsourcing) can be used to help describe imprecise ethical concepts, such as evil, good, justice, or freedom, but this cannot be the final criterion, due to the subjectivism of individual human assessments. Still, the main advantage of such a solution is the possibility of modelling ethical behaviour simulating human nature, which is ambiguous and imprecise.

Defining moral values is a challenge that mankind has grappled with throughout its history. Policymakers and engineers should be aware of the need to quantify ethical values, and have methods that allow implementing ethical standards. Finally, let us remember that AI devices are made by people who are subjective and biased in their judgments. By creating ways of ethical choices in situations of

dilemma, it is possible to reproduce human faults in AI systems, because ultimately it is a human being who creates AI systems' behaviour and decisions.

This paper analyses the problem of the complexity of the choices made by AI devices, and proposes a method using the fuzzy logic theory. Therefore, it contributes to the field of AI ethics, shows the importance of this issue, and outlines the direction of further research.

**KEYWORDS:** moral dilemmas, AI devices, decision-making process, fuzzy logic.

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## **ARE WE IN THE DIGITAL DARK TIMES? HOW THE PHILOSOPHY OF HANNAH ARENDT CAN ILLUMINATE SOME OF THE ETHICAL DILEMMAS POSED BY MODERN DIGITAL TECHNOLOGIES**

**Damian Gordon, Anna Becevel**

Technological University of Dublin (Ireland)

Damian.X.Gordon@TUDublin.ie, Anna.Becevel@TUDublin.ie

### **EXTENDED ABSTRACT**

Philosophers are not generally credited with being clairvoyant, and yet because they recognise, record and reflect on trends in their society, their observations can often appear prescient. In the field of the ethics of technology, there is, perhaps, no philosopher whose perspective on these issues is worth examining in detail more than that of Hannah Arendt, who can offer real perspective on the challenges we are facing with technologies in the twenty-first century.

Arendt, a thinker of Jewish-German origin, student of Martin Heidegger and Karl Jaspers, encountered her life turning point when she was forced into becoming a refugee as the world was shaken by a force of unimaginable brutality that she was one of the first to name “totalitarianism” (Baerh, 2010). She was an independent thinker, separating herself from schools of thought or ideology. Investigating totalitarianism was her ruling passion, and as such her political thought often overshadows her major contribution to other branches of philosophy. Arendt is best known for her accounts of Adolf Eichmann and his trial, and the concept of “banality of evil”, though her perspective on politics was driven by a precise and original theory of action. While the latter is inextricably connected to her political perspective, it is also supported by a sharp ontological reflection of social structures and anthropological reflections.

Famously Arendt (1962) wrote “I have always believed that, no matter how abstract our theories may sound or how consistent our arguments may appear, there are incidents and stories behind them which, at least for ourselves, contain as in a nutshell the full meaning of whatever we have to say. Thought itself - to the extent that it is more than a technical, logical operation which electronic machines may be better equipped to perform than the human brain arises out of the actuality of incidents, and incidents of living experience must remain its guideposts by which it takes its bearings if it is not to lose itself in the heights to which thinking soars, or in the depths to which it must descend.”.

This is a profound insight into the problems of machine learning, Arendt is arguing that real thinking can only occur through the lens of human experience, and an abstract representation of ideas do not in fact encompass the totality of thinking. The world Arendt describes is a vively and turmoiled one, where each individual acts freely in their environment while simultaneously creating a shared political space, a world that our current technologies seem unable to describe at this stage due to the limitations of machine learning. The concept of Machine Learning was developed by Samuel (1959), and generally consists of the following steps (Langley, 2011):

1. collecting data about a significant number of examples of particular scenario; the data usually consists of key descriptors or characteristics;

2. the data is analysed using a computer program that attempts to uncover rules or relationships between the descriptors;
3. the rules are then used to predict the outcomes of new examples of the scenario that haven't been presented to the computer program yet.

This approach has led to a growing catalogue of disastrously poor results, for example, in 2014 Amazon began developing a computer program to help in personnel recruitment, and after a year they discovered that the system was sexist in operation, and would always prefer male candidates to female ones, and eventually they abandoned that system. What a subsequent analysis found was that because a significant majority of existing successful candidates were male, the system was fed an abundance of data on male candidates and less on female candidates (Fumiko et al., 2020). In 2013 IBM partnered with *The University of Texas MD Anderson Cancer Center* to develop a new "Oncology Expert Advisor" system that would ultimately lead to a cure for cancer. Unfortunately, the resulting system gave erroneous, and downright dangerous cancer treatment advice, and had to be finally abandoned in 2018, simply because the IBM engineers trained their software on synthesized data, rather than real patient data (Strickland, 2019). Hendrycks et al. (2019) set out to show the limitations of machine learning algorithms, by selecting 7,500 specifically curated images of a large dataset of images of animals, insects and other natural phenomena, they reduced the effectiveness of a machine learning algorithm from 92% to 2%.

The problem with these systems is that they rely almost completely on data to draw their conclusions, and if data is misconfigured, then the rules that the system deduces are flawed. Additionally, it is only possible for some machine learning systems to express the rules that they have deduced in a manner that a human being can understand, for other systems the manner in which they deduce and encode these rules cannot be expressed as text, and they are therefore said to lack *explainability* (London, 2019). This is a very serious issue, if the systems can't even explain why they are making decisions, it makes trusting those decisions more difficult, so much so that the European Union is regulating the use of machine learning, and requiring that it must be of the explainable variety (Hamon et al., 2020).

As well as bias in data, other issues that appear to cause poor decision-making includes:

- *Data Scarcity*, is where insufficient data is presented to the system, and therefore, there isn't enough variation in the data to represent all of the potential cases the system will encounter.
- *Underfitting*, is where the rules that the systems deduced aren't a sufficiently detailed model of the complexity of the data presented to the system.
- *Overfitting*, is where the rules that the system deduced are too specifically tailored for the data presented to the system, and can't accurately generalise the lessons learned.
- *Undersampling*, is where the distribution of data in one characteristic of the dataset doesn't reflect the population under investigation because one group is under-sampled, for example, if one race of people is under-represented in a dataset about a group of people.
- *Oversampling*, is where the distribution of data in one characteristic of the dataset doesn't reflect the population under investigation because one group is over-sampled, for example, if one race of people is over-represented in a dataset about a group of people.
- *Proxy Variables*, is where you have to use a stand-in variable because it isn't possible to represent a characteristic directly. So, for example, if you can't measure people's level of

health, it might be easier to measure how much money people spend on health, as a proxy to measure level of health. Unfortunately, this doesn't take into account wealth level.

- *Missing Variables*, is where the characteristics selected in the dataset are not everything that should be taken into account to have a representation sample.
- *Underspecification*, identified in 2020, is where the characteristics chosen in the dataset don't represent the totality of the key features required to model the data (D'Amour et al., 2020).

These all simply point to an inherent flaw in the development of machine learning systems, that unless the exact parameters of the problem are already fully understood, it might not be possible to identify the correct dataset characteristics to accurately represent the problem. The truth of the situation is that the datasets used by these systems cannot capture the full diversity of real-world experience. When considering the phenomenological nature of action (Dal Lago, 2016), not being able to describe the complexity of human experience doesn't only mean missing on diversity, but missing on the chance to obtain it at any stage. Human experience is the way through which agents reveal themselves and simultaneously accept the risks implied by this revelation. The exposure of human experience is a necessary and sufficient condition to create a political space where the individuals can work-together and regulate themselves in environments not regulated by governments such as the internet. (Arendt, 1958).

Moreover, the people who create and curate datasets bring with them a series of tacit assumptions, and even cognitive biases, about the problem that make a representative dataset less possible. One common erroneous assumption that many people make is how frequently unusual events occur (Paulos, 1988), and this can lead to the creation of unrepresentative datasets; again as Arendt says: "*incidents of living experience must remain its guideposts by which it takes its bearings*".

Unfortunately, modern technology is contributing to cognitive biases, for example, since 2009 the Google search engine has incorporated a "Personalized Search" which means that results returned are not the same for everyone, instead they are based on each individual user's personal behaviour and interests as well as those of the user's social circle (Zamir and Korn, 2020). This creates a "filter bubble" that creates polarization and echo chambers, and results in an exogenous isolation effect, as well as a lack of full discussion of the topics (Min, et al., 2019). This issue was highlighted by Arendt's when she stated that: "To hold different opinions and to be aware that other people think differently on the same issue shields us from Godlike certainty which stops all discussion and reduces social relationships to an ant heap".

These issues are a small sampling of the perspective and insight that Arendt can give us on computer ethics, and her reflections can be both thought-provoking and illuminating in terms of how we should develop and use new technologies. As mentioned at the start, philosophers are not generally credited with being clairvoyant, and yet Arendt's perspectives might provide a way forward in the modern world.

**KEYWORDS:** Digital Ethics; Hannah Arendt; Machine Learning; Conglomerations

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## **WHERE *MINORITY REPORT* MEETS *THE STEPFORD WIVES* – ETHICAL CONSIDERATIONS OVER THE USE OF FACIAL RECOGNITION SOFTWARE ON THE HIGH STREET**

**Brendan Tierney, Damian Gordon**

Technological University Dublin (Ireland)

Brendan.Tierney@TUDublin.ie, Damian.X.Gordon@TUDublin.ie

### **EXTENDED ABSTRACT**

One of the most startling sights of the COVID-19 pandemic has been the images of empty high streets, empty shopping malls, and empty commercial centres. Although disconcerting, this pause of activity has given researchers an opportunity to reflect on the types of technologies that are being deployed on the high street, and has given them the time to consider the rationale for using them. One of the most concerning technologies being used in public spaces is facial recognition software, which has been repeatedly shown to be both biased and extremely problematic.

Looking at this from an ethical perspective there is a continuum of potential breaches that could occur, from being observed or monitored in a public space, to the use of recognition software to identify faces or even clothing brands, to the targeting of specific individuals or specific demographics, to potentially focusing on individual messaging or location-based marketing. These each represent escalating privacy concerns, and they blur the differentiation between public spaces and private spaces, which philosophers like Jürgen Habermas (1991) and Hannah Arendt (1998) have explored through questions of ownership and property. Asking questions such as; who owns resources in these spaces? And what is truly private? This also leads to a range of serious questions about the recording and retention of data, and particularly around the issue of ownership of data. Even if the monitoring of people in public is legal, it is far less clear whether, or not, it is ethical - crucially, how can consent be given when it's unclear when the monitoring is occurring, and what the recordings will be used for in the future?

This issue is one of a rapidly growing number of computer ethics issues that have been emerging recently, to such an extent that a number of third-level institutes across Europe are collaborating to explore some of these key ethical challenges, and to develop educational content that is both based on pedagogically sound principles, and motivated by international exemplars of best practice to highlight these matters as part of the Erasmus+ Ethics4EU project<sup>5</sup> (O'Sullivan and Gordon, 2020). One specific development that is being undertaken is the creation of a lesson focusing on privacy. This lesson is designed to serve as a way to improve computer science students' ability at consequence scanning – a way to consider the potential consequences - intended and unintended - of a new technological product or service on people, communities and the planet (Doteveryone, 2020).

We are beginning to see aspects of this level of invasion in public spaces already, both by private enterprise and by state organisations, in the United Kingdom between 2016 and 2019, the Metropolitan Police in London undertook a number of trials of live facial recognition systems to detect wanted suspects on public streets, and an independent report (Fussey and Murray, 2019) indicate that although there were many correct identifications of people who were criminals, there were also as

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<sup>5</sup> <http://ethics4eu.eu/>



many false identifications, which resulted in distress and intimidation, and most egregiously in the case of a 14-year old schoolboy whom the recognition systems incorrectly identified as a criminal suspect, and was surrounded by five plainclothes police officers and led by the wrists down a side-street. The child was traumatised by this experience and has subsequently developed a negative view of the police service (Chowdhury, 2020).

In a similar vein, an article in the *New York Times*, on 20<sup>th</sup> December 2020<sup>6</sup>, by Kashmir Hill outlines the case of Nijeer Parks, who was accused of shoplifting and trying to hit a police officer with a car in New Jersey. He was identified using facial recognition software, even though he was 30 miles away at the time of the incident, but nonetheless he spent 10 days in jail until eventually his case was dismissed for lack of evidence. Mr. Parks is now suing the police, the prosecutor and the City of Woodbridge for false arrest, false imprisonment and violation of his civil rights. The article notes that he is the third person to be falsely arrested based on a bad facial recognition match, and in all three cases, the victims were Black men.

Potentially even more worrying, a research team from Harrisburg University, Pennsylvania developed a facial recognition system that they claimed “can predict if someone is a criminal based solely on a picture of their face. The software is intended to help law enforcement prevent crime”<sup>7</sup>. Like the movie “Minority Report”, cameras on the high street could be used to predict which individuals were going to commit crimes, before the event. This idea was recognised as so egregious, that over one thousand experts (from diverse areas, including statistics, machine learning, artificial intelligence, law, history, and sociology) wrote an open letter expressing their concerns and alarm about this research, stating unequivocally: “Let’s be clear: there is no way to develop a system that can predict or identify ‘criminality’ that is not racially biased - because the category of ‘criminality’ itself is racially biased”<sup>8</sup>.

This sort of push-back is growing, with the banning of facial recognition systems in many countries, including the United States of America, where states such as Oregon, New Hampshire, Utah and California do not allow facial recognition systems to be used for law enforcement. Additionally, Illinois passed a law that allows individuals to sue for the collection and use of a range of biometric data, including fingerprints and retinal scans, as well as facial recognition technology (Mohsin, 2020). Similarly, the Association for Computing Machinery (the professional body for computer professionals) on 30th June 2020 called for the complete cessation of all use of facial recognition technologies and research, as they produce “*results demonstrating clear bias based on ethnic, racial, gender, and other human characteristics recognizable by computer systems*” (ACM, 2020).

These concerns are not generally being recognised by private enterprise, with the advances in deep learning and big data being used more widely in image recognition systems for commercial purposes. For example, building upon the customer and buying experiences, reactive digital advertising displays in shopping centres can now monitor and profile people. Customer profiling includes identifying the customer not just by age, but also by the brands of clothing they are wearing. The digital advertising customises what advertises and products to display based on this information (Araujo, et al., 2020). From an ethic perspective, what happens to the images these digital advertising capture? These products constantly need to learn and evolve to improve the accuracy and relevancy of their displays. Are customers having their images being stored, without their knowledge, by these companies? These are

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<sup>6</sup> <https://www.nytimes.com/2020/12/29/technology/facial-recognition-misidentify-jail.html>

<sup>7</sup> <http://iflscience.com/technology/over-1000-experts-call-out-racially-biased-ai-designed-to-predict-crime-based-on-your-face/>

<sup>8</sup> <https://medium.com/@CoalitionForCriticalTechnology/abolish-the-techtoprisonpipeline-9b5b14366b16>

some questions that need additional exploration and education around the ethical use of data in such scenarios.

Figueiredo and Agyin (2019) explored the use of smart advertisement boards in Eindhoven, Holland. These systems use facial recognition technologies to estimate citizens' gender, age, and level of interest, and actively target different citizens, effectively mimicking the online advertising tracking experience in the physical world. The researchers found that the citizens felt unduly monitored by these devices and began to place chewing gum and band-aids over the cameras until eventually the organisations who owned these boards had to remove the cameras.

Patents have been filed for the past decade for software systems that recruit customers into specific shops using their social media information and facial recognition software (e.g. Naor and Friedman, 2012). These technologies have been implemented in Korean shops, and these shops can choose which customers to allow into their stores, and once the customers are in the shop, they analyse customers' behaviour through smart hangers, smart mirrors, and smart show windows that use data to provide personalized shopping experiences to customers (Hwangbo, et al., 2017). Inevitably this level of focus on customer appearance will lead to customers to alter their mode of dress and appearance to be deemed acceptable to be invited into particular stores, creating a "Stepford Wives" style compliancy to perceived social norms.

These issues will continue to plague societies until comprehensive and effective legislation is passed that reflects the values of each society, but until then commercial and public bodies will have the latitude to experiment with these provenly biased technologies.

**KEYWORDS:** Digital Ethics, Facial Recognition, Machine Learning, Targeted Advertising.

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## CHECK YOUR TECH - WHOSE RESPONSIBILITY IS IT WHEN CYBERHARASSMENT OCCURS?

Dympna O'Sullivan, Damian Gordon, Michael Collins

Technological University of Dublin (Ireland)

Dympna.OSullivan@TUDublin.ie; Damian.X.Gordon@TUDublin.ie; Micheal.Collins@TUDublin.ie

### EXTENDED ABSTRACT

Cyberharassment has grown enormously as the online world continues to grow on an annual basis (Smith et al., 2008). The impacts of this form of harassment can be extremely serious on its victims, including issues such as anger, frustration, depression, low self-esteem and suicidal ideation (Hinduja and Patchin, 2009). The situation has become so serious that a number of national and international organisations have been founded in the past decade to help combat this issue, and to raise awareness of its effects, including the Cybersmile foundation<sup>9</sup>, the Online Abuse Prevention Initiative<sup>10</sup>, and the Cyber Civil Rights Initiative<sup>11</sup>.

Legislation has been introduced in different countries to help ameliorate the impacts of cyberharassment, including the *Philippines' Cybercrime Prevention Act of 2012*, and the *Protecting Canadians from Online Crime Act (2014)*. In December 2020, Ireland signed into law the *Harassment, Harmful Communications and Related Offences Bill*, which provides the first legal definition of cyberharassment in Irish law, and includes penalties of up to 10 years incarceration for people who engage in egregious behaviour, particularly, so-called "revenge porn". Additionally, social media companies have added features to their systems to help combat harassment, and they typically use a combination of artificial intelligence (AI) and professional moderators to review and remove inappropriate content. Unfortunately, there are issues with the moderation process; the scale of the task is enormous, and the moderators are often hired based on the lowest salary, and may lack knowledge of the platform-specific guidelines, as well as the linguistic fluency in the language of the content (Roberts, 2019).

Women are disproportionately affected by cyberharassment, in fact, the United Nations Broadband Commission Working Group on Gender indicated that 73% of women worldwide have been exposed to or have experienced some form of online violence (UN Broadband Commission for Digital Development, 2015). The WWW Foundation has found that law enforcement agencies and the courts are failing to take appropriate actions for cyberharassment against women in 74% of 86 countries surveyed (World Wide Web Foundation, 2015). The sheer volume of cyberharassment experienced by women has significant social and economic implications for women's status on the Internet. These include time, emotional bandwidth, financial resources including legal fees, online protection services, and missed wages. This is a problem that needs to be addressed if social media is to remain an open and empowering space for women and girls, and by extension, for boys and men.

This issue is one of grave concern, and is one of a rapidly growing number of computer ethics issues that have been emerging recently, to such an extent that a number of third-level institutes across

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<sup>9</sup> <https://www.cybersmile.org/>

<sup>10</sup> <https://onlineabuseprevention.wordpress.com/>

<sup>11</sup> <https://www.cybercivilrights.org/>

Europe are collaborating to explore some of these key ethical challenges, and to develop educational content that is both based on pedagogically sound principles, and motivated by international exemplars of best practice to highlight these matters as part of the Erasmus+ Ethics4EU project<sup>12</sup> (O’Sullivan and Gordon, 2020). One specific development that is being undertaken is the creation of a lesson focusing on social media, and concentrating specifically on the ethics of developing social media software that can have a negative impact on people’s lives.

Part of the lesson is the development of, specifically synthesized or fictionalized case studies, that focus on different types of cyberharrasment. These are to help computer science students at consequence scanning – a way to consider the potential consequences - intended and unintended - of a new technological product or service on people, communities and the planet (Doteveryone, 2020). The case studies are suitable because they provide a way to examine a specific phenomena with a focus on interpreting events, and exploring the societal context in which the case occurs (Martin et al., 2018). Also because these cases are qualitative, they will be somewhat novel in computer science courses which are typically more quantitative in nature. They can be used to both explore and evaluate specific problems and challenges of social media tools, as well as exploring digital ethics in a more general context.

The two case studies we have developed are a part of a wider curriculum on digital ethics for computer science students. The case studies concern the impact of technology on people’s lives, and how it can adversely impact people’s lives both deliberately and accidentally. Each case study comprises a detailed narrative and set of questions (or “Talking Points”) to be used by an instructor in delivering the content. We have also developed a generic case studies checksheet that allows a student to examine any scenario using a range of criteria that explore the features of the case and the consequences of the technology - intended and unintended. The checksheet is based on work by Yin (2017) and is intended for deeper reflection on specific aspects of the case studies and is to be used in conjunction with the “Talking Points” outlined above.

These case studies have been developed specifically as teaching tools; each is based on a synthesis of several real cases, and are designed to generate detailed and diverse discussions by student groups about the ethics around these scenarios. The use of synthesized case studies has a long history in the teaching, particularly in Law courses (Dyer et al., 1997) as they can help to avoid issues such as confidentiality and legal privilege, which are clearly very important considerations when discussing in this particular context, that of cyberharassment. To highlight the fictitious nature of the case studies, pre-existing fictional characters and place names are used to underscore the fact that these case studies are not real.

These synthesized case studies somewhat resemble a teaching approach that is already used in computer science, the “toy problem”, which is an approach used in the teaching of computer programming, where a scenario is created as an expository device to help students explore challenges around a specific programming problem (Pearl, 1984). These problems often distil some key features or challenges into simplified scenarios, and sometimes combine several distilled features into one problem that would be unlikely to occur in a real-world setting but they are very useful in teaching students about the challenges in that specific domain. Thus, these case studies are designed in the same way to highlight specific features or challenges that serve as the basis for the talking points to discuss ethical topics with the students.

The first case study focuses on a deliberate harassment scenario, where one individual sets out to harm another person using a range of on-line tools, including social media systems, and is presented

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<sup>12</sup> <http://ethics4eu.eu/>

in the form of an epistolary, in this case a collection of e-mails. The second case study explores how a combination of minor technical issues can result in catastrophic consequences for a family, and this is presented in the style of a newspaper article.

As mentioned above, this content is designed for computer science students to allow them to explore how actions in the online world can have calamitous consequences for people in the real world. This is very important, particularly for computer science students who could potentially do the most damage if they chose to engage in harassment (for example, using photo manipulation software, and deepfakes (see Tolosana et al., 2020)) but more importantly, they must have an awareness of these issues because they are going to be the people building the next generation of software systems and social media tools.

**KEYWORDS:** Digital Ethics, Cyberharassment, Accidental harassment, Consequence scanning.

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## **IS SOCIAL MEDIA BAD FOR PEOPLE? THE 2021 STORMING OF THE US CAPITOL COMPLEX**

**Damian Gordon, Dympna O'Sullivan, Andrea Curley, Ioannis Stavrakakis**

Technological University of Dublin (Ireland)

Damian.X.Gordon@TUDublin.ie; Dympna.OSullivan@TUDublin.ie; Andrea.F.Curley@TUDublin.ie;  
Ioannis.Stavrakakis@TUDublin.ie

### **EXTENDED ABSTRACT**

*In this Twitter, tweet, meme, mean world that we've created for our children, the least we can do is consider what we've done and think about the young people, the future and individually, collectively do the best we can to try and turn this thing around.*

Denzel Washington, from his AFI Life Achievement Award acceptance speech (2019)

The events of 6<sup>th</sup> January 2021 in the United States of America, where rioters stormed the heart of their democracy, the US Capitol Complex (which houses their bicameral parliament) were shocking to see. The reasons for this riot were myriad, including to protest the outcomes of the presidential elections and two senate elections, as well as to prevent the counting that day of the electoral votes that formally certify the election result. These events will be analysed and reflected upon for years to come, and blame will be placed at many people's doors, and inevitability one that has already been singled out is social media. As Irish-born CNN reporter Donie O'Sullivan said during the event: "In 2016 people tried to write off anything about social media, saying oh, it's only a few Facebook posts, what harm? Here's the harm. The harm of conspiracy theories, the harm of people living in these online and Trump media echo chambers." And now questions are being asked of social media, including Twitter, the primary communication medium of President Donald Trump.

Twitter allows people to join its service without verifying their identity, and therefore allows people to create anonymous identities irrespective of their motivations or true character. Research indicates that these anonymous (or fake) identities encourage people to share untrue or controversial content without potentially damaging their self-image or social relationships (Zhang and Kizilcec, 2014). This, by itself, wouldn't be as problematic as the fact that Twitter also recommends people to follow based partially on commonly-shared interests, therefore people who share false content will inevitably connect with others who also share fake content, which invariably creates a "filter bubble" that produces polarization and echo chambers, and results in an exogenous isolation effect, as well as a lack of full discussion of all aspects of topics (Min, et al., 2019).

Although social media companies do have tools and personnel to help monitor and remove contentious or libellous postings, and they use a combination of artificial intelligence and professional moderators to review and remove these postings; there are issues with the moderation process; the scale of the task is enormous, and the moderators are often hired based on the lowest salary, and may lack knowledge of the platform-specific guidelines, as well as the linguistic fluency in the language of the content (Roberts, 2019). They also have issues with the notoriously inconsistent application by social media platforms of their own norms of acceptable speech.

The interactions on social media can sometimes make susceptible people think that a celebrity or politician is speaking directly to them, which can be empowering but can also have deleterious effects on the individual, where the distinction between the virtual and real worlds become blurred. This can also blur the differentiation between public spaces and private spaces, which philosophers like Jürgen Habermas (1991) and Hannah Arendt (1998) have explored this by asking questions such as; who has responsibility in these spaces? And what is truly private? This delusional perception of direct communication also leads to the creation of “divides” between in-groups and out-groups based on very simplistic criteria such as gender, race, and social status (Tajfel, 1970). This in combination with the anonymity of identity can lead to harassment and bullying on-line, which is often directed at women and minority groups, making them more likely to leave these platforms or at least be silenced in these domains (Chawki and el Shazly, 2013; UN Broadband Commission for Digital Development, 2015; World Wide Web Foundation, 2015). This ultimately leads to an amplification of white, male voices on social media platforms, and the development of misogynist and racist groups, such as the Incel Movement (Taub, 2018), and Stormfront (Jones, 2006). All of this invariably leads to Groupthink, where people feel they have to behave in a particular way because (they think that) everyone that they are friends with are behaving in that way (Nemeth, 2018). Other typical characteristics of Groupthink are also present on Twitter, where so-called “mind guards” act as self-appointed “protectors” of the group who try to stop members being exposed to adverse views to maintain unity within the group, as well as their believe in the inherent morality of what they are doing, they feel they are trying to expose the massive election fraud as well as liberal bias of Twitter (who engage in surreptitious actions such as “shadow banning”), and therefore any tactic is acceptable in exposing that hypocrisy and (as they see it) gross injustices perpetrated.

This is not to imply that Twitter was solely responsible for the riots, in fact, a study by Prabhu et al. (2021) found concerning content on both Twitter and Parler, and noted that a significant proportion of traffic on Parler was in support of undermining the veracity of the 2020 US Presidential Elections, as well as being hate speech (as a result of Parler’s relaxed community guidelines) and manipulated. In fact, Omidyar (2018) identified six ways that social media systems are a threat to democracy: (1) Echo chambers, polarization, and hyper-partisanship; (2) Spread of false and/or misleading information; (3) Conversion of popularity into legitimacy; (4) Manipulation by “populist” leaders, governments, and fringe actors; (5) Personal data capture and targeted messaging/advertising; and (6) Disruption of the public square

Fuchs (2021) suggests that because Donald Trump used the imagery of a boxer and told them to “fight like hell”, he communicated to his followers that a battle was needed, and his supporters chanted on its way to and inside of the Capitol, “Fight for Trump! Fight for Trump! Fight for Trump!”. But Fuchs highlights that it was not a single speech that incited a coup, but “a long chain of events that unfolded as a consequence of Trump’s authoritarian ideology, authoritarian personality, and authoritarian practices”. Atari et al. (2021) highlight the fact that on the day of the riot Donald Trump tweeted “These are the things and events that happen when a *sacred* landslide election victory is so unceremoniously *viciously* stripped away from great patriots who have been badly & unfairly treated for so long” and suggest that these types of tweets create a perception of moral homogeneity, and a moral obligation to defend the in-group even by radical means.

The events of 6<sup>th</sup> January 2021 led to the deaths of five people, and they show that social media companies will either need to rapidly make changes to the services to prevent a reoccurrence of these kinds of tragedies, or ban Donald Trump from their services.



This is not to suggest or imply that social media is all bad, in fact, it can be used for a range of positive cases, and it is worth noting that during the riot social media was indeed used to support victims and inform law enforcement personnel of the on-going developments.

This issue is one of grave concern, and is one of a rapidly growing number of computer ethics issues that have been emerging recently, to such an extent that a number of third-level institutes across Europe are collaborating to explore some of these key ethical challenges, and to develop educational content that is both based on pedagogically sound principles, and motivated by international exemplars of best practice to highlight these matters as part of the Erasmus+ Ethics4EU project<sup>13</sup> (O'Sullivan and Gordon, 2020). One specific development that is being undertaken is the creation of a lesson focusing on the ethics of developing software that can have a negative impact on people's lives.

**KEYWORDS:** Digital Ethics, Social Media, Cyberharassment, Echo Chambers.

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<sup>13</sup> <http://ethics4eu.eu/>

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## **ETHICS AND INTELLECTUAL CAPITAL IN SMART SOCIETY**

**Carlos Fernández-García, Mario Arias-Oliva, Rubén Fernández-Ortiz, Jorge de Andrés-Sánchez**

University Rovira i Virgili (Spain), Complutense University of Madrid (Spain),  
University of La Rioja (Spain), University Rovira i Virgili (Spain)

carlos@cruam.com; mario.arias@ucm.es; ruben.fernandez@unirioja.es; jorge.deandres@urv.cat

### **EXTENDED ABSTRACT**

In emerging Smart Society, knowledge is considered a key resource for individuals, organizations, economies and societies. Emerging technologies innovations are promoted using new combinations of exiting knowledge or creating new one. The field of Intellectual Capital has been widely studied in academia, but the role that ethics should play is unexplored. This paper introduces the fundamental aspects of Knowledge Management, Intellectual Capital and a reflection of ethics in this area.

Currently, knowledge is considered an essential element of the organizational culture because its management through human talent generates individual, collective and organizational capabilities and experiences, representing the primary asset of a company. So, knowledge refers to the ability to act, process and interpret information to generate new knowledge or solve a certain situation and therefore, it is the main intangible component (Bakhsha, Afrazeh and Esfahanipour, 2018).

In this way, knowledge management (KM) focuses on the production and transfer of information, implying the assessment, assimilation and improvement of the skills and experience of an organization members . The foregoing refers to an emerging managerial approach, which recognizes human talent from the knowledge they have and contribute to the activities of the company and the competitive environment, through structures, methods and consciously integrated interactions between the people who interact within and outside the organization (Hernández, Muñoz & Jiménez, 2015).

From such appreciations, knowledge distinguishes two perspectives: tacit and explicit. In the first one, it can be inferred that it is acquired through experience (skills, competences, know-how and contextual knowledge in people's minds), while the second is transmissible through formal and systematic language, being able to admit forms in the organization (rational, sequential and digital). In this sense, tacit knowledge is not disconnected from explicit knowledge (Axtle-Ortíz and Acosta-Prado, 2017).

In KM there is the transformation of the tacit knowledge of individuals into explicit at group and organizational level, and therefore, each of group members internalize it, making it tacit again. In this sense, managing knowledge implies its administration, which comes from learning as a person and organization, with continuously innovative patents. That explains why KM has two significant elements: the first one refers to administrative processes (planning, organization, direction and control) to achieve the business strategy (objectives, mission, vision, strategies, actions, others) and the second one, shows that both company and individual grow from their learning as a result of their activities and from the internal and external factor that acquires or distinguishes information, exploring, incorporating, gathering, cultivating, valuing and manifesting their revelation abroad, attempting a result (Gómez-Bayona, Londoño-Montoya and Mora-González, 2020). From these ideas, KM is distinguished in providing activities related to learning based on the creation, capture, transformation and use of common experiences. Such process needs planning and implementing the related activities for the effective management of Intellectual Capital (IC) (Alarcón, Álvarez, Goyes and Pérez, 2012).

KM is recognized as the knowledge that the company possesses for the development of its functions and the generation of added value. Intellectual Capital is produced from the contributions of social actors in the organization (workers, collaborators, work teams, others) to the productivity of the organization. So IC is characterized by the knowledge that emerges from the internal and external interactions of the organization (Azofra, Ochoa, Prieto and Santidrián, 2017). In this way, IC within organizations is considered part of intangible assets because it is related to the acquisition, organization and transfer of knowledge, meaning an experiential teaching and a learning instrument. A company that aspires to endure in the current reality must be competent to decipher the demands of the environment and to anticipate them.

Likewise the use of IC allows assessing the knowledge generated in specific conditions on the results of the organizations, as a device that produces surplus value (Gálvez, Borrás and Abadía, 2020). That is why IC represents the main intangible component of an organization because it expresses the existence of knowledge by all the organization member that contribute to the production of a sustainable competitive advantage over time and in the development of a greater financial performance. From this perspective, IC is made up of Human Capital (HC), Structural Capital (SC) and Relational Capital (RC).

The management of the IC is oriented, from a strategic perspective on the construction and administration of intellectual assets, the transformation and modernization of existing ones, and the increase in the valuation of all of them. For this reason, the HC is the main growth factor of a company because workers have to manage knowledge from SC and RC, according to the competence and responsibility inherent to each job (Farah and Abouzeid, 2017).

The HC, through training, develops skills, qualifications and experiences that, associated with the business management policy, can be promoted by a team of committed, responsible, trained, motivated and professionals identified with the objectives of the organization and with its business model. The orientation towards the training and satisfaction of people generates proactive attitudes, continuous learning and meaningful experience. The intelligent and strategic management of HC is a significant element in towards business excellence (Alarcón, Álvarez, Goyes and Pérez, 2012).

SC focuses on the organizational structure, work procedures, digital information processing, technological programs, research and development (R&D) and business management, in such a way that the knowledge of the company is stored in people and in their management and information systems. It is because of that knowledge is the property of the company. By identifying, storing, systematizing and fitting people's knowledge into the routines of the company, it is possible to establish optimal mechanisms and structures for organizational performance (Villegas, Hernández & Salazar, 2017). Regarding RC, it can be argued that the knowledge between the individuals of a company is related to the environment, which means that the social interactions of the organization with all the interest groups (suppliers, customers, competitors, others). So RC is made up of a system of relationships and knowledge that add value to the organization. (Alarcón, Álvarez, Goyes and Pérez, 2012).

So, it is evident that the reference of ethics in IC is glimpsed at daily dynamics of organizations, because IC management is associated with ethics from the perspective of the values shared by human talent with organizational strategy (objectives, mission, vision and policies). The organizational culture from the ethical point of view values the HC from the active, responsible, committed and productive attitude for the development in its various roles, which respond to corporate strategic management (Jiménez, 2018).

From this premise, promoting IC management contemplated from organizational ethics leads to creating knowledge for its employees, allowing them growing in the performance of their functions.

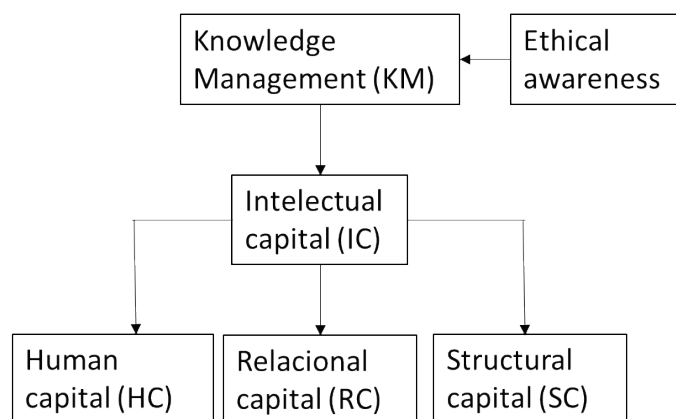
By promoting an ethical organizational culture in human talent, KM develops competences associated with values that allow generating added value to IC (León, 2020). This ethical behavior is reflected in the actions of people and in turn in the corporate image, because knowledge is obtained by linking the ability to learn (intelligence) and the opportunity that the organization develops to promote learning.

Then, the IC is considered ethically viable from the intangible intelligence that is formed by adding new competencies and experiences in the HC, by developing knowledge in the SC and by producing information based on the articulations between the RC and the business environment. All these relationships between the elements that make up the IC and the organizational culture make people being identified with the strategies, structure and system of the company. So ethical values represent the habit of a business philosophy that points to KM (Axtle-Ortíz and Acosta-Prado, 2017).

The issue of ethics in the development of IC is an argument that associates the knowledge of HC, RC and SC with the strategic nature of the organization, producing relationships between people and the business environment from the field of values. Ethics influences beliefs and perceptions, impacting IC performance, and decision-making for an optimal management. This indicates that ethics, IC and companies make up a set of values that interact with each other from people (internal and external) and organizational management.

Thus, it is stated that IC has allowed the development of organizational success and its value is seen in its relationship with the mission, vision and business culture. The adaptability of people in the business environment represents the intellectual contribution to productivity. Therefore, ethical values are applied by human behavior in their usual practice. From this point of view, the selection and development of collaborators has been oriented towards the promotion of ethical values integrated with the internal and external knowledge of the organization, allowing to overcome the absence of the disposition in SC processes, development of the HC and RC growth.

Figure 1. Relation between knowledge management, intellectual capital, human capital, relational capital and structural capital



**KEYWORDS:** Knowledge Management, Ethics, Smart Society, Innovation.

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## **FAKE REVIEWS: AN EMERGING PROBLEM IN ONLINE COMMERCE**

**Raúl Gómez Carmona, Mario Arias-Oliva, Mar Souto-Romero,  
Juan Luis López-Galiacho Perona**

Grupo Reina (Spain), Complutense University of Madrid (Spain),  
International University of La Rioja UNIR (Spain), Rey Juan Carlos University (Spain)

raul.winowin@gmail.com; mario.arias@ucm.es; mar.souto@unir.net; juanluis.lopezgaliacho@urjc.es

### **EXTENDED ABSTRACT**

At the beginning of the Internet revolution, the opportunities for building a better society were unquestionable. The possibility to access to a huge amount of information with a very low cost and a without any technical knowledge open democratization of information and opportunities for all (Leiner, et al., 1997). SME could access to a similar web technology than a multinational company. The emergence of the 2.0 technologies increased the collaboration opportunities, appearing social media as another powerful tool to develop a better society. But this positive view of Internet assumed at the beginning of the digital revolution has changed. Many social and ethical problems and concerns emerge (Guryanova, Smotrova, Makhovikov & Koychubaev, 2020). The concentration and abuse of power in technology companies such as the GAFAM ones (Google, Amazon, Facebook, Apple and Microsoft), loss of privacy, the emergence of invasive technologies that make citizens lose their privacy and control their own information or the fake news that are manipulating opinions and fostering conflicts in society. The very last revolution of Internet, based on Artificial Intelligence, open even more ethical issues that should be debated. Among new ethical and social challenges in the eCommerce arena, the emergence of fake reviews required further analysis.

Fake reviews mean an evolution in the commercial environment of fake news. Fake news is defined as “news articles that are intentionally and verifiably false, and could mislead readers” (Allcott & Gentzkow, 2017, 213). There are several types of fake news, such as news satire, news parody, fabrication, manipulation, advertising, and propaganda (Tandoc, Lim & Ling, 2018). In the eCommerce arena, fake news come in fake reviews. At the beginning of the 2.0 Internet era, the possibility of sharing easily opens new opportunities for commercial evaluation. Reviews done by other customers become one of the most effective ways to attracts new customers. New ways to share reviews become in a popular strategy that originally was helpful for both business and consumers. For business, it was possible to manage client’s opinions, to find the “silent client” (who does not give information about their experience with your product or service) (Giner, 2020), for identifying problems and solving them, or attracting new potential customers. For customers, it was a valuable information to make better purchasing decisions. Under the term eWOM (electronic Word of Mouth) a conversation is development among current or potential users of a product or a service (Erkan & Evans, 2016). This conversation could be done in open platforms (e.g. Facebook or Instagram), or in webs that can be owned by the same business that is selling their products (e.g. Amazon) or infomediaries that offer added value information as their business model (e.g. Trip Advisors or Yelp). The influence of these online conversations, opinions and reviews about products and services has become nowadays in a very influential factor on purchasing decision (Nam, Baker, Ahmad, & Goo, 2020).

The ethical problem surges when the real opinions are hide, modified, or are not real options of real customers that used the product or the service:

- If the platform is owned by the same enterprise that is offering their products: what happen if they decide to censor negative opinions and evaluations, or if they manipulate ranking to show negative opinions at the very end of the list?
- What happen if I hire people to post positive opinions about my products and services to generate a positive opinion on potential customers?
- What happen if I hire people to post deceptive opinions and reviews about the competence to generate a negative opinion
- What happen if I use a bot to create positive or negative opinions in social media about a company?

As we can see, many ethical concerns are arising in the online reviews area. The anonymous character of electronic word of mouth creates the ideal conditions for fraudulent behaviours (Martinez-Torres & Toral, 2019). Fake reviews are a new form of unethical attack, performed to purposefully harm or boost a company or organization, product or service, brand or person reputation (Lappas, 2012).

## Method

Fake reviews unfortunately are spreading all over the sectors. According to OCU (2019a, 2019b) Amazon publishes 8.4% of opinions that could be considered as irregular. An irregular opinion is the post of a false or interested review that does not respond to a real customer experience. The OCU cited study (OCU, 2019a) pointed out based on the analysis of 6.360.172 opinions about 46.512 products and hotels that 6.20% of TripAdvisor opinions and 2.10% of booking opinions were considered as irregular as well. The same study found 75 sellers offering products for free in exchange of a positive review, finding several groups on Facebook and Telegram where it was possible to arrange fake reviews. That represent an unethical behaviour that try to manipulate consumer decision, who cannot distinguish between real opinions of real consumers that freely share their opinions with fraudulent opinions paid to influence decisions.

Fake reviews are present in almost all activities, but in services sector arise more concerns. In products it is possible at least to evaluate physical or technical features, but in services it is all about intangible experiences. In the tourism and hospitality sector it is considered a key factor for an ethical and responsible development. (Luca & Zervas, 2016; Reyes-Menendez, Saura & Filipe, 2019).

The research questions focus on hospitality sector, specifically on restaurants. The perspective used will be from the business point on view, not from the consumer perspective. Most of the studies focus usually on consumer, adding a valuable result to explorer the view from the business perspective. Using a qualitative method, 75 manager and owners of hotels and restaurants located Madrid city center were interviewed from November 2020 to December 2020. The research looks for exploring the following Research Questions (RQ.) with semi-structure interviews:

- RQ1. To what extend are business aware about fake reviews in their restaurants business?
- RQ3. Where are coming from fake reviews in their business?
- RQ2. To what extend fake reviews are happening in their business, and what is the impact on their profit?
- RQ3. How are business fighting against fake reviews practices?

## Conclusions



The results corroborate the existence of this unethical practices in their business. Surprisingly, most of the manager indicated that they don't paid attention to negative and fake reviews (65% of interviews), notwithstanding of being aware about their existence. The main source of negative and fake reviews is the competence (80% of interviews), but they don't have facts to prove it. The interviewed pointed out the existence of a 20% of deceptive reviews considered as real:

We cannot be perfect; we assume the existence of a percentage of deceptive reviews that real according to customer experience. Usually most of the negative experiences are posted, but not all the positive experiences are published.

To balance negative opinions the main strategy is balance with positive, promoting reviews of customers than can balance fake or negative reviews. Influencers opinions are very important as a source to reinforce brand and incentive booking decisions of the customers.

**KEYWORDS:** fake reviews, unethical commerce, deceptive opinions, social media commerce.

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## WHAT DO MACHINES THINK ABOUT?

**Gabriel Marín Díaz, Ramón A. Carrasco González, Daniel Gómez González**

Universidad Complutense de Madrid (Spain)

gabriel.marin@ucm.es; ramoncar@ucm.es; dagomez@estad.ucm.es

### EXTENDED ABSTRACT

Can machines think? This question was posed by Alan M. Turing (1950) in the mid-20th century. The answer to that question is the proposal of the so-called Turing test. In this test, Artificial Intelligence (AI) is considered to be a way of acting that imitates the intelligent behavior of human beings. Since then the AI has been surpassing the human being in tasks for which it was supposed to have intelligence: strategy games like chess, driving vehicles, composing symphonies, automatic planning, and a long etcetera that seems to have no end. In fact, the changes produced in the last decades in the telecommunications sector, accompanied by the development of the storage and processing capacity of information have meant a change of paradigm to which the name Industry 4.0 has been given.

AI corresponds to a field of knowledge that includes Machine Learning (ML) and Deep Learning (DL). In both fields, to solve a problem proceeds to the training of models to learn the problem in question from existing data. Once the rules are obtained, we can apply them to new data sets to produce the appropriate answers by applying the rules learned from experience. To perform ML processes at least three fundamental parts are necessary: input data, the expected results and the measurement of the algorithm's performance so that the algorithm's work can be adjusted by means of feedback processes (Casella et al., 2013).

### Interpretability in Machine & Deep Learning processes

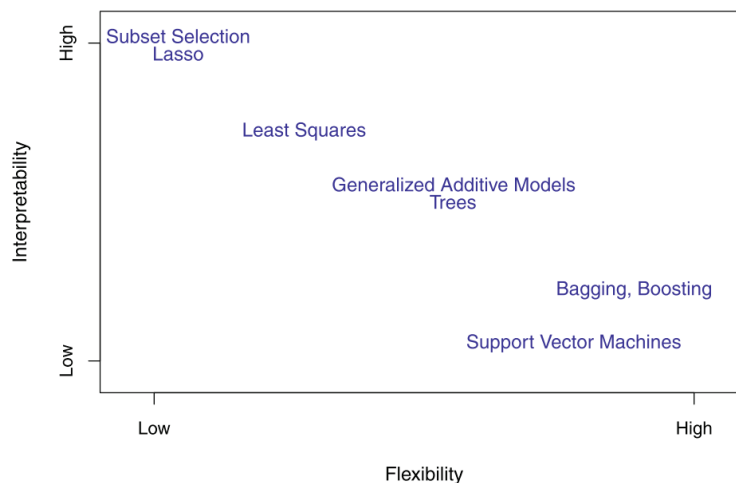
An ML model, once implemented, can complete a task much faster and more reliably than any human, delivers consistent results reliably, and can be infinitely replicated. Training a person to perform a task with the same efficiency is costly and can take years.

An important aspect of using the ML is the interpretability of the models once they have been trained. From this point of view some authors distinguish two types of models (Liu et al., 2016):

- White box models, are models whose predictive or pattern identification behavior can be clearly explained based on the variables involved. Therefore, it is relatively simple to investigate the rules that such models have inferred from the data.
- Black box models, are models whose rules are not understandable in a simple way for the human being, it would be very difficult to explain how the system came to take a concrete decision before a certain entry (Liu et al., 2016).

Some authors even question the interpretability of white box algorithms (Lipton, 2018). In Figure 1 it can be seen, as a general rule, that the greater the interpretability of the ML algorithm, the lower its degree of flexibility and therefore the lower its degree of reliability. In other words, at present there is no doubt that the most powerful algorithms are not interpretable.

Figure 1. Interpretability vs. Flexibility of ML algorithms (Casella et al., 2013)



Therefore, seven decades after Turing posed his philosophical question, we could ask ourselves today the following question: What do machines think about? The question is that in some cases it may not be relevant to understand why a certain decision has been made, especially in low-risk environments. Although, in most cases the human being should understand why a decision that affects him individually or as a group has been taken. Examples include: the decision to grant a loan, a medical decision, driving a car, a selection process for a certain job...

In a study conducted in 2019 by Brandon Fornwalt, Geisinger Medical Center, Pennsylvania, they trained two AI algorithms capable of predicting the risk of death in the first year through the reading of electrocardiograms, even of apparently "normal" people, the accuracy of the algorithm was 85%.

#### The bias and its impact

ML models have been shown to learn very well from the data, but they also collect biases that may or may not be incorporated into the training data. This could make the training model potentially sectarian and discriminate against certain individuals. These potential biases constitute a fundamental point in the investigation of the problem of their interpretability (Miller, 2019; Molnar, 2019). There are three types of classical biases: statistical bias is determined by data collection, its origin, cultural bias derives from the language we speak, how we express ourselves, our stereotypes, and cognitive bias identifies our beliefs and values.

Below we will list some examples of bias applied by ML algorithms in different technologies and areas.

- In 2019, Ruby on Rails entrepreneur David Heinemeier Hansson shared a disturbing story on Twitter, claiming that the Apple card was discriminating against his wife.
- In 2015, the Google Photos application labeled two African Americans as "gorillas". Google engineers analyzed the account and found that the algorithm had trouble adjusting to the photo contrast, lighting and skin tone.
- In 2016, it was noted that some of the LinkedIn algorithms were gender biased, recommending better paying jobs to men.

- In 2016 Microsoft launched "Tay," a chatbot that was intended to mimic the behavior of a curious teenage girl seeking to engage in informal conversation at RRSS. Within 24 hours, Tay was tweeting her empathy for Hitler or her support for the genocide.

Bias in the source data implies biased decision making, and if the algorithm used is black box, it will be much more difficult to identify such bias.

## Conclusions

So, to answer the question, what do machines think about? The answer has to be approached from different points of view, several areas of action are listed to answer this question:

### *Scientific Vision*

Today there are various scientific approaches that aim to help explain in a relatively simple way the models of ML, especially the so-called black box models. These interpretation methods can be classified according to several criteria (Lipton, 2018; Molnar, 2019; Ribeiro, 2016): intrinsic, post hoc, specific, agnostic, local and global.

These approaches, although interesting, are far from turning what black box algorithms do into a white box. Therefore, new actions in the scientific field can be expected for the problem posed.

### *Legislative Vision*

Profiling and automated decisions can pose significant risks to individual rights and freedoms. The European and Spanish legislation on data protection obliges and requires certain guarantees. Article 22° of the General Regulation on Data Protection (RGPD) establishes that European citizens have the right not to be the object of a decision based solely on automated means, including the elaboration of profiles. As it usually happens in areas of Information and Communication Technologies (ICT), the legislative aspects go behind the technological advances, so it could be questioned if this regulation can be enforced in a global and effective way. Furthermore, if it is enforced, can the RGPD regulations really protect us from decisions made by an algorithmic bias?

### *Performance of Independent Entities*

It seems clear that there is a need for action by independent bodies capable of determining the "quality" of the algorithm, providing sufficient guarantees to citizens, thus increasing social acceptance of this type of practice. Ensuring that the following qualities are met: fairness, privacy, reliability, soundness, causality, trust (Doshi-Velez, 2017).

As a result of this need, in December 2019 the technical subcommittee for standardization CTN 71/sc 42 – Artificial Intelligence and Big Data was set up in Spain precisely to draw up standards in the field of AI, participating in the development of the standards at a global level that are being developed in the international committee ISO/IEC JTC 1/SC 42 Artificial Intelligence.

These actions, of course, are very limited and timid at present.

### *Business Vision*

Companies, especially those in the ICT sector, have undertaken certain actions on their own to address the problem.

- IBM launched in 2018 the Fairness 360 Kit project (IBM, 2018), this toolkit helps to examine, report and mitigate discrimination and bias in ML models.
- Microsoft has a model interpretation SDK in Azure ML Python package (Microsoft, 2020).
- Google has an Explainable API (Google, 2020), which is a set of tools and frameworks capable of helping to debug and understand the behavior of ML models.

Other companies are taking steps in the same direction, although it is obvious that companies will put their own interests before the problem posed.

In short, when faced with the question of what machines think, steps are being taken, as we mentioned in the previous points. However, the question that should concern us most is whether this question is really asked by today's society. In a society that is becoming more and more Innumeracy (John A. Paulos, 1988), where the decision making is usually made through System 1 of thought: fast, intuitive and emotional (Daniel Kahneman, 2011), as opposed to System 2 of thought: slow, deliberative and logical. We can intuit that this speed, immediacy of the daily and short term could come to invade us, leaving the decisions that require thinking and meditating to a third party, the machine, which also would not have to explain the reason for its decisions.

**KEYWORDS:** Machine Learning, Interpretability, Deep Learning, Bias, Artificial Intelligence.

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## **FAKE NEWS PERCEPTIONS IN THE SMART SOCIETY**

**Mario Arias-Oliva, Eglée Ortega-Fernández, Graciela Padilla-Castillo,  
Sonia Laura Carcelén-García**

Complutense University of Madrid (Spain), Antonio de Nebrija University (Spain) and  
Complutense University of Madrid (Spain), Complutense University of Madrid (Spain),  
Complutense University of Madrid (Spain)

mario.arias@ucm.es; egleeort@ucm.es; gracielp@ucm.es; sonialca@ucm.es

### **EXTENDED ABSTRACT**

We are living in the Smart Society, where citizens are connected to other people and devices that generate an incalculable amount of information each second. The Smart Society look for the increase of the well-being of citizens, the strength of the economy, and the effectiveness of institutions based on the innovative use of emerging smart digital technologies (Chakravorti & Chaturvedi). According to the World Economic Forum (2020), the digital universe is expected to reach 44 zettabytes in 2020. Citizens are producing, consuming and exchanging information every day: sharing photos, personal videoconferences, social media content, or streaming services. And business is generating, exchanging and consuming digital information every day with eCommerce, teleworking, intranet access or global information systems. But paradoxically, at the moment with the most information available for citizens, we are probably worse informed than ever before. There are several reasons that explain this paradox. We are losing the freedom to choose our source of information. An algorithm is deciding for us, filtering and suggesting what is the information of any kind (such as commercial, news, media or streaming) that we should consume. That way of organizing information provokes a narrowed mind in which vision and understanding of individuals and society are biased. The shared vision and the shared values are the ones decided by the algorithm with the ethical concerns that this fact represents: who manages the algorithm, manage society and individuals. It could be considered as the hacking of the human brain. According to Harari (2019), to hack a human being three things are needed: solid knowledge of biology, a lot of data about human behaviours and an important computer capacity. The Inquisition or the KGB never succeeded in penetrating human beings because they lacked this knowledge of biology, data about individual and aggregate behaviours, and computer capacity. Nowadays companies such as the GAFAM (Google, Amazon, Facebook, Apple and Microsoft) and governments are developing all these tools and knowledge, and probably they will be -or they are- hacking us. They will not only be able to predict our decisions, but also to manipulate our feelings. In this digital environment, governments and corporations are using this new technique to manipulate us, and fake news is an emerging strategy.

The term "fake news" is used to mean disinformation through the use of dissemination of totally false messages or manipulation of information (misinformation) trying to bias information to achieve the desired goal (Watts, 2018). In both cases, the intention of cheating to serve a certain cause exists. Satirical information or news messages misleading that based on a true fact biases it by manipulation or decontextualization are increasingly in our society. Fake news is spreading in politics; journalism, law and policies or social media (Zimdars & McLeod, 2020). These messages can have geopolitical consequences, for example by creating or fuelling conflicts, changing the intention to vote, or by putting public opinion for or against a certain social problem. Citizens increasingly trust these types of messages, being not able to distinguish between what is fake news and real news.



According to Arias-Oliva and Khawly (2021), the control of messages disseminated through the Internet is increasing their social and economic influence. The news that is created and shared quickly in social media can generate significant advertising returns when readers access the original website (Fielden, Grupac & Adamko, 2018), and fake news with polarized messages generate more traffic than real news. A study found that fake news are diffused significantly faster, deeper, and more broadly than the real news, and the effects were more pronounced for political fake news than for other information such as terrorism, natural disasters, science, urban legends, or financial information (Vosoughi, Roy & Aral, 2018). Fake news are designed to become viral information, exploring all possible aspects to attract the reader’s attention, from the title design to the language used throughout the body of the text (Baptista & Gradim, 2020).

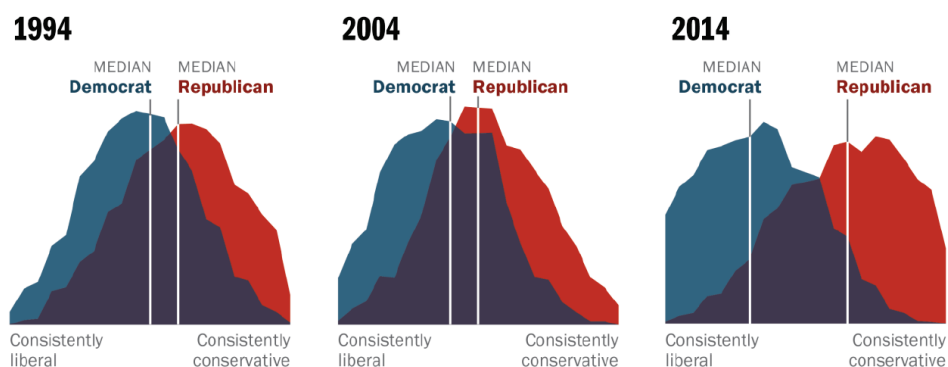
Beyond fake news practices as an unethical method to increase traffic and revenue, an even more concerning practice is the use for geopolitical purposes. Facebook and Twitter are no longer used mainly as a way to connect us with family and friends or connecting brands with customers. Facebook now has 2.7 billion accounts worldwide and has become a political influencer. Twitter, with 1.3 billion accounts created, has only 330 million active accounts per month, with a significant number of manipulated accounts (EC Financial News, 2020). Both networks have become a powerful instrument of institutional and political communication, but also of disinformation. Through real or fictitious users, they are instruments to manipulate public opinion. Armies of manipulated Twitter accounts are used through complex artificial intelligence systems to redirect public opinion for certain purposes. These systems are called bots, which from the so-called "bots farms" try to influence the electoral results representing a serious threat to the sovereignty of countries. Marcellino, Johnson, Posard and Helmus (2020) analysed these techniques in the last presidential elections in the United States. Their report proves the existence of electoral interference through the use of trolls (fake people who spread a variety of sensitive information and news in an exaggerated way) and super-voters (highly networked accounts that can spread messages effectively and quickly). The study did not identify the origin of the accounts, but interference seems to favour Russian interests according to the authors, who transparently describe the methods used to identify the dubious accounts.

As an example of this algorithm polarization is the report published by Pew Research Center (2014). We can see the consequences of and fake news in the USA political arena. According to the study, 92% of Republicans are to the right of the median Democrat, and 94% of Democrats are to the left of the median Republican, as we can see in Figure 1.

Figure 1. Polarization of USA political opinions

**Democrats and Republicans More Ideologically Divided than in the Past**

*Distribution of Democrats and Republicans on a 10-item scale of political values*



Source: Pew Research Center (2014).

## METHOD

Based on these findings, the research purpose is to explore how fake news are perceived. Our research focuses on to what extent fake news is perceived by higher education students in Spain. Using qualitative techniques, the research explores different media in order to determine what are the news media with higher levels of reliability for future professionals.

**KEYWORDS:** fake news, media reliability, social media, disinformation, misinformation.

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## **ROBOT ETHICS: SOCIAL ROBOTS IN THE RETAIL**

**Áurea Subero-Navarro, María Alesanco-Llorente, Jorge Pelegrín-Borondo, Mario Arias-Oliva**

Universidad de La Rioja (Spain), Universidad de La Rioja (Spain),  
Universidad de La Rioja (Spain), Universidad Complutense de Madrid (Spain)

First. aurea.subero@unirioja.es; maria.alesanco@alum.unirioja.es;  
jorge.pelegrin@unirioja.es; mario.arias@ucm.es

### **EXTENDED ABSTRACT**

In recent years, the great advances that have been made in different disciplines such as computer science and mechanics have enabled the development of robots created not only for the realization of industrial tasks, but also to interact with people in healthcare environments, providing different services such as care of the elderly people, advisory tasks in commercial environments, medical tasks, etc. (Torras, 2014). These types of robots are called social robots and their rise has boosted the interest of researchers.

Today the implementation of robots is taking place practically in every area of society. However, the discussion over the use of robotics and artificial intelligence has increased as the possible consequences of the use of robots for the economy, employment and society are beginning to be seen (Huang and Rust, 2018). These future changes in society generate both, expectations and fears (Mick and Fournier, 1998). That is why in a society where artificial intelligence is becoming more relevant, it is necessary to define a number of limits in relation to the mode of use of artificial intelligence and the way of interaction with human beings (Santos González, 2017).

Technoscientific and technological development implies the introduction of improvements in human life but also implies the emergence of numerous risks in which it is necessary to influence. One of the relevant issues to address is the impact of ethics on technoscience, that is to say, how to apply ethics to emerging new technologies. This is because any cultural change requires, in turn, an ethical rethink to avoid unwanted situations in the future (Valls Prieto, 2019).

It is therefore necessary not only to anticipate the possible scenarios that may occur but also to identify the future moral problems that will arise from them. There are numerous initiatives and projects related to roboethics that aim to answer all these questions (Torras, 2014).

The future will be conditioned by the decision-making that takes place at this time and not only by the legislator, but also by each of the agents who have the capacity to influence them. It is therefore necessary to regulate both individual and collective behaviour in relation to minimum requirements and to carry out a periodic evaluation of it. How the sharing of benefits and costs is appreciated will obviously influence the blessing of consumers. The introduction of these technological developments does not necessarily imply inequality, as long as these technological tools are subject to values and standards (Grau Ruiz, 2019).

Another main challenge of ethics or theft is based on the use of language. Currently, the terms used can be applied exclusively to humans and not to robots. Decision-making is completely different and contingencies arise in terms such as "consciousness" or "empathy" that constitute human realities and are mis-applied to machines. It will be necessary to introduce terms that adapt to robotics. The risk of this is very great because if robots are equated to humans, there is a risk that machines will resemble people (Noeo Tech, 2017).

Therefore, it will be essential to implement an ethical system that promotes the ethical behavior of the different agents participating in it. However, the main problem in relation to this issue is that human beings usually know what is ethical, but not how to achieve it, so this supposes the main challenge in the field of Philosophy and Law (Grau Ruiz, 2019).

In this regard, the European Parliament in 2017 approved the robotics report establishing an ethical code of conduct. Its purpose is to serve as: "an ethical guidance framework for the design, production and use of robots". All this has led to the emergence of a new term coined by Gianmarco Veruggio: robotics (Noeo Tech, 2017).

In addition, it is also necessary to influence the opinion of the population in relation to the use of these robots. Ethics reflects the plurality of legal, moral and religious norms that govern in a community (Berger et al., 2008). Reidenbach and Robin (1990) consider that individuals use more than one basis to make ethical judgments so that the employment of multiple dimensions is necessary to capture the meaning of ethical judgment. Therefore, after the revision of literature dedicated to moral philosophy, they developed the Multidimensional Scale of Ethics (MES) which includes five dimensions based on contemporary normative moral philosophies: moral equity, utilitarianism, relativism, selfishness and contractualism.

This theoretical framework is taken as a reference. The objective of the present research is to find out if the ethical action of consumers in relation to the use of robots takes some place in the minds of the consumers involved in it.

To achieve this goal, one hundred people have been interviewed. These people have been asked open questions about what they consider to be the main benefits and disadvantages of the use of social robots in retail (Shawver and Senneti, 2009). The results show the following:

- Utilitarianism: a dimension based on consequential theories that consider morality to be measured by the consequences of the actions performed (Reidenbach and Robin, 1990). The results show that when claiming advantages of the use of social robots in retail, the respondents made a balance of their costs and benefits and 71% of them were guided by utilitarian reasons such as speed of service, handling large amounts of information and the ability to easily locate products. On the other hand, only 31% alleged utilitarian reasons when alleged inconveniences.
- Moral Equity: dimension based on the theory of justice (Rawls, 1971). The results show that at the time of stating the advantages of the use of social robots in retail, none alleges reasons related to moral equity, while, for their part, in stating the disadvantages 59% alleged these reasons, such as the dehumanization of work, destruction of employment and increase in the number of people in unemployment.
- Selfishness: dimension also based on consequential theories, but focusing exclusively on the individual consequences (Reidenbach and Robin, 1990). The results show that 18% used selfish arguments such as "not having to be kind to dependents". For its part, when it comes to stating inconveniences, none alleged selfish reasons.
- Relativism: it is defined as the "perception of what is correct versus incorrect based on guidelines/parameters of the social/cultural system (Nguyen and Biderman, 2008). The results of the research show that when declaring the benefits of the use of robots in retail 4% of respondents alleged relativistic motivations by comparing the right and wrong of the use. They argued, for example, that it would be good because of the increased efficiency while it wouldn't be correct because of the destruction of employment. For their part, when they exposed the drawbacks of the use of robots in retail, 9% made relativistic arguments.

- Contractualism: a deontological dimension that encompasses different notions such as implicit obligation, contracts, duties and rules (Reindenbach and Robin, 1990). The results show that when declaring the benefits of the use of robots in retail 4% claimed contractual reasons, while when it came to stating the inconveniences 1% alleged such reasons.
- For their part, 2% of respondents said they found no benefit from the use of robots in retail.

The influence of ethical judgment on the intended conduct is a conclusion from the investigation. When respondents were asked about the benefits of using robots, most of them alleged utilitarian reasons. It is clear that one of the strengths of robots are the great possibilities they offer us: they enable economic growth and the development of traditional businesses, they accelerate and optimize business processes, they are a source of information and recommendation and constitute a source of entertainment for users. However, in exposing the inconveniences of their employment, 59% of people alleged moral equity reasons. This is mainly due to the fear generated by the introduction of robots into our lives due to process automation and job destruction. However, robots can be used with the aim of complementing humans and freeing them from the most routine tasks, rather than replacing humans.

**KEYWORDS:** social robots, ethical judgment, retail, technological acceptance.

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## NEUROETHICAL PSYCHOLOGY IN TRANSHUMANISM

**Jesús Jiménez Olarte**

Universidad de La Rioja (Spain)

psico.larioja@gmail.com

### EXTENDED ABSTRACT

Technological progress in the search for solutions to internal conflicts runs parallel to the transition process as the humanist paradigm shift is a fact. Pharmacological solutions allow us to modify our state of mind, nanotechnology begins to be applied to the brain and thus neuroethics is transformed (Bostrom, 2005). The problems of cryopreservation contain in themselves a future solution so the problem is defined, and embryo selection is a real possibility and currently in the process of implementation (Simon, 2006).

The aim of this study is not to question the ethical and moral posthumanist legitimacy of the limits that should or should not be exceeded, but to foresee the psycho-emotional conflicts derived from this symbiotic evolution that will lead to the postulation of moral premises that will propose solutions to the ethical conflicts that will be generated.

Thus, it is considered fundamental to invite an ethical reflection on transhumanist postulates within a framework of social coexistence and which allows us to maintain a tolerable emotional balance for the continuity of our natural and continuous evolution as cognitive, emotional, and social beings.

There is nothing more provisional than scientific knowledge (Tirapu, 2008). The answers to hypotheses that we ourselves generate come from questions that we ask ourselves based on the observation of the world around us, or even in the field of ethics, philosophy, and psychology, from the observation of our own inner world, as well as its interactions.

Scientific answers are replaced by others that refute the first ones on the basis of experimental or statistical tests and that, in turn, expand new questions for further studies. If we move back 110,000 years ago, evolution frames a new paradigm based on the advance of technology, homo sapiens sapiens; its first moral, ethical, and philosophical conflicts seek to accommodate a new knowledge that begins to develop on the basis of new discoveries placed at the service of its species parallel to the development of its capacity for metacognition (González, 2009). However, this parallel development of the internal process together with the advance of technology is a *continuum* and, if we do not frame both a past and future perspective, we will not be able to spontaneously reflect and study the changes in ethical needs, emotional conflicts and repercussions at a global level as social beings tending towards inner technification (Carcar, 2019).

The debates amplified by fiction based on future projections that draw the struggle between machine and human, after the awareness of a "self" of the machines, retreats before currently more pragmatic issues in which the human being itself tends to become robotised diluting its condition of homo sapiens sapiens evolving towards being the technologically perfected; The H+ (Carvalko, 2012). In this way, human being and machine are diluted in a future entity in which new ethical conflicts and neuroses will appear as a result of this symbiotic evolution.

We are currently at a transition point towards a transhumanist development in which the possibility and moral tendency to improve the physical, intellectual, and psychic capacities of the human species

through the application of new technologies and eugenics (Overall, 2017), with the aim of eliminating all undesirable aspects of the human condition such as illness, suffering, ageing, and even death, lead us irremediably to the transhuman species by evolution (Hughes, 2004). Such potentialities open the window to a post-human being, in which an evolution in moral and social ethical conflicts should be envisaged in parallel (Fukuyama, 2004).

**KEYWORDS:** transhumanism, neuroethics, transhumanist psychology, moral conflict, ethical technology, evolutionary neurosis, posthumanism.

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## TIME SPENT ON SOCIAL MEDIA, PHUBBING AND FEAR OF MISSING OUT

Yeslam Al-Saggaf

Charles Sturt University (Australia)

yalsaggaf@csu.edu.au

### EXTENDED ABSTRACT

Time spent on social media

There are about 3.78 billion social media users worldwide<sup>14</sup> spending on average three hours a day on these platforms<sup>15</sup>. The literature indicates that increased Time Spent on Social Media (TSoSM) is associated with numerous detrimental effects and psychological harms. A recent study has found that longer periods of TSoSM are associated with depression, conduct problems and episodic heavy drinking (Brunborg and Burdzovic Andreas 2019). Another recent study has found that Adolescents who spend more than three hours a day on social media are at a higher risk of developing mental health problems (Riehm et al. 2019) and while one study (Coyne et al. 2020) has found that TSoSM does not impact mental health, a study by Stronge et al. (2019) has found that TSoSM is weakly related to psychological distress. In addition to these psychological problems, a study by Aalbers et al. (2019) has found that TSoSM is associated with higher levels of interest loss, concentration problems, fatigue, and loneliness.

These numerous detrimental effects and psychological harms with which TSoSM is associated raise a serious ethical concern; so it is important to find out what predicts the amount of TSoSM and how the prediction happens? The Uses and Gratifications (U&G) theory has been used in the past to shed light on the motives for using social media. This theory argues that individuals actively seek out media that best fulfills their needs (Hollenbaugh et al. 2020). For example, using the U&G framework, researchers have found that engaging with technology may be motivated by a desire to manage state feelings (Elhai and Contractor 2018). The Media Displacement theory has been used to explain how TSoSM can take away time that could be otherwise spent with family and friends (Tokunaga 2016). Using a Media Displacement framework, Hall et al. (2019), for example, found that online interactions do take away time from face-to-face interactions. Addiction to social media as a research problem has attracted the attention of many scholars and there is no shortage of research in this area. Karadağ et al. (2015), for example, noted that social media is one of the addiction elements within the smartphones. But these research directions don't address the question: what triggers people to spend longer periods of time on social media and how this triggering takes place? The aim of this study is to investigate what predicts TSoSM and under what circumstances this prediction occurs. Given the seriousness of the problems accompanying TSoSM, understanding what predicts the amount of TSoSM and 'how' is important for our moral understanding of this technology and judgment. The dearth of research in this area makes this study a significant contribution to the literature.

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<sup>14</sup> <https://au.oberlo.com/statistics/how-many-people-use-social-media>

<sup>15</sup> <https://au.oberlo.com/blog/social-media-marketing-statistics#10-social-media-users-via-mobile>

## Phubbing

There are about 3.8 billion smartphone users worldwide<sup>16</sup>, a figure that is forecast to continue to grow. More than 90% of the smartphone users access social media from their smartphones.<sup>17</sup> Dependency on the smartphone has created a new ethical problem, namely phubbing. Phubbing is a fleeting reaction in which a smartphone user momentarily engages with their smartphone while he/she is having a face-to-face conversation with another person or persons (Ivanova et al. 2020). Phubbing has been found to be associated with a number of negative impacts (Al-Saggaf and O'Donnell 2019a). The impacts of phubbing have been researched in a broad range of settings. Phubbing has been found to be common in workplaces (Roberts and David 2017) and when employers engage in phubbing behaviour, phubbing has been found to decrease employee engagement (Roberts and David 2017). Phubbing is also common among intimate partners (Roberts and David 2016) and in situations where phubbing occurred over a long period of time, phubbing has been found to weaken the bond between intimate partners (Roberts and David 2016), and among married partners phubbing has resulted in reduced ratings of relationship satisfaction, which in turn increased levels of depression (Wang et al. 2017). Phubbing has also been found to negatively impact conversation quality. Phubbing during conversation has been found to decrease the perceived quality of communication, and overall relationship satisfaction (Chotpitayasunondh and Douglas 2016), and checking the smartphone during a face-to-face interaction can reduce the sense of emotional connection (Nakamura 2015). In addition, frequent texting via smartphones has been associated with increased smartphone-related conflicts and lower evaluations of relationship quality (Roberts and David 2016). Phubbing and time spent on social media (TSoSM) are related. A study by (Al-Saggaf 2020) has found that participants most frequently used social media apps while phubbing others. As phubbing also raises a major ethical problem and the behaviour is linked to TSoSM, what predicts phubbing and the nature of its relationship with TSoSM will also be investigated in this study.

## Fear of missing out

A number of variables have been found to predict state phubbing. A study by van Rooij et al. (2018) has found that state fear of missing out (FoMo) is a strong predictor of state. The associations among time spent on social media, state phubbing and state FoMo inspired the need to investigate the interplay among TSoSM, state phubbing, and state FoMo.

FoMo is the need to be in constant contact with one's network, and the fear of missing out on an event where one's network is having fun (Przybylski et al. 2013). A study by Elhai et al. (2016) has found that FoMo is the most related factor to problematic smartphone use. FoMo is also associated with social exclusion, which causes anxiety and elicits feelings of worthlessness (Franchina et al., 2018). This makes FoMo an ethical problem in its own right. However, FoMo was not found to be associated with overall frequency of smartphone use (Elhai et al. 2016). This suggests that even though state FoMo was found to be a strong predictor of state phubbing, it may not predict TSoSM.

## Method

This study was part of a larger study that looked into the role of personality in smartphone usage. A total of 325 participants completed the Google Forms survey of the study, the link for which was shared in a number of social media sites including sites like Reddit.com. Of the 325 responses received, 19

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<sup>16</sup> <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/>

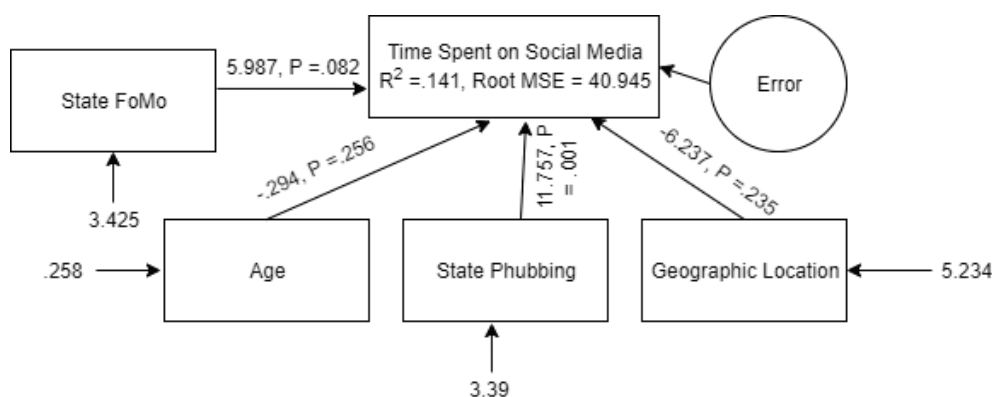
<sup>17</sup> <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/>

responses were excluded because the participants indicated ages below 18. As the ethics approval for this study was only for individuals who were 18 and above, the responses of participants under the age of 18 could not be included in the study. Further, as this component of this study is concerned with time spent on social media, the responses of participants who indicated at the time of the study that they did not use any of the social media apps (41 responses) were also excluded from the analysis. In addition, five outliers were detected and unselected bringing the total number of responses used in the analysis to N = 260. Of the 260 individuals who participated in the study, 23.1% (N=60) of the participants were male and 76.9% (N=200) were female. Participants' ages ranged from 18 to 65, with a mean age of 26.55 (SD = 10.508). Participants came from several countries, including Asian countries, but 40.9% (N=106) of the participants resided in the United States, 25% (N=65) of the participants resided in the United Kingdom and 20.8% (N=54) lived in Australia, with the remaining participants coming from other Asian and Western countries. Time spent on social media was measured in minutes per day. Participants were asked: How many minutes, in total, have you spent on social media today? State phubbing was assessed using the state phubbing scale (Al-Saggaf and O'Donnell 2019b). The state phubbing scale contained four items rated on a scale from 1 (strongly disagree) to 5 (strongly agree). State fear of missing out was measured using the state fear of missing out scale (Wegmann et al. 2017). The scale consisted of seven items rated on a scale from 1 (not at all true of me) to 5 (extremely true of me). Multiple regression analysis was run in SPSS Version 25 and the mediation analysis was run using Hayes Process Macro for SPSS. In the full paper further details on data analysis will be provided.

## Results

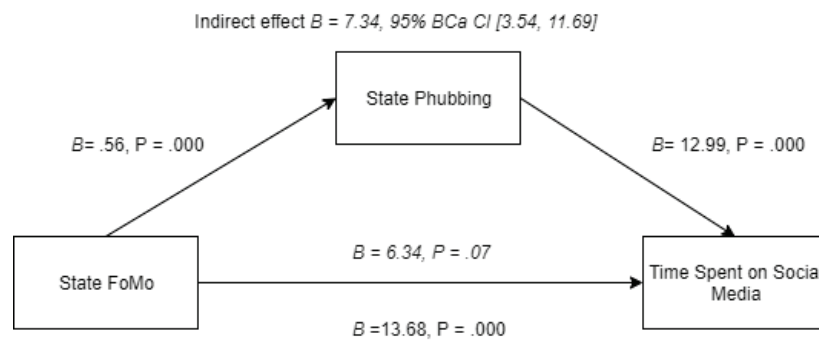
The multiple regression analysis has revealed that state phubbing is a strong predictor of TSoSM. This indicates that the momentary reaction of checking the smartphone during a face-to-face conversation, increases the TSoSM. Figure 1 below shows the results of the regression model along with the regression coefficients, their associated standard errors, and their relevant p-values.

Figure 1. Results of the regression model along with the regression coefficients, their associated standard errors, and their relevant p-values



The mediation analysis has revealed that state FoMo affects TSoSM via state phubbing. State phubbing fully mediates the relationship between state FoMo and TSoSM, as shown in Figure 2. This means that the entire effect of state FoMo on TSoSM is transmitted through state phubbing. In the full paper the findings from statistical analysis will be reported and the results will be described and interpreted.

Figure 2. Results of the mediation analysis



## Discussion

The result that state FoMo predicts TSoSM through state phubbing may mean that the fleeting feeling of state FoMo become more intense when smartphone users are having face-to-face conversations with others which is why they momentarily check their social media feeds via their smartphones, i.e. phub their conversationalists. This temporary checking of the social media apps during face-to-face conversations to relief the fleeting feeling of FoMo makes state phubbing a coping mechanism. State FoMo, state phubbing and TSoSM are each associated with numerous detrimental effects and psychological harms. Understanding the interplay among state FoMo, state phubbing and TSoSM paves the way for efforts into helping people change harmful habits. In addition, State FoMo, state phubbing and TSoSM each raises an ethical problem in its own right but when they combine they create a more convoluted ethical problem. Developers of social media platforms have a duty of care to the people who are likely to be impacted by the apps they develop. At a minimum, they must ensure that the users are aware of the health risks associated with the heavy use of their apps. The full paper will expand on these ethical considerations.

**KEYWORDS:** Fear of missing out, phubbing, smartphone, social media, time, regression, mediation.

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## OPEN INNOVATION ON SMART CITIES

**Orlando Lima Rua, Mario Arias-Oliva, Francisco Musiello Neto, Leonor González Menorca**

CEOS.PP/ISCAP/Polytechnic of Porto (Portugal), Complutense University of Madrid (Spain), Lisbon University/ISEG (Portugal), University of La Rioja (Spain)

orua@iscap.ipp.pt; mario.arias@ucm.es; musiello@mail.uft.edu.br; leonor.gonzalez@unirioja.es

### EXTENDED ABSTRACT

Some scholars (e.g., Bresciani, Ferraris, & Del Giudice, 2018; Ferraris, Erhardt, & Bresciani, 2019) maintain that smart cities are now a hot topic in the public and private debate. These configure (1) new paths of organizing city functions and urban life for environmental purposes, based on digitization and urbanization (Katz & Bradley, 2013), (2) the shift in production and consumption from the global to the local, (3) the change from competitive to collaborative manufacturing, and (4) business from the point of view of a shareholder to a point of view of multiple stakeholders (Marsal-Llacuna & Segal, 2016). According to Holland (2008), the smart city thus connects physical infrastructures, information technology, social and business to feed the collective intelligence of the city. Smart cities can be developed through the combination of knowledge generated and belonging to partners (Pancholi et al., 2015), being the open innovation paradigm decisive for reach this goal (Chesbrough, 2003; Natalicchio et al., 2017).

Open innovation became an increasingly established topic in the management literature at the beginning of this century (Lee, Park, Yoon, & Park, 2010), since the impact of the open innovation management model has currently been one of the topics of major discussion within the academia (Huizingh, 2011). As a counterpoint to the traditional view of closed innovation, open innovation is based on a strong prior knowledge developed in the innovation management literature, including approaches related to R&D outsourcing, i.e., outsourcing, inter-firm collaboration, and organization-environment interaction (Ferreira & Teixeira, 2018). Open innovation thus emerges as an emerging paradigm to replace the previous paradigm, defined by Chesbrough (2003) as closed innovation. The role of open innovation, as a strategy of different management models, aims at obtaining competitive advantage by organizations (Finkelstein, Hambrick, & Cannella, 2009), being for this purpose essential the strategic positioning tending to the identification of key factors for recognizing opportunities and making decisions that affect organizational processes (Diaz-Fernandez, Bornay-Barrachina, & Lopez-Cabrales, 2015). The nature of open innovation suggests that the generation of innovative products is facilitated by greater openness to external sources of knowledge in organizations, encouraging the fluidity of knowledge and information between firms (Chesbrough & Crowther, 2006; Crescenzi, Nathan, & Rodríguez-Pose, 2016; Shearmur & Doloreux, 2016).

For Weiblen (2014) the term “open” in business models is grounded in the logic of the firm’s collaboration with its ecosystem. This collaboration is oriented toward the design of the model in which strategic decisions focus on creating value for the organizations, making it essential to manage the execution risk of R&D projects, with greater attention to accelerating the product life cycle time, to quickly achieve results and so that the firm has less time to evaluate external technologies and consequently insert them in its activities.

Therefore, the challenges that city managers face are increasingly complex, driven by new paradigms of “smart” innovation, as well as by the complexities of the city’s heterogeneous “environment” (Öberg, Graham, & Hennelly, 2017). Open innovation allows organizations to increase the acquisition

of knowledge and technology, strengthening partnerships to develop innovation (Santoro et al., 2018), to explore how new technologies and ideas to respond to the challenges of cities (Ferretti & Schiavone, 2016). Therefore, we intend to analyze the impact of open innovation on smart cities.

Finally, we intend to develop a research model that allows to establish the relationship between open innovation and smart cities integrating ethical aspects. According to Kitchin (2016) information management in Smartcities raise an important number of concerns and challenges. Technologies used in Smartcities record and use personal information about citizens such as location and movements, representing a threat with regard people's privacy rights. Ethical dimension should be integrated in Smartcities development.

**KEYWORDS:** Smart cities, Open innovation, Ethics.

**ACKNOWLEDGMENTS:** This work is financed by portuguese national funds through FCT - Fundação para a Ciência e Tecnologia, under the project UIDB/05422/2020 and the *Cátedra Telefónica Universitat Rovira i Virgili- Universitat Barcelona "SmartCity – Agenda Urbana Europea (Urban Agenda for the EU)"*.

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## ETHICS AND OPEN INNOVATION

**Orlando Lima Rua, Mario Arias-Oliva, Francisco Musiello Neto**

CEOS.PP/ISCAP/Polytechnic of Porto (Portugal), Complutense University of Madrid (Spain),  
Lisbon University/ISEG (Portugal)

orua@iscap.ipp.pt; mario.arias@ucm.es; musiello@mail.uft.edu.br

### EXTENDED ABSTRACT

Ramos (1981), highlights the relevance of rationality that can be defined as an action based on non-calculation, whose quality and content are related to actions that are oriented to achieve technical goals or purposes linked to economic interests with established and pre-established purposes, and said respect for conducts, events or objects to reach a certain objective. The author explains that rationality is based on the organization's theory, which admits as the legitimate unlimited intrusion of the market system in human life. Proceed, further, enhancing the substantive reasoning role, which would be a natural attribute of the human being that resides in the psyche, as the main category of analysis of its theory, and ethics as the preponderant discipline for the structuring of human life. Regarding the organizational environment, an instrumental logic arises as a way of attending to the market demands, and, therefore, it seeks exclusively economic satisfaction. For this, the individuals make use of the concept of profit, productivity, efficiency, and effectiveness in all the spaces of their lives. Shrivastava and Crichton (2017) refer that rationality manifests itself in many actions and elements within the organizations. Furthermore, this approach identifies that moral values can motivate collaborators to develop shared ethics that contribute to sustainability.

Therefore, ethics play a central role in human behavior and comprises a set of norms (or values) applicable to a specific group of people, expressing which ones are "right" or "wrong" (Habermas, 1996; Schlagwein, Cecez-Kecmanovic, & Hanckel, 2019). Innovation must understand socio-ethical issues and social responsibility that allow the creation of a sustainable future, to, therefore, respond to challenges related to business logic, problems with stakeholder management, and resource constraints (Long, & Blok, 2017).

The innovation studies of the management and business models come to bring attention to the beginning of this secular, standing out as the main conceptual areas e-business and the use of information technology for organizations, consolidating strategies focused on creating value and competitive advantage, innovation, and management of technology, creation, and acquisition of value for companies, based on the organization of their internal processes and external relationships with customers and suppliers (Zott, Amit, & Massa, 2011). From here a new paradigm emerges - open innovation, no external environment can be considered as strategic innovation management strategies since the research departments let to be the sole source of innovation for organizations, which need to innovate at an increasingly faster speed, as innovation becomes part of a continuous flow that can be both internal to the external environment and vice-versa, a collaborative process (Chesbrough, 2003).

Open innovation's concept quickly gained great prominence, both as an approach to contemporary top management, among the business community, and as a theoretical concept intensively studied by researchers (Podmetina, Soderquist, & Teplov, 2018). The open innovation model underscores the need for firms to acquire valuable resources from third parties and share internal resources for the development of new products and services (Teplov, Albats, & Podmetina, 2019). However, this model

does not clarify the question of when and how a firm obtains external knowledge and shares internal knowledge, leading to the definition of a conceptual model of innovation management that confronts managers with the complex analysis and interpretation of the specificities of each firm and the market, with specific management models (Kuo-Nan, & Tidd, 2012).

According to Van de Vrande et al. (2009) and Huizingh (2011), some activities favor the firm to acquire new knowledge and technologies outside the boundaries of the organization, thus allowing an intentional flow of knowledge that will capture and benefit from external sources of knowledge to improve current development. Using the knowledge acquired to learn from the successes and failures of organizational projects is important to enhance the competitiveness of the organization, as mechanisms and logic of innovation strategies (Slowak, & Regenfelder, 2017). Therefore, open innovation is a very common approach in a business context, with innovation dimensions and practices that make it possible to integrate the management of socio-ethical factors in a less disruptive and costly manner (Schlagwein et al., 2019), thus respecting the appropriate ethical values and norms (Habermas, 1996).

Thus, it is also important to take into account the implications of ethics in the definition of innovation strategies that allow managers to improve and adjust contracts, structures, processes, and routines, as well as to create support mechanisms and incentives to guarantee the effectiveness in the transfer of knowledge in partnership (Miracles, & Burcharth, 2019).

This research aims to analyze the relationship between ethics and open innovation. To make this possible, a proposed model will be developed to analyze. We intend to conduct an online survey of firms' top managers from the technological sector.

**KEYWORDS:** ethics, open innovation, technological sector.

**ACKNOWLEDGMENTS:** This work is financed by portuguese national funds through FCT - Fundação para a Ciência e Tecnologia, under the project UIDB/05422/2020.

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## **ETHICAL CONSIDERATION OF USING BIG DATA ANALYSIS TO PREDICT STARTUP SUCCESS**

**Rami Alkhatib, Rocío Martínez Torres, Sergio Toral Marín**

University of Seville (Spain)

rami@rayame.net; rmtorres@us.es; storat@us.es

### **EXTENDED ABSTRACT**

With the raise of data analyses and the use of technology, there is an increased availability of data (Ming-Shu, 2019). Organizations including startups use big data in a structured way to lead to more efficient results in marketing, revenue generation, customer services and even fund-raising activities leading to a higher possibility of success (Țăranu, 2015). The large amount of data that companies deal with every day makes a significant opportunity if it is processed properly supporting Business Innovation in these companies (Băbeanu, & Ciobanu, 2015). Conventional analysis and investigations are taking place with regards to startup success, but in the past few years there are more innovative analysis using machine learning that are being used to analyze investment portfolios (Ferrati, & Muffatto, 2020). Success rates were impacted by COVID-19 pandemic situation which required the immediate attention but still subject to study (Kuckertz, et al., 2020).

Big data introduced significant opportunities to support fast and more accurate decisions so it acts like a real time decision support system (Wielki, 2015).

Using big data has technical challenges (Fan, Han, & Liu, 2014) such as using the correct set of data and the proper tools (Wielki, 2015), but it also has ethical issues that have to be paid attention for such as reselling the data, misguiding the decision, and influencing the process (Martin, 2015). Using big data implicit the use of online platforms and storage of individual private and corporate data on different locations such as the cloud. There is an ethical challenge in protecting this data from being exposed and abused either deliberately or by mistake (Vayena, Salathé, Madoff, & Brownstein, 2015). Big data and machine learning algorithms are designed by humans, so the original goal of the algorithm has to be monitored not to perform a desired unethical output; another ethical concern is when the intent of the designer of the algorithm is different than the intent of the user of the application so results may be used for different reasons. One reason is declared and the other is not declared (Char, Shah, & Magnus, 2018). In addition, it was found in some cases that the algorithms reflect a bias decision. This decision is due to either the design reflects the designer orientation, and the algorithm does apply the rules it was designed for with no consideration to any other factor, for example, a justice decision support system may analyze a given data and perform a racism based decision (Char, Shah, & Magnus, 2018)

Another important consideration is to what level the system is acceptable to use data and reveal the results. When the system analyses data, it will generate a pattern. This pattern will provide significant information about the person or organization orientation and interests. We agree that this kind of pattern could support to avoid and predict undesired actions people or organizations intent to commit. Nevertheless, there is no clear boarder to which detail it is still ethical to for the system to publicize this info (Michael, & Miller, 2013). And this highlights the importance of drawing guidelines to drive the utilization of big data and machine learning in all fields, including the success prediction of startups by investment portfolios (Char, Shah, & Magnus, 2018)

When data is used to analyze startup portfolios to support the fund-raising decisions, there is the debate of the ownership of this data if it is available for the investment portfolios only to be used, or if it is acceptable for these investment portfolios to share data with other organizations (Wielki, 2015)

So here comes the raise of a problem of how can we predict the success of the startups by processing the historical big data of similar ventures taking in consideration all ethical aspects to avoid any preach of the code of ethics, this is the topic of a research in the near future.

**KEYWORDS:** Big Data, Startups, Ethics.

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## ETHICAL DIGITAL COMUNICATION IN COVID-19 VACINES

**Jorge Pelegrín-Borondo, Orlando Lima Rua, Leonor González Menorca, Sandrina Teixeira**

Universidad de La Rioja (Spain), CEOS. PP / Polytechnic of Porto / ISCAP (Portugal),  
Universidad de La Rioja (Spain), CEOS. PP / Polytechnic of Porto / ISCAP (Portugal)

jorge.pelegrin@unirioja.es; orua@iscap.ipp.pt; leonor.gonzalez@unirioja.es; sandrina@iscap.ipp.pt

### EXTENDED ABSTRACT

The information that people receive is crucial when it comes to accepting a vaccine. Communications by non-traditional means, such as social networks, have opened a new means of communication. In the acceptance of vaccines, these new ways of information have been used by some people. There are people who, based on fake news, deny the existence of the Covid-19 disease and people who, due to their fear and misinformation, have taken unhealthy actions to avoid getting infected (such as injecting disinfectant).

In this context, fear of virus infection could be used to convince people of the need to be vaccinated (Lau, Yang, Tsui, and Kim, 2003). In this sense, the decision to use a vaccine is affected by the emotions that people feel (Manca, 2018) and their emotional states (Luz, Brown, and Struchiner, 2019). Several investigations have shown that the negative emotions that a person feels influence the intention to use a certain vaccine (Chapman & Coups, 2006). Thus, intense negative emotions related to vaccines increase the possibility of changing a specific behavior of people (Chan, Cheng, Tam, Huang, & Lee, 2015). One of the most studied negative emotions in the acceptance of the vaccine is fear. In this sense, fear can influence in several ways: (1) Fear of the side effects of the vaccine can negatively include the intention to use said vaccine (Abebe et al., 2019; Anraad et al., 2020; Kyaw et al., 2019; Otieno et al., 2020); (2) the fear of needles and bleeding when they give you a vaccine is a reason to refuse to be vaccinated (Luz et al., 2019), and (3) the fear of contracting the disease caused by a virus positively influences the acceptance of a vaccine (Anraad et al., 2020; Nguyen et al., 2020).

Regarding fear of the disease, it has been shown that consumer fear of infection can stimulate acceptance of the vaccine that would prevent that infection (Anraad et al., 2020). Furthermore, the fear of contracting an infection is a positive motivator for the tendency to follow the instructions of the health authorities and accept vaccination (Poland, 2010).

Related to the above, in this research we have first analyzed the fear of the Covid-19 disease produced by the SARS-CoV-2 virus, the intention to use different vaccines, and the relationship between this fear and the acceptance of different vaccines.

For this, a survey was carried out with Spanish residents. Potential respondents were contacted via telematics, requesting their participation. Gender quotas and three age ranges were established. As the respondents of each rank were obtained, the effort to contact was concentrated in the other ranks. The survey was self-administered and completed online. The information was collected from Tuesday, September 9, 2020 to Wednesday, September 16, 2020. 600 valid surveys were obtained. The characteristics of the sample are: (a) woman 55% and men 45%, and (b) From 17 to 30: 33%; from 31 to 50: 33%; 51 or older: 34%. To measure fear of Covid-19 disease, the scale of Nguyen et al (2020) was adapted. The intention to use various vaccines was also asked [CanSino (China), SputnikV (Russia), Moderna (USA), AstraZeneca (United Kingdom-USA)]. To measure this variable, the item developed by

Venkatesh and Davis (2000) on intention to use has been adapted. The measure used was an 11-point Likert-type scale, from no agreement (0 points) to total agreement (10 points).

Regarding the results, Table 1 shows the arithmetic mean and the standard deviation of the items for fear of the disease. As can be seen, the fear of being infected is high (6.60) and the fear of transmitting Covid-19 is even higher (7.86). Here we observe an interesting result from the ethical point of view: selfishness (fear of getting infected) is less than our fear of hurting other people (fear of transmitting covid-19). Table 2 shows the results of the items for the intention to use the different vaccines. This is an also interesting result, the vaccines developed by countries with greater cultural ties with Spain (the United Kingdom and the United States) have greater acceptance than vaccines developed by countries with fewer cultural ties (China and Russia).

Table 1. Arithmetic mean of the items on fear of Covid-19 disease

Items fear of the covid-19	Average
I am afraid of getting Covid-19	6.60
I am afraid of transmitting Covid-19 to others	7.86

Table 2. Arithmetic mean of vaccine intention

Intention to use vaccine	Average
I intend to use the <b>AstraZeneca (UK-EEUU)</b> vaccine	5.07
I intend to use the <b>CanSino (China)</b> vaccine	2.54
I intend to use the <b>Sputnik (Russia)</b> vaccine	2.14
I intend to use the <b>Moderna (EEUU)</b> vaccine	3.38

In Figures 1, 2, 3, and 4 we observe how fear of contracting Covid-19 and transmitting Covid-19 influence the intention to use the different vaccines.

The results show that for the AstraZeneca vaccine (UK-USA) both fear of getting Covid-19 and fear of transmittign are predictors of the intention to use and also the ability of fear of Covid-19 to explain the intention to use the vaccines is the highest ( $R^2 = 0.138$ ). Regarding the Moderna vaccine (USA), only fear of getting Covid-19 can explain the intention to use the vaccine. Besides, the ability of fear of Covid-19 to explain the intention to use these vaccines is the second highest ( $R^2 = 0.088$ ). For the CanSino (China) and Sputnik (Russia) vaccines, the behavior is very similar: (i) the ability of fear of Covid-19 to explain the intention to use the vaccines is lower than for the other vaccines ( $R^2$  Cansino = 0.046 and  $R^2$  Sputnik = 0.026), and (ii) only fear of infecting others has an influence.

In conclusion, we observe that as we have more interest in using a vaccine, fear becomes more important in the decision to vaccinate. That is, if a person has a low intention to use a vaccine, the fear caused by the news is of little importance to that person. But when you have a greater interest in using a vaccine, the fear caused by the news takes on greater importance.



Figure 1. AstraZeneca (UK-EEUU)

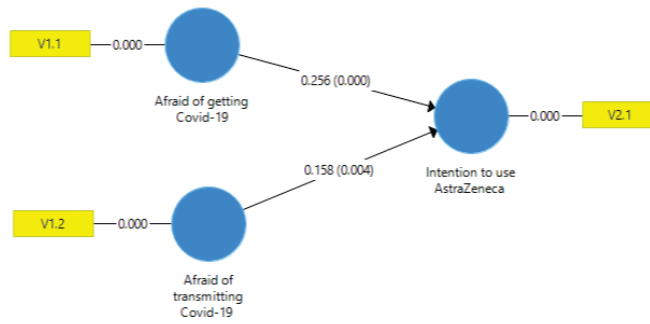


Figure 2. CanSino (China)

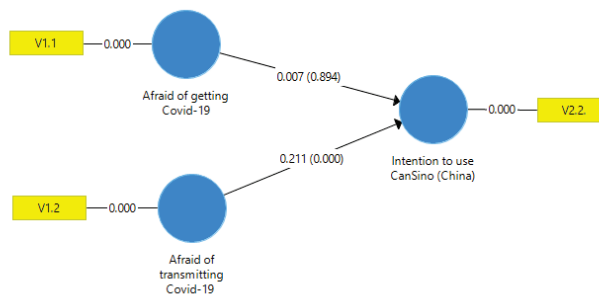


Figure 3. Sputnik (Russia)

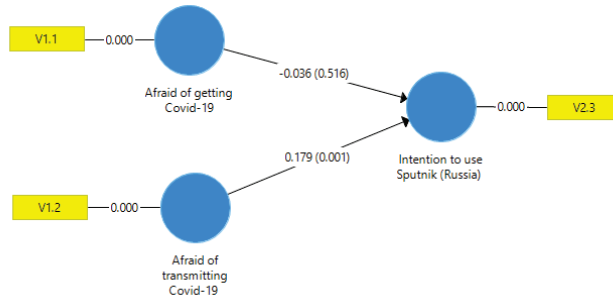
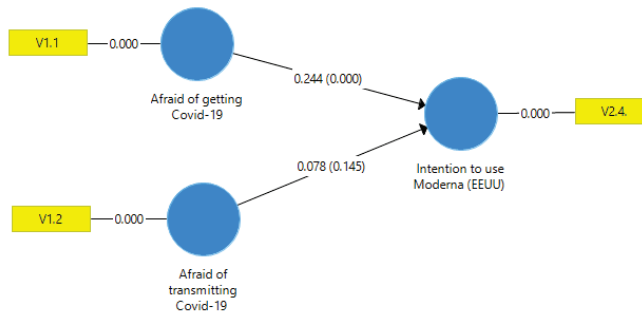


Figure 4. Moderna (EEUU)



**KEYWORDS:** digital influence, ethical, fear to covid-19, vaccine acceptance.

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## ACCEPTANCE OF WEARABLES FROM CONSUMER ETHICAL JUDGMENT

**Eva Reinares, Isabel Alvarez, Mario Arias-Oliva, Cristina Olarte-Pascual, María Alesanco-Llorente**

Universidad Rey Juan Carlos (Spain), Universidade Autónoma de Lisboa (Portugal),  
Universidad Complutense de Madrid (Spain), Universidad de La Rioja (Spain),  
Universidad de La Rioja (Spain)

eva.reinares@urjc.es; ialvarez@autonoma.pt; mario.arias@ucm.es;  
cristina.olarte@unirioja.es; maria.alesanco@alum.unirioja.es

### EXTENDED ABSTRACT

The human body has become a support for intelligent technologies as wearables (externally-worn intelligent devices, such as watches, bracelets, clothing, glasses and headphones). Wearables represent an expanding market, with a forecasts for the use indicate that the world market will reach 279 million units in 2023 and a compound annual growth rate of 8.9% (IDC, 2019), that has opened an ethical debate about their development, commercialisation, and use in modern society. According to the literature, this scenario poses ethical dilemmas in a variety of areas, including the social, economic, environmental, educational, moral and philosophical (e.g. Shipp et al., 2014; Li, 2015; Mok et al., 2015; Ferenbok et al., 2016; Hofmann et al., 2017; Segura Anaya et al., 2017; McCall et al., 2019; Kostick et al., 2019; Kreitmair, 2019; Olarte-Pascual, 2021).

Although the ethical issues have been approached from institutional and organisational perspectives, fundamentally using discourse methodology, few studies have taken a demand perspective about the influence of ethics on the acceptance and intention of using wearables (e.g. Hofmann et al., 2017; Segura Anaya et al., 2017).

The present study addresses this research gap by modelling the acceptance of capacity-enhancing wearable ITDs, using "ethical judgment" as an antecedent of intention to use. Ethical judgment has been defined as a cognitive process in which the individual must "judge which course of action is morally right" (Nguyen & Biderman, 2008, p. 628).

The results of this work advance the theoretical development of ethics as applied to the acceptance of new technologies. At the same time, the demand approach will establish operational implications that can help, while taking account of users' ethical judgments, guide the development and commercialisation of capacity-enhancing wearables.

In discussing, Ferenbok *et al.* (2016, p.95) stated that "wearable devices represent more than just a potential economic disruption, but, in a broader sense, a disruption of the ethics by which we live". Disruptive technologies, through a process of refinement, improvement and innovation, create new standards (Christensen *et al.*, 2018). Ethics allow the controversy between the potential benefits that can be achieved through technological progress, and the duty not to endanger this progress, to be addressed.

In the framework of ethical judgment, ethical evaluations of actions have been conceptualised as individual cognitive processes (Nguyen & Biderman, 2008). In turn, *psychological contract theory* conceptualises decision-making subjectively (Thompson & Hart, 2006). This theoretical basis can be used to address similar decisions made by individuals in the absence of absolute rules of what one can and cannot do (Goel *et al.*, 2016). Decisions and actions are often guided by applied ethical perceptions, rather than a complete understanding of what can or should be done (LaFollette, 2002;

Cohen & Wellman, 2005). In the sphere of circular evolutionary ethics, what an individual considers ethical influences his/her behaviour and, over time, the behaviours they observe influence what they believe to be ethical (Goel *et al.*, 2016). In the present study, we believe it is appropriate to analyse the impact of ethics on intention to use wearables on the basis of individuals' perceptions of what behaviours, from an applied ethical viewpoint, are appropriate (Thompson & Hart, 2006).

Reidenbach and Robin (1990) argued that individuals use more than one reason to make ethical judgments, and thus they established the multidimensional ethics scale (MES) used in the literature to explain the influence of ethical judgment on people's behavior. Shawver and Sennetti (2009) found theoretical problems in Reidenbach and Robin's (1990) scale, and thus proposed a new scale, which they called the Composite MES; this has five dimensions, "moral equity", "relativism", "utilitarianism", "egoism" and "contractualism" (deontology):

The **"moral equity"** dimension refers to the "individual perception of fairness and justice as well as what is right and wrong in its broadest sense" (Nguyen & Biderman, 2008, p. 628). According to Leonard *et al.* (2017), this dimension encompasses fairness, justice, rightness, and goodness. Hofmann *et al.* (2017), in a content analysis of 155 academic articles, clarified some ethical issues about the use of smart glasses in relation to justice; these authors concluded that, in relation to smart glasses, justice appears to be crucial for the successful development, evaluation, decision-making, implementation, use, and formation of knowledge and norms. Weber and Zink (2014) found that the use of smart glasses and other intelligent devices increases the digital divide and, in the sports field, Bozyer (2015) showed that these devices create unfair advantages for those who have access to the technologies because they can, in consequence, train more effectively. Wearables can have negative consequences, such as the creation of a social divide between those who can afford the latest innovative technology and those who cannot. **"Relativism"** refers to the perception that what is correct is based on guidelines/parameters embedded in social/cultural systems, rather than on individual considerations (Reidenbach & Robin, 1990; Nguyen & Biderman, 2008). Ferenbok *et al.* (2016) found that the most modern wearable computers, such as smart glasses, offer unprecedented portability and ability to capture images, and thus can go where no digital eye has gone before, which represents a departure from established social norms. **"Utilitarianism"** has been defined as "an action based on cost and benefit analyses, such that the action will bring about the greatest good for the greatest number" (Nguyen & Biderman, 2008, p. 628). It must be kept in mind that capacity-enhancing technologies might help in societal advancement and that impeding them could be considered unethical (Berger *et al.*, 2008). Wearables improve the quality of life of their users, promote lifestyle changes and save time and money (Segura Anaya *et al.*, 2017). These authors also found that, while wearables have considerable benefits, device dependency, and privacy and security concerns, are major challenges. In light of these potential problems, the balance between the costs and the societal benefits of technology must be analysed from a utilitarian perspective. **"Egoism"** has been defined as acting in a manner that promotes only one's own long-term self-interest (Nguyen & Biderman, 2008). This dimension focuses on the consequences for the individual (Reidenbach & Robin, 1990), and Leonard *et al.* (2017) concluded that the individual's intention to behave ethically is driven by the benefits that the behaviour will bring to him/her. Wearable technologies have been developed to improve, increase, and empower individuals. For example, smart glasses empower and improve their users' cognitive capacities, although this may provoke negative reactions in others (Hofmann *et al.*, 2017). **"Contractualism"** (deontology) refers to the "individual perception of what is right versus wrong based on notions of an implied contract that exists between business and society" (Nguyen & Biderman, 2008, p. 633). Reidenbach and Robin (1990) argued that this dimension reflects the deontological concept and encompasses notions of implicit obligations, contracts, duties and rules. It implies the existence of an unwritten, or tacit, contract between society and the individual, that influences all

his/her behaviours (Leonard *et al.*, 2017). Shipp *et al.* (2014) and Mok *et al.* (2015) examined the role of wearable cameras in the research field and evaluated the amount of data they provided to researchers and the related ethical concerns in regard to respect for personal autonomy, common well-being, trust in third parties, anonymity, confidentiality, privacy, beneficence (responsibility to do good) and non-maleficence (responsibility to avoid doing harm). According to Thierer (2015), societal and individual adaptation play key roles in the acceptance of wearables. Although great privacy and security challenges await, individuals and institutions will adjust in an evolutionary, resilient fashion, just as they have to earlier disruptive technologies.

Based on this theoretical background, the authors propose to advance the knowledge of the impact of ethical judgment and its dimensions on digital natives' intention to use wearable. Thus, as working hypothesis is proposed: Ethical judgment (moral equity, relativism, egoism, utilitarianism, contractualism) positively affects intention to use wearable.

To test the proposed hypotheses an online survey was undertaken with an international sample of 1,563 digital-native higher education students who assessed levels of technological competence.

The collected data were analysed through structural equation modelling (SEM), specifically, using the Consistent Partial Least Square (PLSc) technique.

To test the proposed hypotheses a sequential 2-step statistical process was followed: 1) Assessment of the measurement model. The measurement model was assessed by verifying the reliability and validity of the measurement scales; 2) Assessment of the structural model.

In the framework of new technology acceptance, the principal conclusion to be drawn from this work is that the ethical judgment construct has high explanatory power for digital natives' intention to use new capacity-enhancing wearable technologies ( $R^2 = 44.4\%$ ;  $Q = 0.184$ ).

"Utilitarianism" is the most important dimension for wearables (69.8%). We argue that that when more is known about new devices, such as wearables, ethical judgments focus more on whether they are useful to society in terms of their benefits (improved quality of life, lifestyle changes, time and money savings) vs their associated costs and inconvenience (device dependency, privacy and security concerns, among others) (Segura Anaya *et al.*, 2017), leaving other ethical aspects in the background, as the devices have already been assimilated and the objections overcome in the framework of circular evolutionary ethics.

The effect of "relativism" is negative, although not significant (-13.3%) for intention to use wearables. "Relativism" is based on the idea that "social and cultural systems are important in helping us define our ethical beliefs" (Reidenbach & Robin, 1990, p. 646). In this sense, for a known product, which has been socially accepted, and is not perceived as bodily invasive, such as wearables, this spread of opinion is not observed in digital natives (Pelegrín-Borondo *et al.*, 2017). The "moral equity" ethical judgment dimension had a positive influence on intention to use of wearables. However, was not significant probably because digital natives' ethical judgment is almost all explained by the "utilitarianism" dimension. This result contrasts with those of Hofmann *et al.* (2017) and Weber and Zink (2014), which showed that smart glasses and other intelligent devices widen the digital divide, which raises the issue about whether such a gap is morally fair.

The influence of "contractualism" on intention to use wearables is negative and significant. In other words, contrary to expectations, "contractualism", the implicit contract that exists between the individual and society, inversely influences intention to use wereables. We can say that, although wearables are a known quantity, and that their use is expected to increase significantly in the coming years (IDC, 2019), there is no defined social norm in favour of, or against, these devices, so the related social pressure might be positive or negative.

The results of this study allow us to establish a series of operational implications to guide and design the responsible development and commercialisation of wearables. The first implication is that any organisation that wishes to participate and compete in this sector must develop an ethical strategy based on the ethical judgments of the users. It is also important for organisations to know how intention to use can be strengthened by addressing the dimensions of ethical judgment. The intensity and the direction of the effects of the five ethical judgment dimensions on intention to use wearables suggest the following practical implications will help promote their acceptance, and prevent their rejection, by digital natives: (a) Companies should focus their efforts on the “utilitarianism” dimension, which explains most of intention to use wearables, due to its high explanatory power. To promote the use of wearables, the marketing community must continue to emphasise their utility for society, in line, for example, with the benefits reported by Segura Anaya *et al.* (2017), in terms of improved quality of life, and the optimisation of productivity and economic and time resources. On the other hand, to prevent rejection, the marketing axis must focus on reducing or eliminating societal perceptions of privacy and security problems related to the use of these devices. In addition, due to the importance of the “utilitarianism” dimension, public powers must guarantee the rights of individuals in this matter. Kreitmair (2019) evaluated the ethical dimensions of wearable technologies based on their contribution to the “good life” of the user, in accordance with the Aristotelian “human flourishing” concept, and argued that, as a criterion of consumption ethics, that the momentum of utilitarianism should not be arrested. However, McCall *et al.* (2019) noted the widespread marketing claims promoting the use of wearables, promising health, personal cognitive and well-being benefits, absent of any warnings about possible risks and side effects. We believe it is necessary that, in line with the ethical considerations of Kostick *et al.* (2019) about the effects of these type of claims, to guarantee informed choice the commercial exploitation of the “utility” dimension be supported by scientific evidence.

**KEYWORDS:** Composite MES, Ethical judgment, Technology acceptance, Wearables.

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## **5. Marketing, Technology and Ethics**

Track chair: Jesús García de Madariaga, Universidad Complutense de Madrid; Cristina Olarte Pascual, University of La Rioja; Eva Reinares, Universidad Rey Juan Carlos; Joaquín Sánchez Herrera, Complutense University of Madrid



## ETHICAL CONCERNS ABOUT FEAR APPEALS IN SOCIAL ADVERTISING

Ingrit Moya, Jesús García-Madariaga, María-Francisca Blasco

Complutense University of Madrid (Spain)

ingritvm@ucm.es; jesgarci@ucm.es; fblasco@ucm.es

### EXTENDED ABSTRACT

Fear is one of the most basic emotions humans can experience (Bartikowskia, Larocheb and Richard, 2019). It is a negative emotion associated with a high level of arousal that is caused by a threat that is perceived to be substantial and personally relevant to individuals (Ortony and Turner, 1990). Due to fear activates a person's sense of risk and vulnerability, fear appeals have been used as an advertising appeal on the basis that it increases the motivation of the subject to accept the message and follow the recommendations of the campaign (Witte and Allen, 2000).

According to Hoekstra and Wegman (2011), the shocking effect of fear appeals may attract the attention of the audience and through a "mirror effect", allows them to become aware of the risks derived from dangerous behaviours. Therefore, fear could help people to raise awareness about the problem and its consequences. This is the main argument of using fear appeals in campaigns targeting the most pressing public health problems, focusing on a wide variety of disease prevention and/or health promotion behaviours such as condom usage to prevent HIV/AIDS, smoking cessation, reduction of alcohol usage while driving, promotion of flossing for dental hygiene, using sunscreen to prevent skin cancer, breast self-examinations, exercise promotion, and so on (Parry et al., 2013).

However, fear appeals raise serious issues of ethics. According to Beauchamp (1988), fear appeals are unethical because they expose audiences—unwillingly—to graphically upsetting images. Besides, there is a problem of collateral damage that has also to be considered. Mass-media messages inevitably reach and often annoy, unintended audiences who are not in the market for particular goods or behaviours (Hackley & Kitchen, 1999). Additionally, ethical theory and professional codes of conduct suggest that there are potential dangers in using fear appeals. Most significantly, there is evidence that fear messages may encourage maladaptive threat-avoidance behaviours that may, in themselves, be damaging to health (Hasting, Stead and Webb, 2004).

Different models have been proposed to describe the cognitive and emotional processes involved in fear processing. Among them three can be distinguished as the most representative: (1) The Curvilinear Model (Janis, 1967; Quinn, Meenaghan and Brannick, 1992), derived from drive theories, which propose that fear can persuade up to a certain threshold of tolerance, beyond which it becomes counterproductive; (2) The Parallel-response Model (Leventhal, 1970), which proposes that emotional and cognitive factors act independently to mediate behaviour, with emotional factors affecting internal attempts to cope with the threat (e.g., by rationalizing or rejecting it), whereas cognitive factors determine whether the recommended behaviour change will happen; and (3) The Protection Motivation Theory (PMT) (Rogers, 1983), which proposed a four-way interaction between the dimensions of threat and the dimensions of efficacy (Severity × Susceptibility × Response Efficacy × Self-Efficacy).

Additionally, researchers have developed various theories to explain how fear appeals affect advertising effectiveness. Those theories propose two distinctive approaches: (1) Studies assuming a linear relationship between fear intensity; and (2) Studies related to the rejection of the message that

assume a curvilinear relationship between the intensity of fear and the change in attitude (Barth and Bengel, 2000).

The findings of the different models and theories on fear processing and effectiveness have undoubtedly provided an amazing advance in the topic. However, the lack of conclusive results on the effectiveness of using fear images in social advertisements, along with the fact that the evidence provided by most of the researches is mainly based on results from declarative studies, it represents a research gap that needs to be addressed.

Based on the aforementioned, this research focuses on analysing the effectiveness of the use of fear appeals in social advertising through the application of a combination of declarative and neuroscientific research methodologies. To achieve this purpose, we will conduct an experiment to analyse the conscious and unconscious reactions of a sample of ninety people (45W-45M), aged between 18 and 30 years toward two TV advertisements. While the participants watch the ads, their unconscious reaction will be recorded by using electroencephalogram (EEG), galvanic skin response (GSR) and eye-tracking (ET). Besides, issues related to their attitudes toward the tested ads will be questioned.

To test the influence of fear appeal on advertising effectiveness, the sample will be divided into two groups, to which each participant will be assigned. Each group will correspond to one of the two conditions to test: Explicit Ad (including fear images) and Non-Explicit Ad (not including fear images), in such a way that there will be two groups of 45 subjects each.

The stimulus selected for this study is the advertisement for the “Memories” campaign produced by the R\* Agency for the General Directorate of Traffic of Spain (DGT) in the summer of 2013. In condition 1 (Explicit Ad), the subjects will see the full 30-second video of the ad, showing explicit images of a car accident on the road in the final 13 seconds. In condition 2 (Non-Explicit Ad), the final 13 seconds will be edited and replaced by the brand image of the DGT, eliminating all the sounds related to the crash.

The stimulus was selected on the basis of the importance of prevention of road accidents in Spain. According to the Accident Balance of the DGT, in 2019 1,098 people died in fatal accidents on Spanish roads, which represents 15% of the total dead for external causes. These figures reflect the worrying situation of road accidents in Spain, a serious outlook aggravated by the consumption of alcohol and/or drugs, causing 65% of accidents involving drivers between 25 and 54 years of age (DGT, 2020). To reduce the incidence of this problem, in the last 10 years the national government has invested millions of euros in awareness campaigns all of them with a fear appeal as a common denominator, however, nowadays there is still no evidence to support the effectiveness of this approach.

Although this is exploratory research and its scope is limited to only one of the multiple public health issues, our results will provide evidence on the effectiveness of the use of fear appeal in the advertising oriented to prevent dangerous behaviours behind the wheel. Based on this evidence, it will be identified valuable insights to contribute to the design and implementation of ethical social campaigns that truly serve the objective of sensitizing the population about the problem and promoting changes in their behaviour.

Additionally, according to Mostafa (2018), due to its recent adoption in marketing, research on fear appeal in advertising by applying neuroscientific techniques is still scarce. Therefore, the understanding of the way in which the audience processes the shocking images of the prevention advertisements applying neuroscientific techniques will lay the foundations for future studies in which it will be possible to delve into the study of other conditioning factors of social advertising effectiveness.

**KEYWORDS:** advertising, social advertising, ethics, neuromarketing.

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## A FUZZY SET QUALITATIVE COMPARATIVE ANALYCPS OF VARIABLES INFLUENCING THE ACCEPTANCE OF LIFE SETTLEMENTS IN SPAIN

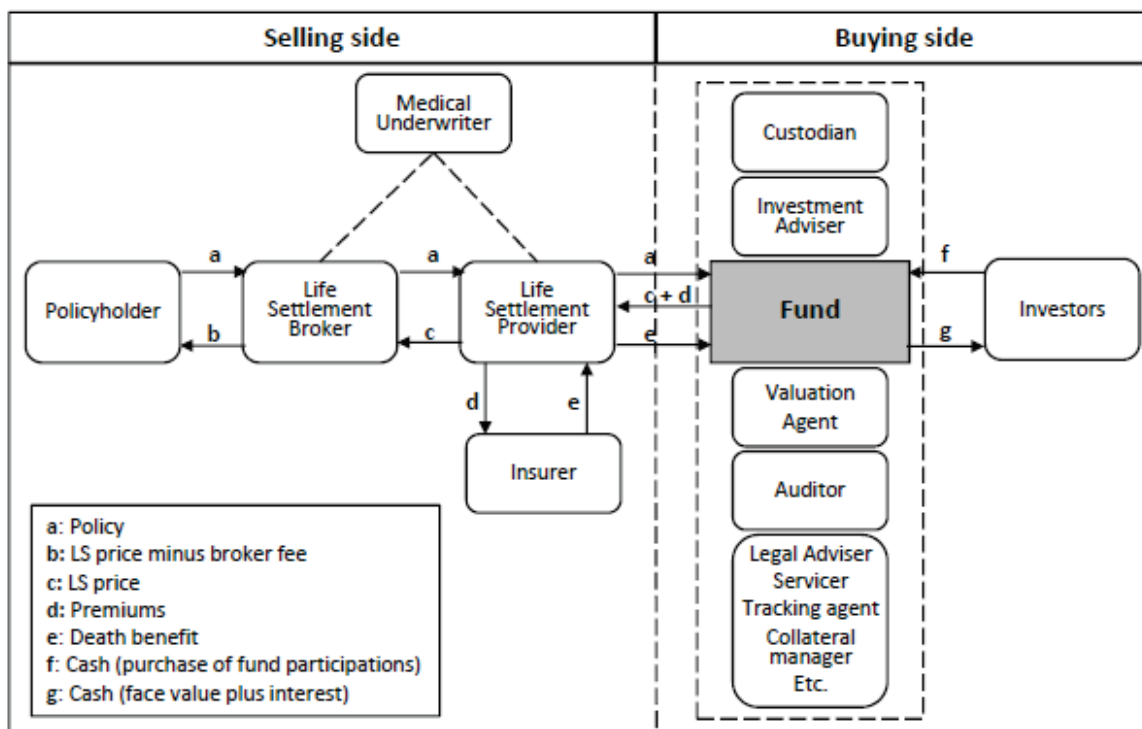
**Jorge de Andrés-Sánchez, Laura González-Vila Puchades, Mario Arias-Oliva,  
Rua Orlando Lima**

University Rovira i Virgili (Spain), University of Barcelona (Spain),  
Complutense University of Madrid (Spain), CEOS.PP/ISCAP/Polytechnic of Porto (Portugal)  
jorge.deandres@urv.cat; lgonzalezv@ub.edu; mario.arias@ucm.es; orua@iscap.ipp.pt

### EXTENDED ABSTRACT

A (LS) is an agreement in which a life insurance policyholder obtains an amount by transferring its ownership to an investor. The buyer acquires the right to obtain the benefits and the obligation to pay the outstanding premiums (Giacalone, 2001). Figure 1 shows a life settlement negotiation process. This paper investigates the variables influencing the acceptance of life settlement (LS) agreements in insurance markets where they still do not exist. In the study two assessed variables are linked with ethical dimensions of life insurance decision-making.

Figure 1. Life settlement negotiation process

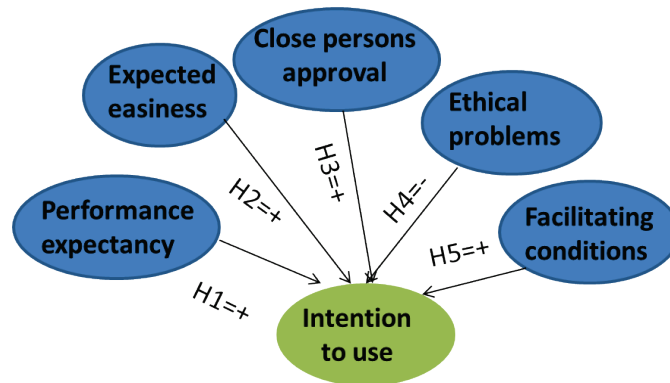


Source: Own elaboration, adapted from Braun et al. (2016) and Andrés-Sánchez and González Vila (2021)

In many countries, as Spain, these agreements do not exist nowadays (Andrés-Sánchez and González-Vila, 2021). So, from the perspective of a Spaniard insured they are a novel financial technology. This paper assesses the variables that may explain the development of LSs in Spain by using UTAUT model

by Venkatesh et al. (2003) and Venkatesh et al. (2012). It is depicted in Figure 2 that is based on Arias-Oliva et al. (2019) where it is studied cryptocurrencies acceptance in Spain. We propose a slight extension due to the fact that moral and ethical dimensions of LSs are more complex. Ethical dimensions of life settlement acceptance are reflected by the construct “close persons approval” that is based on “social influence” of UTAUT models and “Ethical problems” which is linked with moral concerns that specifically attain LSs.

Figure 2. Proposed theoretical model for the intention to use LSs



Source: Adapted from Arias-Oliva et al. (2019)

Performance expectancy (PE) influence on Intention of use (IU) is because a seller can obtain a better price by means of a LS than by surrendering it (Doherty and Singer, 2004).

Effort expectancy (EE) is the perceived difficulty to agree a LS. Following Arias-Oliva et al. (2019), in the questionnaire users are asked about how easy will be for them using LSs if needed. So, we work over the basis of a positive relation with IU. Notice that LSs are as it is shown in Figure 2, trades with complex architecture. This fact might suppose a problem for the expansion of LSs trades.

Close people approval (CP) is built up over the basis of “social influence” in Arias-Oliva et al. (2019). Its positive relation with the decisions on adopting new financial technologies is shown in Warsame and Ireri (2018). Notice that the purpose of life insurance is giving an economic protection to people close to the policyholder and so, their direct opinion may be important to decide the selling by her/him.

Ethical problems (EP) of LSs are inherent of decision making on new technologies when moral concerns come clear (Pelegrín-Borondo et al., 2018). In LSs they come because of insurable interest is lost and are amplified due to moral hazard and adverse selection problems (Gatzer, 2010, Andrés-Sánchez, 2020). These reasons lead us to assume a negative relation between this construct and output variable.

Facilitating conditions (FC) with (+) relation with IU are the necessary organizational and technical infrastructure to use a specific technology (Venkatesh et al., 2003).

The data collection has been done by submitting a structured and on-line survey to people who had a university degree preferably in any branch of social sciences (economists, lawyers, sociologists...) and whose professional activity is embedded in financial sector (e.g. they are insurance brokers or financial advisors). Likewise, people in questionnaire is over 35 years and have a monthly income of 2000€ and above. So, it ensures that asked persons have enough income to be life policyholders and may perceive LSs as an interesting way to sell their policy if needed. The sample available is small, since there are only 45 answers where 21 are from men and 24 from women.

The scale for all the common items with Arias-Oliva et al. (2019) is adapted from their questionnaire. We propose splitting construct EP in two items, which are related to ethical issues in both sides of the transaction, sellers and buyers. We have checked that Cronbach alpha is always acceptable in all the constructs. It oscillates between 0.837 for IE and 0.960 in EE. Subsequently the value of constructs has been fitted from the factorial analysis punctuations of their items. In all the cases the values of Kaiser-Mayer-Olkin statistic is above 0.5 and Barlett’s sphericity test rejects the identity of correlation matrix in factorial analysis.

A suitable method to deal with small samples is fuzzy set Qualitative Comparative Analysis (fsQCA) by Ragin (2008). It is very common sociological studies, but also there is a great deal of applications in management and marketing (Kraus et al, 2017). Calculations are performed with fsQCA 3.1. by Ragin (2018). Notice that The value of the construct for an element of the sample is standardized punctuation in the construct first principal component. Subsequently we have calibrated membership function of constructs from standardized punctuations. We have considered for the 10%, 50%, 90% percentile of registered punctuations a membership value 0, 0.5. and 1 respectively within the calibrating function of fsQCA 3.1.

Notice that the sample is not too wide and the number of possible configurations in antecedent by taking 5 causal variables is  $2^5=32$ . As a previous step to fit Boolean function  $IU= f(PE, EE, CP, EP, FC)$  we calculate consistency and coverage of each individual variable and its negation on IU in Table 1. Notice that all variables attain a consistency above 0.75 i.e. following Ragin (2008) in all the cases they are “almost always” necessary to produce IU. As we expected, the consistency of PE, EE, CP and FC is greater than their negation when we assess IU. However, despite we suppose a negative relation of EP with IU, in our sample EP presents a greater consistency to explain IU when is not negated.

Table 1. Necessity analysis on IU

Necessity analysis on IU		
Variable	Consistency	Coverage
PE	0.860	0.753
~PE	0.522	0.539
EE	0.891	0.687
~EE	0.540	0.664
CP	0.815	0.727
~CP	0.585	0.592
EP	0.765	0.678
~EP	0.700	0.713
FC	0.811	0.722
~FC	0.660	0.669

QCA parsimonious, intermediate and complex solutions (CQA-PS, CQA-IS and QCA-CS) are in Table 3. It is commonly stated in fsQCA that CQA-IS is the most used solution (Thiem, 2019). It supposes a compromise between the complexity of CQA-CS and CQA-PS, which is simpler and easier to understand but needs from all possible counterfactuals that made terms in solutions as easy as possible, despite some of them may be have a difficult theoretical justification. On the other hand, to build up QCA-IC we have to take into account only theoretically well-founded counterfactuals. To obtain QCA-IC we suppose that PE, EE, CP and FC (EP) contribute to IU only when they are present (absent).

In the intermediate solution only two terms present a consistency above 0.75,  $EE*\sim FC$  and  $PE*FC$ . So, these terms allow accepting H1 and H2 (the sign of PE and  $EE\&$  is as we expected) but rejecting H5 (the



presence but also the absence of FC is present in the intention to use LS). The solutions CP and ~EP suppose not rejecting H3 and H4. However, notice that the consistency of both solutions is weak (<0.75), i.e. this finding can be interpreted from statistical point of view as a fact with low significant level.

Table 2. QCA-CS, QCA-IS and QCA-PS for the model IU= f(PE, EE, CP, EP, FC)

<b>Complex Solution</b>	raw coverage	unique coverage	consistency
EE*FC*~EP	0.566	0.026	0.833
EE*~FC*EP	0.526	0.019	0.836
~PE*~EE*~FC*~EP	0.365	0.000	0.787
~PE*~EE*CP*~EP	0.345	0.000	0.797
PE*~CP*~FC*~EP	0.392	0.027	0.891
~PE*~EE*CP*EP	0.384	0.021	0.864
PE*CP*FC*~EP	0.470	0.004	0.896
PE*~EE*~CP*FC*EP	0.312	0.000	0.866
PE*EE*CP*FC	0.640	0.024	0.841
PE*EE*CP*EP	0.568	0.004	0.872
	coverage:	0.923	
	consistency:	0.710	
<b>Intermediate solution</b>	raw coverage	unique coverage	consistency
~EP	0.700	0.022	0.713
CP	0.815	0.039	0.727
EE*~FC	0.588	0.020	0.813
PE*FC	0.721	0.005	0.824
	coverage:	0.968	
	consistency:	0.652	
<b>Parsimonious solution</b>	raw coverage	unique coverage	consistency
~EP	0.700	0.007	0.713
CP	0.815	0.012	0.727
EE*~FC	0.588	0.001	0.813
PE	0.860	0.022	0.753
~EE*FC	0.451	0.000	0.820
	coverage:	0.985	
	consistency:	0.634	

Thiem (2019) also claims to search for causal relations using exclusively QCA-PS. He considers that conservative and intermediate solutions introduce matching artificial data which QCA supplements the empirical data with. Yet, these artificial data often lead to inferences that violate the very causal structure that had generated the empirical data in the first place and that QCA is meant to uncover. Table 2 shows again the solutions CP and ~EP that does no contradict H3 and H4 but present low consistency (<0.75). The solution PE, whose consistency is >0.75 and coverage >0.860 allows accepting H1. Likewise, the solutions with greater consistency (>0.8) are EE\*~FC and ~EE\*FC i.e. nor for EE neither for FC we can accept H2 and H5 respectively.

So, by combining QCA-IS and QCA-PS we can conclude that the most decisive variable in the IU LSs is PE. Likewise, in the case of FC, its soundness is clearly rejected since in both QCA solutions FC is presented in two recipes with contradictory sign. For the ethical factors (SI and EP) we can conclude that H3 and H4 are weakly accepted. They are present in a recipe with the expected sign but their consistency is <0.75. Finally, the role of EE in IU LSs is unclear. Whereas QCA-IS leads to a strong acceptance of H2, QCA-PS suppose a clear rejection of that hypothesis.

**KEYWORDS:** life insurance, insurance secondary markets, life settlements, fuzzy set QCA.

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## WOKE WASHING IN THE WAKE OF COVID-19: A CASE STUDY ON AMAZON

**Alice Crowley**

University of South Australia (Australia)

alice.gm.crowley@gmail.com

### EXTENDED ABSTRACT

The magnitude of the global recession caused by the outbreak of COVID-19 is unprecedented in modern times. In May, the Asian Development Bank (2020) announced that COVID-19 could cost the global economy between US\$5.8 and US\$8.8 trillion. Between April and June 2020, the United States' economy contracted 32.9%, the United Kingdom's contracted 20.4%, and Japan's contracted 27.8% (BBC News, 2020; Dennis, 2020). Additionally, Australia and South Korea entered their first recession in several years (Dennis, 2020). Social and travels restrictions have also reduced the workforce in most economic sectors (Nicola et al., 2020). The hardest hit of these include hospitality, tourism, entertainment & arts, and sports & recreation (Wilkins, 2020). Social restrictions have also triggered the collapse of several well-known businesses, such as the Arcadia fashion group (owner of Topshop and Miss Selfridge), airline Virgin Australia and Swedish stationary giant Kikki.K (Davey, 2020; Nine News Australia, 2020; Virgin Australia, 2020).

However, one company which has reaped benefits from COVID-19 is online Seattle-based retailer Amazon. With lockdown measures causing people to stay home, people worldwide turned to e-commerce platforms as a means of purchasing products and services. In April 2020, *The Guardian* reported that Amazon customers were spending almost US\$11,000 per second on the website. The company's founder and chief executive, Jeff Bezos, increased his personal wealth by US\$70bn since the start of the pandemic, to US\$185bn as of December 2020 (Neate, 2020). It has been widely discussed that Bezos could give US\$105,000 to every Amazon employee and would still be as wealthy as he was before the pandemic (Reich, 2020). In the third quarter of 2020, the company earned US\$6.3bn – the highest quarterly earnings in Amazon's 26 year history (Rana & Dastin, 2020). It is therefore unsurprising that Amazon has been described as "Wall Street's biggest winner from coronavirus" (Randewich, 2020).

Despite its financial success, Amazon has come under fire for its treatment of employees throughout the pandemic. The coronavirus outbreak has highlighted how much the economy depends on frontline workers such as those in healthcare, delivery, food services and public transportation (Crane & Matten, 2020). Although some politicians and public figures have applauded these employees, frontline workers have been continually exposed to the virus, with some organisations failing to take the protections required to protect employees (The Lancet, 2020). This is especially true when it comes to Amazon, with the retailer being accused of lacking adequate deep cleaning after there were confirmed COVID-19 cases at its fulfilment centres (Sainato, 2020); failing to provide personal protective equipment, hand sanitiser and socially distanced workspaces (Pound, 2020); and a lack of paid sick leave (Woodward, 2020). Some Amazon employees shared their stories of mistreatment with the news media, arguing the company priorities gruelling productivity targets over employee safety.

Amazon has continually denied these allegations. Senior Vice President Tim Bray resigned from the company and responded to the accusations in an open blog post by stating "the justifications were laughable; it was clear to any reasonable observer that they were turfed for whistleblowing" (Bray, 2020). In March 2020, when a New York worker organised a walkout to protest what he argued were

inadequate safety measures, he was fired by Amazon. A leaked memo illustrates that Amazon's general council wanted to portray the worker as "not smart or articulate" (Soper & Day, 2020; Wong, 2020). In response to growing accusations, the retailer launched television advertisements and a docuseries which portrayed Amazon as being deeply concerned with the safety of its 'retail heroes'. Amazon's Twitter page shows a number of posts which represent the retailer's employees as happy and well-supported, as well as highlighting the Covid-safe practices enforced within the company's facilities. When contrasting these social media posts to the allegations made by employees, it suggests that Amazon's internal behaviours may not align with the image it wishes to project.

In today's business environment, consumers increasingly expect companies to be responsible corporate citizens, in addition to providing high quality goods and services (Diddi & Niehm, 2016; Fuentes-García, Núñez-Tabales, & Veroz-Herradón, 2008; Hess, Rogovsky, & Dunfee, 2002). A 2018 survey revealed that 64% of consumers would reward firms that engage in some kind of social or political activism (Edelman, 2018). As a result, businesses are increasingly seeking to be 'activists', by attempting to encourage social-political change whilst also seeking reputational and economic benefits (Vredenburg, Kapitan, Spry, & Kemper, 2020). Brand activist initiatives are typically run in conjunction to Corporate Social Responsibility (CSR) campaigns, through which actions and policies which take into account the triple bottom line are implemented (Aguinis, 2011). Some research has suggested that CSR efforts are positively correlated with an increase in profit (Goering, 2014; Lin, Yang, & Liou, 2009; Orlitzky, 2008; Porter & Miles, 2013) and brand reputation (Brammer & Pavelin, 2006; Navarro, 1988; Waddock & Graves, 1997).

With these economic incentives, however, also comes the potential for brands to act inauthentically to obtain greater profits. Sobande (2019) and Vredenburg, Spry, Kemper, and Kapitan (2018) discuss 'woke washing', which refers to inauthentic brand activism whereby a brand's practices do not align with their messaging. A prominent example of this is Nike's decision to make Colin Kaepernick the face of their 30th anniversary advertising campaign (Duarte, 2020). At face value this was a meaningful stand for racial justice, but public records indicate that in 2019 less than 10% of Nike's 300-plus vice-presidents worldwide were black (Nike, 2020). The growing use of social media to promote CSR initiatives and ethical conduct makes it easier for brands to capitalise off current social issues with the sole goal of creating profits. This is prevalent in the COVID-19 pandemic, where some businesses have sought to profit from the crisis by inflating prices or making misleading claims about products and services (He & Harris, 2020).

COVID-19 has put companies under a microscope for their commitment to ethical business conduct and CSR. Based on the allegations made by employees, it is reasonable to suggest that Amazon may have chased short-term profit at the expense of employee health and safety. The marketing campaign the company ran which portrayed Amazon as being concerned with the safety of its 'retail heroes' implies the company may have engaged in its own 'woke washing'. What remains unknown is how effective this marketing campaign was in convincing consumers that Amazon's conduct aligns with the values it promoted itself as having. The goal of the full paper is to investigate how Amazon uses the values of employee health and safety to woke wash their online marketing campaign and to investigate users' response to it. The full study will collect the posts tweeted by Amazon on Twitter between 1<sup>st</sup> February to 30 December 2020, in addition to users' responses to these posts. A critical discourse analysis will be conducted on Amazon's Twitter posts to investigate how the company represented itself and its employees whilst allegations of employee mistreatment accrued in the media. A content analysis will also be conducted on users' Twitter replies to shed light on how online audiences responded to the campaign. User responses to Amazon's posts which are favourable about the company and their practices will be coded as 'positive'. Consider the example: "LOVE Amazon! Thank you! Please be safe though, we're thinking of you..." (Ieshom76, 2020). Responses to Amazon's posts

which are neither favourable or unfavourable about the company will be coded as 'neutral'. For example: "I think we have all shown our gratitude for Amazon associates by spending a considerable amount of money there- despite our reluctance - because of the convenience. I just hope Jeff gives these workers a meaningful raise for their hard work!" (zagnut427, 2020). Additionally, responses which are unfavourable about the company will be labelled 'negative'. For example: "Seeing that it's #GivingTuesday, maybe you should give your employees better wages and working conditions instead of a meaningless thank you" (TLSuperGal, 2020). User responses may also be categorised as 'unrelated' if the user tweets about something irrelevant to Amazon's post (such as a complaint about a delay in the delivery of an order) or 'unknown' if there is not enough information to ascertain the orientation of the user's response.

The objective of the paper is to offer a unique and topical case study on how Amazon has engaged in woke washing to appeal to their consumers in light of the pandemic, and to explore how online Twitter users responded to this campaign. It has been predicted that Covid-19 will increase precarious work conditions amongst all workers, but particularly those deemed essential (Kniffin et al., 2020). Thus, it is important to understand how these essential workers are represented in the online media by their employers vis-à-vis how they are treated, and to reflect on how effective these representations may be in shaping the perceptions of consumers.

**KEYWORDS:** woke washing, social media, marketing, Covid-19, Amazon.

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## **DOES THE NEW *MOBILE-ASSISTED-SHOWROOMER* CONSUMER HAVE ETHICAL DILEMMAS? IDENTIFYING THE ETHICAL DILEMMAS IN THE BEHAVIOR OF THE *MOBILE-ASSISTED-SHOWROOMER* CONSUMER**

**María Alesanco-Llorente, Aurea Subero-Navarro, Cristina Olarte-Pascual, Eva Reinares-Lara**

Universidad de La Rioja (Spain), Universidad de La Rioja (Spain),  
Universidad de La Rioja (Spain), Universidad Rey Juan Carlos (Spain)

maria.alesanco@alum.unirioja.es; aurea.subero@unirioja.es; cristina.olarte@unirioja.es;  
eva.reinares@urjc.es

### **EXTENDED ABSTRACT**

A technology is considered disruptive when it changes the basis of the competitive game by introducing a dimension where products did not previously compete (Danneels, 2004). In the case of commerce, disruptive technologies are constantly emerging aimed at both, supply, and demand (augmented reality, virtual reality, digital wallets, beacon networks, wearables, insideables, robots, etc.), to improve customer service, facilitate their purchasing decisions and lead the sector into an omnichannel environment. Offering a seamless shopping experience where the barriers between online and offline world are broken (Verhoef et al., 2015) is the maxim of the omnichannel strategy and technological devices are its great ally (Mosquera *et al.*, 2018)

In this context, the irruption of smartphones and their technological applications in the purchase process has resulted in an "*always connected*" consumer (Fernández-Viejo *et al.*, 2018). In the situation we are in, after the appearance of COVID-19, 66% of consumers have declared to use the smartphone inside physical shops in the different stages of the shopping journey (Capgemini, 2020). For example, smartphones are used in-store to compare prices, to look for opinions about a product, to redeem discount coupons, to pay, to see how a garment fits without trying it on or a show in the shop window using augmented reality, etc. This behaviour is known as showrooming (Sit *et al.*, 2018), where product information is collected in the physical shop and the purchase is made through online channels (Schneider and Zielke, 2020). More specifically, the smartphone-showrooming binomial leads to a new category of consumer called *mobile-assisted-showroomer* (MAS) (Sit *et al.*, 2018) who seeks an omnichannel (Mosquera *et al.*, 2018) and an autonomous shopping experience (Lazaris *et al.*, 2015) by shopping via smartphone while visiting physical shops (Fernández-Viejo *et al.*, 2020).

Previous literature has distinguished between the competitive and traditional showroomer consumer (Gensler *et al.*, 2017). The difference between them lies in the retailer where the purchase is made. While the competitive showroomer seeks product information from retailer A and buys online from retailer B, the traditional (or loyal) showroomer changes only the channel but not the retailer (Schneider and Zielke, 2020). Previous literature indicates that in-store smartphone use is an important indicator of competitive showrooming behaviour (Koenigstorfer and Groeppel-Klein, 2012; Rapp *et al.*, 2015), so this study assumes that MAS presents this behaviour.

Competitive showrooming inherently implies an ethical component (Burns *et al.*, 2019). This behaviour involves purchasing a product without a payment to the retailer from whom we take information and consumers are expected to be less likely to participate in activities they consider unethical (Babin and Babin, 1996). But does the new consumer *Mobile-Assisted-Showroomer* have these ethical dilemmas, or does he or she intend to continue to behave in the same way? What is clear is that this technology

has modified traditional business models (Luo *et al.*, 2014; Mosquera *et al.*, 2018), challenging the dominant ethical and moral patterns (Lin *et al.*, 2020). In this sense, smartphones stimulate online shopping within the physical shop itself (Lazaris *et al.*, 2015) and are responsible for impulsive behaviour (Fernández-Torrice *et al.*, 2018). These consumers prefer to interact with their smartphones than with the sales staff in the shop (Mosquera *et al.*, 2018). It has been shown that involving shop personnel in the consumer's MAS purchase process generates distrust and uncomfortable behaviour when their consumption habit is discovered (Sit *et al.*, 2018).

In the field of the circular evolution of ethics what an individual considers ethical influences his or her behaviour and, over time, the behaviours he or she observes influence what he or she believes to be ethical (Goel *et al.*, 2016). What has happened in the case of the smartphone in the physical shop is that it has gone from being a socially unapproved behaviour (even in many shops there were signs prohibiting its use) to being a standardised and accepted behaviour. In a recent study we found that 79% of the Spanish population declares to use/consult the smartphone in their purchase process in the physical shop. From the point of view of applied ethics, it is known that decisions and actions are often guided by specific ethical perceptions of the context rather than an absolute consideration of what can or should be done (Cohen, 2005; LaFollette, 2002). In addition, and according to the *Psychological Contract Theory*, decision making is subjective, consumers make decisions like those made by other individuals in the absence of absolute rules of what can and cannot be done (Thompson, & Hart, 2006; Goel *et al.*, 2016).

The new omnichannel environment makes it easier and more convenient for consumers to use their smartphones at the point of sale. This use allows the offerer to have perfect information about the consumer who has accessed his open network at the point of sale. Is the MAS consumer aware of the information he is giving away? Does he or she reflect on the risks related to the use of smartphones? It should be noted that the use of smartphones, in general, entails ethical dilemmas, such as those arising from security and data protection issues and informed consent. We must also ask ourselves about the possible change in behaviour and the autonomy of the consumer. Is the consumer more dependent on the information provided by his or her mobile phone and, therefore, less autonomous and free? All this would have an effect on personal identity and resource allocation. Ethical beliefs depend on individual factors such as gender, age, educational level, as well as certain situation-specific factors (Ford, & Richardson, 1994). It is clear that a decade ago the ethical beliefs about the use of the smartphone in the shop were clearly different from those of today.

To understand MAS behaviour and to answer all the questions raised, this research is based on the Multidimensional Ethics Scale (Reidenbach and Robin, 1990) which considers that individuals use *five dimensions to make ethical judgements*: "moral equity", "relativism", "utilitarianism", "selfishness" and "contractualism". The MES has been used in the context of consumer behaviour (Nguyen, 2008) and in the field of acceptance of disruptive technologies (Reinares-Lara *et al.*, 2018; Arias-Oliva *et al.*, 2020; Olarte-Pascual *et al.*, 2021). The results of this research have important academic and practical implications.

**KEYWORDS:** Mobile-Assisted-Showroomer, Showrooming, Multidimensional Ethics Scale, Smartphone.

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## DIGITAL MARKETING ETHICS EDUCATION IN SPAIN

**Mario Arias-Oliva, Teresa Pintado Blanco, Antonio Pérez-Portabella,  
Araceli Rodríguez Merayo<sup>2</sup>**

Complutense University of Madrid (Spain), Complutense University of Madrid (Spain),  
Universitat Rovira i Virgili (Spain), Universitat Rovira i Virgili (Spain)

mario.arias@ucm.es; tpintado@ucm.es; antonio.perezportabella@urv.cat; araceli.rodriguez@urv.cat

### EXTENDED ABSTRACT

Digital marketing is an emerging discipline. The application of all technological disruptions in the marketing field is transforming both the research and professional arenas. Technology provokes a revolution in traditional marketing strategies and techniques, arising many ethical concerns. Our research question is the following: are business schools teaching the ethical implications of digital marketing? The first section of the paper starts with some examples of the importance of the ethical considerations in digital marketing. It continues with the proposed methodology to analyse the ethical digital marketing competencies that future professionals are acquiring in Spain.

Why is important ethical issues In digital Marketing Educations?

The technological impact of Information and Communication Technologies on marketing over the last decades is enormous. Our paper focuses on the analysis of higher education in Spain, specifically about how ethical issues in digital marketing are integrated in curricula and competences. In this section we will introduce the importance of the ethical aspects in digital marketing. . It would be difficult and not relevant to our educational purpose to list the specific areas of ethical impact when using new digital tools in marketing, as this paper does not intend to create an ethical taxonomy of digital marketing. Due to this constrain, we ground the relevance of our paper with some examples that point out the importance of ethics in digital marketing, as ethics should be included in the curricula of higher education for future marketing professionals.

Impact of digital tools on marketing can be classified in two broad categories:

- Impact on traditional marketing tools and strategies such as segmentation, pricing, product, promotion, etc.
- Impact on new marketing tools and strategies such as SEO, SEM, Big Data, etc.

Pricing strategies are an excellent example of technological disruption in marketing. Pricing is analysed and taught in any marketing course all over the world. All marketing handbooks incorporate a pricing chapter (e.g. Kotler & Armstrong, 2018; Kerin & Hartley, 2019; Marshall & Johnston, 2015) or specific books and papers can be found among the recommend references (e.g. Schindler, 2012; Baker Benmark, Chopra, Kohli, 2018; Simchi-Levi, 2017; Liozu, 2019). But technology is transforming the pricing strategies. Marketing is transforming, moving from a static way of fixing prices to dynamic pricing, where prices can be now personalized for specific segments, microsegments or even for each specific customer. The price discrimination was detected in online environments in 2010. Amazon was showing different prices for the same product. In 2012, the Wall Street Journal found that prices were different based on the geographic location of customers (Mattioli, 2012). From this discrimination in

prices, the new technologies have opened new amazing possibilities for dynamic pricing. The creation of dynamic prices is done by an algorithm that can change price every second depending on the location, demand, time or any other criteria defined in the algorithm. These techniques were born in one of the first electronic markets, the GDS (Global Distribution Systems) in the air travel industry (Schmid, 1994). Since then, it has been applied in many other sectors such as the energy sector (Goutam, & Krishnendranath, 2017), online advertisement auctions (Google, 2020) or public transport services such as Uber (Martin, 2019).

In the previous examples, the combination of traditional pricing policies with the possibilities of new technologies opens important opportunities in marketing, but some problems and ethical concerns arise as well. According to Veeraraghavan (2016), the use of dynamic pricing could anger frequent customers, or provoke a shift in demand towards the very last-minute bargain. In a piece of research about the effects of a dynamic pricing strategy for a concert ticket, was shown that a significative last-minute discount shows controversy: some people find it as favourable, many others hate it, and some of the costumers consider it as a right practice. In the case of Uber, the price is changing constantly looking for the maximum price that the consumer is willing to pay. The algorithm establishes a price based on where you are, what time it is, how many people are demanding the service, the day of the week and the month, and also on your historical records using the Uber app (Martin, 2019). But Uber goes further and knows that on a rainy day a consumer is more likely to accept a higher price than on a sunny day, or that a key variable to accept a higher price is the level of battery of your Smartphone (Kosoff, 2016). When the battery is very low, the probability of accepting a higher price is very high because the user can miss the connectivity of their device. Using all these digital marketing strategies, companies have the ability to collect, keep and use information on consumer behaviours not in favour of their customers, but in their own interest (Calo & Rosenblat, 2017).

The price can be different depending on the operating system of your device. According to Kingsley-Hughes (2012), the online travel agency Orbiz showed different hotels and different prices to Mac users than to other users with other operative systems (e.g. Linux or windows). Based on their records, they knew that Mac users spent 30 percent more per night for a hotel room than Windows users. Offers and prices were different for customers accessing from Mac or other devices. These techniques are known as price steering and price discrimination (Hannak, Soeller, Lazer, Mislove & Wilson, 2014). Price steering occurs when different products are shown to the customer (or the order of showing products is different for each customer) depending on their profile, and it becomes a usual strategy in online environments. Pemberton, Stonehouse & Barber (2001) pointed out their concerns in the air travel industry. GDS create an "halo effect" which make customers usually choose products that appear in the first position of the screen. A consumer usually does not ask for a hundred flights before choosing the best option in a flight, he/she asks for a few combinations and decides. That "halo effect" allows companies to control the system and manipulate it, showing on the first screen the options of the airlines that own the GDS. This way, they alter competition with an unethical behavior.

Business has all the information about both individual customer preferences and aggregated customer preferences. But customers know nothing about the information of the company. For instance, whether the company must sell products fast because a new version is going to be launched soon. This asymmetry in the information creates important differences.

Based on previous findings and examples, we question how ethical those new tools and techniques are? Do business using all these techniques inform their consumers? To what extend is ethical to control the market in the company's own interest? Making aware of ethical aspects to future digital marketing professionals is a must.

## Method

In order to know the current situation of ethical competences in the digital marketing field, a qualitative study analyzing the competences of current official masters in Spain will be conducted. Official reports of each Master will be collected, and a dataset of their competencies will be analyzed by experts determining to what extent ethical issues, technological competences and specific ethical digital marketing competences are covered by the current set of competencies.

**KEYWORDS:** digital marketing; ethical marketing; higher education; ethical competences.

**ACKNOWLEDGEMENTS:** Work produced within the FLOASS project - Learning Outcomes and Learning Analytics in Higher Education: An Action Framework from Sustainable Assessment (Resultados y analíticas de aprendizaje en la educación superior: un marco de acción desde la evaluación sostenible), funded by the Ministry of Science, Innovation and Universities in the Spanish R+D+i Programme Focused on Challenges to Society and the European Regional Development Fund (Ref. RTI2018-093630 -B -100) and by the innovation project ACCRAM – Análisis de la Calidad de las Competencias y Resultados de Aprendizaje de los Másteres (Ref. INDOC19-07GI1926), funded by the Call for Teaching Innovation Projects of the Rovira i Virgili University (URV).

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## ETHIC REFLECTION ON THE TOURIST SHOPPING JOURNEY. EFFECTS OF COVID-19

**Alba García-Milon, Cristina Olarte-Pascual, Emma Juaneda-Ayensa, Jorge Pelegrín-Borondo**

Universidad de La Rioja (Spain)

alba.garciam@unirioja.es; cristina.olarte@unirioja.es; emma.juaneda@unirioja.es;  
jorge.pelegrin@unirioja.es

### EXTENDED ABSTRACT

Before the coronavirus (COVID-19) outbreak, tourists used to be a great source of income for stores and businesses (Jin et al., 2017). Tourists that purchase goods at the destination carry out the process called tourist shopping journey (García-Milon, Juaneda-Ayensa, Olarte-Pascual, et al., 2020). So far, tourist shoppers were motivated to use technology (Table 1) as a tool to help them in their tourist shopping journey (García-Milon et al., 2019; García-Milon, Juaneda-Ayensa, Pelegrín-Borondo, et al., 2020):

[1] Table 1. Main motivations to use technology in the Tourist Shopping Journey

Motivation	Benefit	Technology
Lack of awareness	Avoid the costs of time and money of not choosing the best option available.	Smartphones, Apps, Internet...
Necessity to share	Share and comment on shopping experiences, especially when the store or item purchased is unusual to the tourist.	Smartphone, Social networks...
Effort in payments	Reduce energy when handling foreign currency, cashless transactions are the most convenient strategy (Yuvaraj & Sheila Eveline, 2018)	Smartphone, NFC, credit/debit cards...
Tax refund	Recover the taxes from the items bought at the destination (Global Blue, n.d.)	Totem DIVA (Spain).

Source: Adapted from García-Milon, Juaneda-Ayensa, Pelegrín-Borondo, et al. (2020)

Nowadays, we are living with a continuous biosecurity threat caused by the coronavirus (COVID-19) which can be easily spread thanks to human contact activities (Zeng et al., 2020). Shopping and tourism could suggest safety concerns as they both rely on human interaction. If there is a risk on shopping and traveling separately, if both activities are undertaken together the threat is even greater. Given that there is a necessity of innovation to operate under new rules like social distancing (O'Leary, 2020; Zenker & Kock, 2020), many aspects of both industries are going to be affected. This has created a favorable environment for the incorporation of new technologies such as robots and other automation technologies in tourism (Ivanov et al., 2020) which can be used for physical distancing between service providers and tourists (Seyitoğlu & Ivanov, 2020). Also, there will be an increasing interest for destinations on becoming smart tourism destinations where technologies have an essential role in the personalization, context-awareness, and real-time monitoring of tourists' experiences (Buhalis & Amaranggana, 2015). Likewise, shopping will evolve towards a contact-free pattern and could result

in the adoption of drones and robots into electronic commerce or even in the greater use of artificial intelligence (O'Leary, 2020).

Many other emerging technologies in tourism and shopping fields will be benefited by COVID-19: augmented reality, virtual reality, 5G, chatbots, beacons... Consequently, when retaking the tourist shopping journey, tourists will be able to experience a greater amount of technologies than before the pandemic. However, this new reality will entail that the use of technologies will be compulsory instead of being optional. In order to shop at destinations, tourists used to be motivated to use technologies (García-Milon, Juaneda-Ayensa, Pelegrín-Borondo, et al., 2020), now they will be forced for safety issues.

There are many concerns regarding the new situation. First, the obvious outcome is that shopping tourists' privacy is in great danger. Companies and countries could benefit from the COVID-19 crisis to establish new measures to control the population. The combination of two high-risk activities where technology could be widely employed, paves the way for triple surveillance: for being a tourist, for being a shopper, and for being a shopping tourist. This will result in complete traceability of the whole tourist shopping journey (García-Milon, Juaneda-Ayensa, Pelegrín-Borondo, et al., 2020). Supported by safety concerns, visitors' movements will be followed thanks to geolocation technologies such as wearable GPS (Global Positioning Systems), Bluetooth technology, smartphone applications, or social media geotagging and hashtag analytics (Hardy et al., 2017). Tourists will be treated as numbers with a complete "traceability" of individuals (Chantre-Astaiza et al., 2019). Another important issue is the substitution of humans by robots and automation technologies which would entail a considerable loss of jobs (Li et al., 2019). Furthermore, tourists might be frustrated by such distancing and lack of emotional involvement (Ivanov et al., 2020). This creates a brand new ethical landscape that needs to have appropriate regulations in order to be able to manage a more proper use of technologies in society (Tzafestas, 2018).

It could be believed that technology will permit the continuance of activities like shopping at destinations in a "safer" way. Nevertheless, there is a dangerous point in which safety ends and overcontrol begins.

**KEYWORDS:** Tourist shopping journey, COVID-19, technology, social distance, control, ethics.

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## **6. Open Track**

Track chair: Kiyoshi Murata, Meiji University; Ana María Lara Palma, Universidad de Burgos; Yohko Orito, Ehime University



## EXPLORING THE JAPANESE GREY DIGITAL DIVIDE IN THE PANDEMIC ERA

**Simon Rogerson, Tatsuya Yamazaki, Yohko Orito, Kiyoshi Murata**

De Montfort University (UK), University of Toyama (Japan), Ehime University (Japan),  
Meiji University (Japan)

srog@dmu.ac.uk; tatsuya@eco.u-toyama.ac.jp; orito.yohko.mm@ehime-u.ac.jp;  
kmurata@meiji.ac.jp

### EXTENDED ABSTRACT

The world has changed since the pandemic. Online has become the accepted first channel of choice for communication and social interaction. Or, perhaps the world at large had no choice but to accept that online was the only viable method of ongoing social interaction and communication. Whichever is the reason, the fact remains that the gap has widened between those digitally included and those digitally excluded. The digital divide is rapidly becoming a digital chasm. The digital divide has come about through increasing global digital technological dependency. It is a social divide which sits upon a complex foundation of poverty, education, gender, age, status, location, and mental and physical faculty.

In times of global emergency, such as the COVID-19 pandemic, social divides are extremely harmful. It is morally unacceptable to ignore the risk of harm and to fail to provide essential support to the vulnerable. There has been a tendency by some governments and some service providers to be reactive rather than proactive in their approach. Whilst reactive action in a state of emergency is appropriate so also is proactive action which has a preventative function. As society's voices of concern rise, mirroring the increasing suffering of the most vulnerable, so those in a position to alleviate the suffering react. Proactive action is needed both to minimise the chance of short term suffering and to instigate long term strategies to remove barriers and promote wellbeing.

It is generally accepted that those of 65 years and over are most at risk in the pandemic; the older a person is the greater the risk (see, for example, Kang & Jung, 2020 and Signorelli & Odone, 2020). For this group, termed the elderly, the digital divide has likely increased the risk of deteriorating health and tragically increasing the likelihood of death. The elderly are often referred to as grey to differentiate them as population group; hence grey digital divide is now a commonly used term. There are two groups; Grey Digital Native and Grey Digital Outcast positioned either side of the grey digital divide. A grey digital native is a digitally literate elderly person who uses, and is somewhat dependent upon, digital technology, whereas a grey digital outcast is an elderly person who is, for whatever reason, unable to access the benefits offered through the use of digital technologies (Rogerson, 2020). The Grey Digital Divide Typology, which is an extension (ibid) of the user typology derived by Birkland (2019), provides a detailed description of the grey digital divide. The use or non-use of digital technology is differentiated by a simple three-part classification: no-tech – print media, written letters and face to face dialogue; low-tech – television, radio and telephone; and high-tech – smartphone, social media and Internet (Rogerson, 2020).

This paper discusses an empirical study undertaken in Japan of people across the digital divide, focusing on their perception of both connectivity and being informed as the pandemic unfolds. Japan is a country where digital technology has pervaded society, the ageing of the population is being accelerated at a pace exceeding the rest of the world, and the number of confirmed COVID-19 cases remains at the lowest level among developed countries although strong measures to contain the spread of the novel coronavirus such as a national lockdown have not been taken. The elderly are placed in the context of a wider demographic through the chosen sample.

It has been estimated that 9% of the global population of 7.8 billion people are elderly (source: [www.statista.com/statistics/265759/world-population-by-age-and-region](http://www.statista.com/statistics/265759/world-population-by-age-and-region)). Of these only 48% can be classified as grey digital natives and therefore, the grey digital divide comprises 363.5 million digital outcasts who are at particular risk during the COVID-19 pandemic because their lack of communicative support by the authorities who tend to inform only through digital technology conduits. The White Paper Information and Communication in Japan (MIC, 2020) reported that Internet usage rate is 89.8% in 2019 for the whole population (79.8% in 2018), 90.5% for 60-69 year olds (76.6% in 2018), 74.2% for 70-79 year olds (51.0% in 2018), and 57.5% for those 80 years old and over (21.5% in 2018). This suggests that there remains a grey digital divide albeit diminished and this becomes more significant in the over 80 year olds where around 65% of COVID-related deaths occur.

According to Statista (see <https://www.statista.com/statistics/1105162/japan-patients-detail-novel-coronavirus-covid-19-cases-by-age-and-gender/>), the distribution of coronavirus disease (COVID-19) cases in Japan as of March 3, 2021, shows that the highest number of patients were aged 20 to 29 years old, with a total of around 94.5 thousand cases. The highest number of deaths is among the patients aged 80 years and older at about 4.7 thousand cases. The Japanese health ministry announced on March 5 that there was a total of around 436.7 thousand confirmed cases of COVID-19 in Japan. This data shows that those aged over 60 years account for 24% (105,940) of reported cases yet they account for 96% (6,508) of reported COVID-19 related deaths. Those over 80 years of age accounted for 64.8% of deaths. This clearly demonstrates the primary need to protect the elderly through preventative medical care, appropriate communication and social support.

The survey was conducted in Tokyo and four local cities in Japan (Bizen, Chiryu, Matsuyama and Takaoka) from August to December 2020. Of the 136 valid responses, there are 67 digital outcasts of which 59 are grey digital outcasts and 69 digital natives of which 34 are grey digital natives. The results of the survey suggest that the phenomenon of grey digital divide does exist in Japan. Of the elderly respondents, 37% were grey digital natives and 63% were grey digital outcast. Though they could potentially use digital technology to access various information about the disease through searching and interacting online, Japanese grey digital natives showed their reluctance to accessing such information, preferring to depend on low- and no-tech media. Nearly 90% of grey digital outcasts were would-be low-tech users, meaning that they did not have an intention to use the Internet to get information about the disease even during the pandemic era. This may lead to grey digital outcasts disadvantaged and even penalised within the vaccination programme; a programme which is administered through the Internet.

**KEYWORDS:** digital divide, digital outcast, COVID-19, Japanese elderly.

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## THE PRIVACY PARADOX: INVADING PRIVACY WHILE PROTECTING PRIVACY

Kiyoshi Murata, Yohko Orito

Meiji University (Japan), Ehime University (Japan)

kmurata@meiji.ac.jp; orito.yohko.mm@ehime-u.ac.jp

### EXTENDED ABSTRACT

The tremendous development and spread of information and communication technology (ICT) has enabled organisations in both the public and private sectors to make use of big data. The astonishing surge of data generated by internet of things or everything (IoT/loE) environments is often referred to as the Cambrian explosion of data. The widespread use of sensors and handheld ICT devices, such as smart phones, along with continuously increasing social media use and computer-mediated economic trades has created such an environment. Consequently, every moment of every day, immense quantities of data are being accumulated in organisational databases. Advances in hardware and the construction of ICT infrastructure have enabled superfast data processing, vast data storage and ultra-high-speed data communication. These, in addition to the promotion of data science, have made it possible for organisations to carry out effective big data analysis using artificial intelligence (AI)-based systems. Accordingly, a data economy, in which data are expected to function as the new crude oil in terms of business opportunities, has emerged.

As ICT has permeated society and the economy, privacy protection has come to be considered a social issue. It is alleged that the business models adopted by many organisations, including Tech Giants, which are premised on using AI-based systems to analyse huge amounts of personal data collected through 24/7 electronic surveillance, are fraught with privacy risks. Recent discussions on black box society (Pasquale 2015) and surveillance capitalism (Zuboff, 2015; 2019) suggest that individual privacy must be treated as a social issue for viable protection measures to be designed and implemented.

Curiously enough, however, it is rare for clear definitions of privacy to be provided in arguments about privacy protection. It is often implicitly assumed that privacy protection is identical to personal data protection. In fact, to protect privacy, legislative efforts such as the EU's General Data Protection Regulation (GDPR) in 2018 and the revision of Japan's Act on the Protection of Personal Information (APPI) in 2015, in addition to institutional approaches such as the establishment of data protection commissions as independent authorities that are responsible for citizens' personal data protection, have been established in many countries and regions. Encryption and anonymisation technologies, including k-anonymity (Sweeny, 2002), l-diversity (Machanavajjhala et al., 2007) and t-closeness (Li et al 2007), have been developed to protect personal data. Legal, institutional and technological measures to protect personal data are important components of privacy protection. However, can the protection of any kind of privacy be reduced to personal data protection? Such a narrow or trivialised understanding of privacy or privacy protection has brought about a new societal challenge. That is, legally and/or technologically appropriate approaches to the protection of personal data or informational privacy have paradoxically caused, and even justified, serious invasions of decisional or psychological/mental privacy – invading privacy while protecting privacy. This is a new type of privacy paradox that differs from the oft-alleged privacy paradox regarding the gap between people's awareness of the importance of privacy protection, and concern about invasions of their privacy, and their tendencies to ignore privacy considerations in their everyday lives. This study attempts to

investigate the modern-day version of the privacy paradox and proposes policies to resolve it, including establishing organisations' fiduciary responsibility to data subjects.

The phenomenon known as the privacy paradox has been considered from various perspectives. For example, Barnes (2006) pointed out that, whereas adults have concerns about the threat of privacy invasions by governments and companies through the collection and storage of citizens' and consumers' personal data, teenagers are freely giving up their personal and private data on social media because they don't understand the public nature of the Internet. Discussions about the paradox of sensible adults and silly youngsters are based on observations of young Internet users' careless posts on social networking services (SNSs) in the mid-2000s, when SNSs such as MySpace and Facebook started to become popular among young people.

Through group interviews with Canadian teenagers who grew up as digital natives, Adorojan and Ricciardelli (2019) found that, despite older teens' emphasising their debased privacy awareness declaring "one has nothing to hide", they attempt to protect their privacy by managing impressions on SNS sites, given the affordance of SNSs. Adorojan and Ricciardelli considered this seemingly hypocritical behaviour to be a pragmatic adaptation to the present Internet environment. Youngsters' declarations of having "nothing to hide" is an outcome of their understanding the nature of the online environment, namely, that there is no real privacy. Hence, they try to control their impressions on certain SNSs by internalising the moral expectations of generalised others who may look at their posts on SNSs. This behaviour enables them to avoid simultaneously the social isolation caused by the non-use of SNSs and damage brought about by accusations against their posts or context collapse (Vitak, 2012) caused by interventions by unintended others. This finding can be characterised in terms of the contradiction between the words and actions of sensible young people, contrary to the previous paradox.

The most often alleged privacy paradox refers to the gap between attitudes and behaviour. Although people, in particular young people, recognise the importance of protecting their privacy and feel concerned about invasions of their privacy, they do not attempt to understand the concept and social significance of privacy or take positive action to protect their privacy. It is important to note that these existing discussions on the privacy paradox pertain to informational privacy.

On the other hand, it is rare that an intervention by an AI system over, for example, individuals' voting behaviour is recognised as an invasion of decisional privacy. The threat to psychological/mental privacy posed by individual or group profiling has rarely been discussed. However, in today's socio-economic and technological environment, many organisations in both the public and private sectors operate ICT-based systems with capacities to monitor individuals' status and behaviour 24/7 and control their future behaviour (Murata, 2017), while a sufficient degree of protection of personal data has been undertaken. Hence, automated interventions by those systems over an individual's private decisions and/or psychological/mental status can pose a serious threat to personal privacy.

Monitoring and control systems provide individuals with pseudo-personalised information services to encourage specific behaviour and/or psychological/mental states, as intended by the organisations that operate the systems, based on analysis of lawfully collected and accumulated personal data. This has resulted in the paradoxical situation where "individual privacy is invaded while it is protected" or "legally and technologically justifiable privacy protection as personal data protection causes an invasion of decisional and/or psychological/mental privacy". Individuals' rights to know, freedom of choice and action and inner liberty can seriously be undermined.

In the current situation, where post-truth politics is causing serious damage to democracy and genetic information is going to be used to control individual citizens, we must urgently resolve the paradox to maintain individuals' autonomy and freedom and protect decent civil society. To realise this, (a) the

focus of personal data protection should mainly be placed on use, (b) working definitions of “decisional and psychological/mental privacy to be protected” that are suitable for our socio-economic and technological circumstances must be laid down, and (c) organisations’ fiduciary responsibility to individual data subjects, in terms of the use of their personal data, should be established. These strategies are aimed at protecting decisional and psychological/mental privacy. Given that the use of AI technologies centred on deep learning drives an infringement on that right underground, working definitions of an individual’s private decisions and/or psychological/mental issues, no interference in which from others is tolerated with or without his/her explicit consent, have to be provided in a socially acceptable manner.

**KEYWORDS:** privacy paradox, data protection, decisional privacy, psychological/mental privacy, fiduciary responsibility.

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## **VISUALISING HOME TECHNOLOGIES OF THE FUTURE: A REPORT FROM LEICESTER'S DIVERSE COMMUNITIES**

**Catherine Flick, Adebowale Owoseni, Malcolm Fisk and Roxana Firth**

De Montfort University (United Kingdom)

cflick@dmu.ac.uk; adebowale.owoseni@dmu.ac.uk; malcolm.fisk@dmu.ac.uk;  
roxana.firth@dmu.ac.uk

### **EXTENDED ABSTRACT**

#### Introduction

In a previous ETHICOMP paper (Firth and Flick, 2020), we outlined a proposed method for engaging with those with low digital capital (often associated with low socio-economic status) in order to look at their sociotechnical imaginaries of home technologies of the future. In that paper, we argued that this is important to do because of the dramatic divide between those traditionally involved in developing such technologies, and those who may benefit or be harmed by them. The method proposed an arts-based expressive mechanism that gave “participants to explore and give shape to their ideas and future technologies by collaborating in creating art pieces”. In this paper we report back on the findings of this method: the results from art workshops conducted with Leicester families for the Living Innovation (EU H2020) project along with a reflection of the method involved, particularly given the context of COVID-19.

#### Background

Our original vision for capturing the diverse voices of Leicester was to visit the local community centres in the most deprived parts of the city and run a series of in-person half day art workshops for families with at least one adult and one child. 20% of neighbourhoods in Leicester are among the most deprived 10%, according to the Index of Multiple Deprivation statistics put out by the UK Government (Office of National Statistics, 2019). The locations we chose are considered amongst the most deprived within Leicester, where the university already runs successful local community outreach programmes so we could link in with those. In this way we could benefit from the trust already placed in the local community organisation and use the networks developed to ensure we had as many participants as possible.

However, before we could run the workshops, the COVID-19 pandemic hit and lockdown was put in place in Leicester in March 2020. We quickly modified our approach to be an asynchronous online workshop.

#### Method

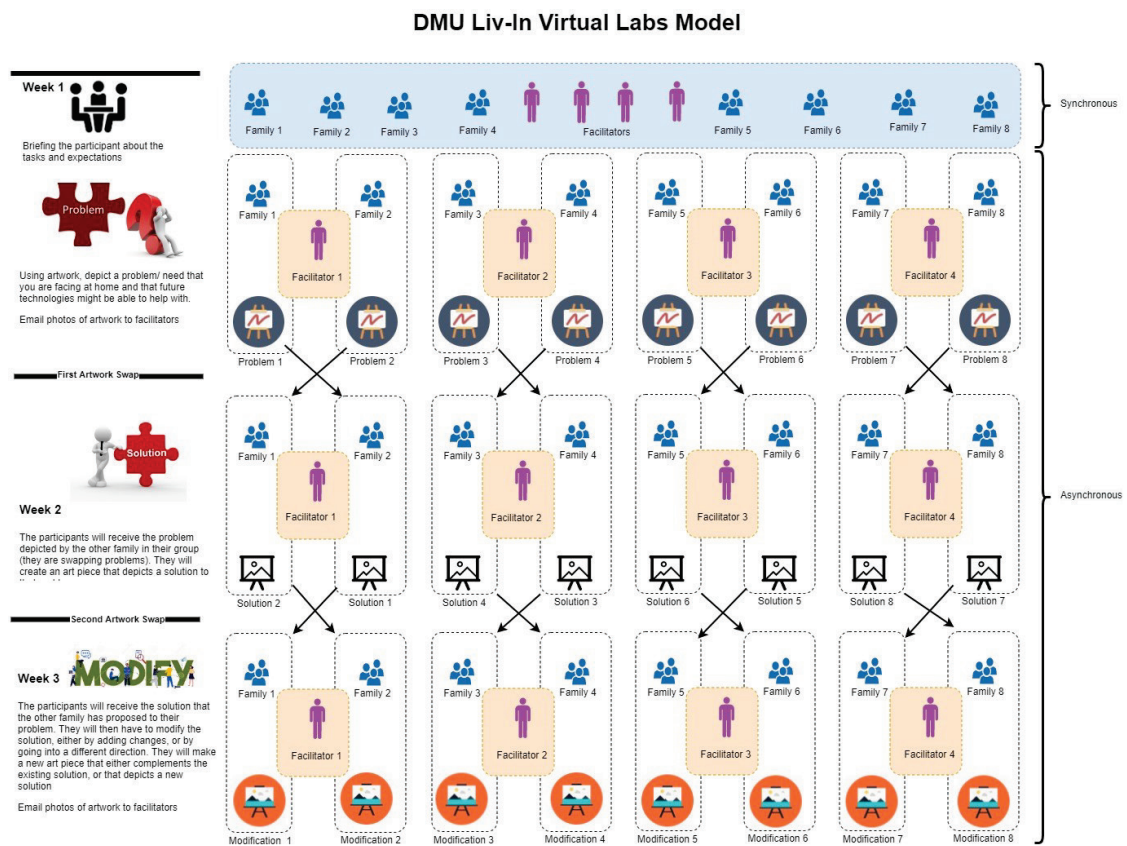
Our key question to participants for the purpose of driving the asynchronous online art workshop was: what problems in your home could be solved by technology of the future? In asking this question, we would be gaining answers to our research questions:

1. What are the visions of future technologies for families of low digital capital?
2. To what extent has the lockdown affected these visions?

Our approach took inspiration from Design Thinking (Brown, 2008) through encouraging our participants to define a problem, then create a solution (to another family’s problem), then receiving the solution to their problem back and modify that solution to best fit their needs (or to suggest a new solution to the problem). Each stage was depicted by the creation of an artwork and a short piece of explanatory text. A follow up interview further elaborated the creation of each of the three artworks, who was involved, and the thinking behind it. A local artist was employed to create inspiring videos showing the different stages.

Overall the structure of the artwork stages worked as in Figure 1 below:

Figure 2. Virtual Workshop (Lab) Model



### Recruitment

Due to not being able to go into the local communities in Leicester through the local outreach programme, we had to recruit through other means. We tried several methods for recruiting across Leicester more generally: through the local outreach (DMULocal), the artist, who already ran art workshops in those areas, on the local BBC Radio station (BBC Radio Leicester), and a snowball approach through a local mothers’ group Whatsapp. By far the most successful recruitment method was through the mothers’ group. The organiser of the group runs several local outreach community groups including with disadvantaged families in Leicester, and advertised it amongst her different programmes. Comparably, the 15 minute radio slot resulted in 0 recruited families. In the end, we recruited 12 families with at least one adult and one child age 8 and up, and 2 pilot families – the family of the artist and of one of the co-investigators. Of the recruited families, approximately half of them

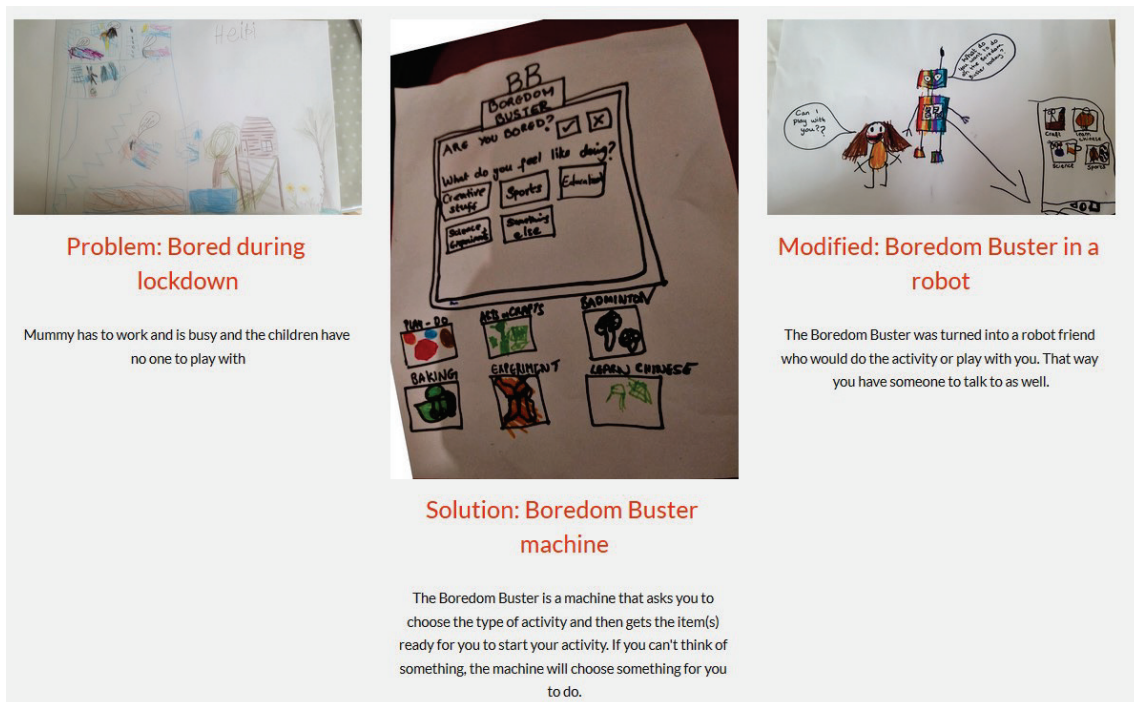
lived in the most deprived areas of Leicester. All families were retained throughout the entire programme. Participants received a £40 shopping voucher for their time. Ethics approval was gained through the university ethics committee, with particular focus on protection of children.

## Results

The workshops were conducted over four weeks in July 2020, 4 months into lockdown.

Preliminary results show that lockdown significantly affected the sociotechnical imaginaries of the families involved. Several problems illustrated the concerns the families had with lockdown: mental health, boredom, not being able to leave the house, communication problems. Other problems were more general – mess or insects in the home, sustainability and recycling, home security. Solutions ranged from the extremely practical – spider catchers and bottle recyclers – to the more fantastic, including holographic technology, aerial vacuum cleaners, and flying houses. Surprisingly, many of the solutions already existed as well, apps to track chores, virtual reality, and surveillance cameras, amongst others. Most families modified the solutions sent to them, but others chose to come up with their own ideas. An example of a series of three artworks is found in Figure 2.

Figure 3. A series of three artworks showing the problem, solution, and modified artworks



## Analysis

Lockdown under coronavirus showed the significant impact that current events can have on influencing imaginaries. This may be linked to the fact that the question was asked of the participants to describe a problem in their home. With the lockdown lingering, and little sign of it letting up in Leicester, families were feeling increasingly confined, bored, and frustrated by the technologies they were using. That many of the solutions depicted virtual reality shows a general knowledge of the existence of virtual reality, but perhaps not any actual experience with it – much of its application in the cases illustrated is likely to be impossible, even in the future. The depiction of currently existing

technology such as surveillance cameras and 3D printers shows that perhaps although these exist they are not yet accessible to families of low socio-economic status. Indeed, many of the technologies depicted exist in some form, though they are extremely expensive. “Future technologies” may instead simply be current, expensive technologies, in a more accessible form.

Further analysis of the results and feasibility has been undertaken through interviews with technologists, futurists, cutting edge technology journalists: this will be taken up in the full paper.

**KEYWORDS:** Responsible research and innovation, design thinking, diversity and inclusion, innovation, futures research, digital capital.

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## **RESPONSIBLE PUBLIC ENGAGEMENT AT TERRITORIAL LEVEL: CORE DIMENSIONS AND MEANS FOR IMPLEMENTATION**

**Maria Michali, Thalia Kallia, Daniele Mezzana, George Eleftherakis**

South-East European Research Centre (Greece), South-East European Research Centre (Greece),  
Knowledge & Innovation (Italy), CITY College, University of York Europe Campus (Greece)

mmichali@seerc.org; efkallia@seerc.org; mezzana@knowledge-innovation.org;  
eleftherakis@york.citycollege.eu

### **EXTENDED ABSTRACT**

Responsible Research and Innovation (RRI) is a multi-dimensional concept gaining advancing prominence within the final decade in the ERA (European Research Area) and beyond. With one core definition by the EC (European Commission) characterizing RRI as “a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products” (Von Schomberg as cited in Owen et al., 2012), one explicitly comprehends that RRI principles and tenets (RRI keys) can highly contribute to aligning the agendas of STI (Science, Technology, Innovation) to society’s needs and ethical concerns or values. A strong emphasis can be particularly placed on how the RRI key of Public Engagement (PE) contributes to achieving the aforementioned objectives. PE implies the establishment of participatory multi-actor dialogues and exchanges to foster mutual understanding, co-create research and innovation outcomes, and provide input to policy agendas (EC, n.d.). It additionally advocates, among others, towards: a) involving stakeholders so that innovations address societal needs, societal complexities and ethical problems (Taebi et al., 2014), b) engaging the public “before an issue or technology becomes controversial, when opinions become polarised and hardened and policies are predetermined” (Cobb & Gano, 2012, p. 97) –thus making ethical questions acquire genuine meaning within the context of research, technology and development.

The six RRI keys<sup>18</sup>, RRI principles and dimensions –namely anticipation, reflexivity, inclusion and responsiveness–and related initiatives can be applied at a national, institutional and/or territorial level. In the case of application at the territorial context, RRI acquires a set of new features and the Territorial RRI framework emerges. Territorial RRI can be described as shaping research and innovation (R&I) to support territory-making processes and new governance-making agendas (Caiati & Mezzana, 2019). It concurrently advocates that R&I processes need to be responsive to regional and societal needs. As argued by Fitjar et al. (2019), regional RRI acquires a place-based approach and STI processes become both socially and spatially embedded; it is the exact combination of regional elements with ‘responsibility’<sup>19</sup> (Schrader, 2010; Meissner, 2014) that helps address grand societal challenges. In a similar line of argument, territorial PE acquires new dimensions. It focuses on territory-based co-creation and subsequently affects territory-making R&I agendas in the sense of combining scientific knowledge with the intimate knowledge of the territory’s local actors (Caiati & Mezzana, 2019). In addition, the effects

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<sup>18</sup> The six RRI keys are: Governance, Ethics, Science Education, Open Access, Gender Equality, Public Engagement.

<sup>19</sup> Response-ability focuses not on being responsible, but on learning how to respond and opening up possibilities for different kinds of responses (Schrader, 2010); the central connotation is no longer an imperative of taking charge for something, but rather an ability to respond to others (Meissner, 2014).



of territorial PE are further enhanced by the regional context around STI processes being beneficial for effective knowledge acquisition and spillover (Larsen et al., 2012). In other words, regions –owing to their scale– exhibit a better proximity towards social values and ethical concerns, and can be highly effective towards framing corresponding initiatives. Territorial PE dimensions thus indicate that one can avoid the emergence of STI developments having being created for their own sake within the context of a ‘normal’ digital transformation; citizens along with practitioners can acquire the license to express their ethical concerns towards the mass of new developments in the region, and subsequently infuse their own (otherwise tacit) ideas and moral standards to core regional transformational agendas.

The present paper therefore addresses the application of Public Engagement (within the RRI umbrella) at the territorial level. It places an emphasis on the critical interpretation (core dimensions, principles, emerging governance frameworks) of territorial PE, shifting the focus to engaging communities at various territorial scales (e.g. at a region, city, municipality or neighbourhood). PE approaches, which can be applied at a territorial scale and within an upstream, midstream or downstream vantage point, are afterwards described in an evidence-based way. Territorial PE-related exemplar applications that are responsive to ethical and societal concerns indicatively come from the following approaches or initiatives: Participatory Design (co-design), Science Shops, Scenario Planning, Living Labs, Guiding Visions technique for Agenda Setting. The rationale of the above processes has after all been to critically describe the content of the aforementioned PE activities that can be applied territorially, and subsequently stress elements that enhance the conceptual underpinnings of territorial PE.

This holistic approach has the potential to lead to the successful realisation of territorial PE for meeting society’s ethical concerns towards R&I and technology. Valuable suggestions are provided in this way towards enhancing: a) the concept of shared responsibility in innovation, and b) the opportunities for constructing new territorial and PE-driven R&I and technological agendas. These agendas ultimately promote a type of socially and ethically robust science (EC, 2007) as a result of combining expert/scientific knowledge with local and practical experiential knowledge –the so-called building of a truly knowledge-based society (Steinhaus, 2013).

The paper will be structured around five, complementary to each other sections. The state-of-the art of RRI and PE is primarily set, followed by their framing at the territorial context (Territorial RRI and PE). The focus afterwards shifts exclusively on territorial PE; its conceptual underpinnings entailing the focus on addressing public ethical concerns towards STI, as well as insights gained from past territorial PE approaches are spelled out. The paper’s concluding arguments allude to a set of experience-based suggestions towards realistically and efficiently capitalizing on territorial PE for developing ethically responsive and democratic –in the sense of shared rights and responsibilities among scientific experts and local knowledgeable actors– STI processes and agendas.

**KEYWORDS:** Public Engagement (PE), Responsible Research and Innovation (RRI), Territorial, Regional, Ethics, Society

**ACKNOWLEDGEMENTS:** This work has been conducted within the framework of TeRRitoria (Territorial Responsible Research and Innovation Through the involvement of local R&I Actors) EU project, which has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 824565.

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## ETHICAL BENCHMARKS FOR INDUSTRY AND COMMERCE: A NEW LANDSCAPE FOR RESPONSIBLE INNOVATION

Malcolm Fisk, Catherine Flick, Adebowale Owoseniç

De Montfort University (United Kingdom)

malcolm.fisk@dmu.ac.uk; cflick@dmu.ac.uk; adebowale.owoseni@dmu.ac.uk

### EXTENDED ABSTRACT

This paper addresses a ‘new landscape’ for responsible innovation. It reports on different ethical reference points for industry and commerce. In this context, responsible innovation (and Responsible Research and Innovation, RRI) can be seen as a strand of thinking *and doing* to be found in several ethically-oriented frameworks - including those represented by the United Nations Sustainable Development Goals (SDGs) and several international standards.

Exploration of the new landscape took place within the European Commission funded LIV-IN (Living Innovation) project. This focused on technologies for our lives and our homes in 2030. Published sources, consultations with experts and workshops with a range of consumers and customers informed the project. Such project activity utilised RRI approaches to explore technological futures for the ‘focal’ sectors of smart homes and smart living. This was supplemented by a specific dialogue with CSR consultants about the wider potential contribution of RRI (or elements of it) to industry and commerce in the context of other ethically-oriented frameworks.

Five recognisable frameworks, in addition to RRI, were identified. Some overlap. All six are legitimate in the pursuit of ‘responsible innovation’ and a means by which commercial organisations can benchmark and ‘test’ their ethical credentials. The context for consideration of these frameworks is, however, controversial. It relates to the question of whether their adoption can be seen as a kind of ‘gloss’ or cloak to disguise brutal truths about the adverse environmental or social impacts caused by some commercial activity. In such a context there may be, therefore, sound arguments to favour robust regulations to control the worst commercial excesses. Also relevant is the matter of ‘responsible’ investment and, arguably, the need to rebalance attention from *shareholders* towards a wider range of *stakeholders* (Hohnen, 2007).

Of the six frameworks, CSR dominates the commercial ethical ‘landscape’. Deloitte (2016) pointed to it as having experienced ‘continued growth’. Tench et al (2018) noted it as well established in industry *throughout* the EU. Does CSR fall into the category of ‘gloss’? The answer, these authors contend, is ‘no’. But they argue that serious action may be necessary to promote ‘responsibility’, possibly with regulatory frameworks, the sharpness of whose teeth is commensurate with the risks and the actuality of any commercial excesses.

The notion of ‘responsibility’ goes back many centuries – linking to ‘religion in general and to Protestantism in particular’ (Pavie et al., 2014). The root of CSR in particular leads to the American Christian, Harold Bowen through his seminal 1953 publication (see Bowen et al., 2013). He affirmed that ‘the profit system is defensible if the amount ... and their use are determined with the needs of society in view’. *And whilst claims attributed to CSR in the ensuing decades have varied, most of Bowen’s social goals including ‘justice, freedom and development of the individual person’ still resonate. The environmental element is there, too with CSR frequently linked with the ‘triple bottom line’ viz. ‘people, planet, profit’* (Hohnen, 2007; Fontaine, 2013). Important also is CSR being

‘voluntary’, enabling this appraisal to make a link to the third and fourth ethically-oriented frameworks – Environmental and Social Governance (ESG); and international standards.

ESG has become more prominent in recent years and may be seen by commercial organisations as more ‘graspable’ than a somewhat daunting *seventeen* SDGs. Delevingne et al. (2020) noted that the ‘pressure on companies to pay attention to ESG continues to mount’. Well over half of over 300 executives and investment professionals agreed ‘that ESG programs create shareholder value’ and ‘strong performance on ESG issues can improve top-line growth, reduce costs, minimize regulatory and legal interventions (and) improve employee productivity’.

The fourth ethical framework is international standards. These are voluntary unless written into law. As signalled above, many commercial organisations seek accreditation to standards as a ‘badge’ of their responsibility. Important examples are the ISO 14000 series for environmental management and, though carrying less authority, the ISO 26000 guideline on social responsibility. Standards are not, however, without their critics - particularly around their predisposition, when dominated by commercial interests, to reinforce a *status quo* that may have ethical shortcomings (Optimat, 2014).

The fifth ethical framework, also voluntary in nature, carries considerable international ‘weight’ by virtue of being promoted by the United Nations. It is that of the SDGs – including both environmental and social ‘goals’ - with these increasingly used as reference points for responsible behaviour around governance, investment and innovation. Their relevance to particular industry and commercial sectors is, naturally, varied but almost all can be used to gauge activities. A direct link between SDGs and ESG was made by Douma et al. (2017) in setting out six principles of investment in a responsible investment blueprint that aligns ‘with the broader sustainable objectives of society as currently defined by the SDGs’.

The sixth ethical framework is that of EU Directive 2014/95 (Non-Financial Reporting Directive). Having been adopted by Member States, it carries legal force. It applies to public-interest companies with over 500 employees, requiring them to report annually on policies and practices for environmental protection; social responsibility and the treatment of employees; respect for human rights; anti-corruption and bribery; and diversity on company boards. Other Directives, as noted by Martinuzzi et al. (2011), are also relevant such as for the recycling of waste from electrical and electronic equipment.

These six ethically-oriented frameworks represent the backdrop for consideration of the ‘transferability of RRI’ in the world of commerce. The listing below indicates the RRI elements that appear to lend themselves to such transfer and may add value to ethical frameworks noted above. At least two (co-creation; and early, anticipatory approaches to innovation) are RRI elements that are often held as uppermost among its merits and are noted as having particular relevance to industry (Martinuzzi et al., 2018).

- Wider Stakeholder Agenda: Re-enforcing the move from shareholder to stakeholder perspectives - including responsibility for future generations.
- Integrity in Management: Helping ensure maintenance of an appropriate ethos - echoed in policies, practices and behaviours (e.g. around equality and safeguards against discrimination or disadvantage).
- Dynamism of the Innovation Process: Re-enforcing the importance of anticipatory and reflexive approaches that are alert to (and mitigate or avoid) risk.
- Incorporation of Co-creation in Design and Innovation: Providing a route to better products and services, albeit allowing for issues of commercial confidentiality to be taken into account.

- Openness and Interoperability: Recognising that stakeholders are not served by vendor lock-ins and any diminution in their choices.
- Maintenance of Privacy and Confidentiality: Specifically relevant to commercial activity online and calling for the safeguarding of customer or consumer data.

These elements, it is contended, may offer a means whereby there is lasting value for industry and commerce that derives from RRI. That value lies, however, in RRI being a contributor to ‘responsible innovation’ and, through the elements indicated above, providing an input to the ethically-oriented five other frameworks that are noted – all of which carry greater prominence and several having wider scope.

**KEYWORDS:** Responsibility, Ethics, Stakeholders Industry.

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## COMPUTER ETHICS AND COMPUTER PROFESSIONALS

**Norberto Patrignani, Iordanis Kavathatzopoulos**

Politecnico of Torino (Italy), Uppsala University (Sweden)

norberto.patrignani@polito.it; iordanis.kavathatzopoulos@it.uu.se

### EXTENDED ABSTRACT

*Tech workers now want to know: what are we building this for?*

Conger K., Metz C., 2018

This paper investigates the intersection among the two domains: *computer ethics* (as an academic research field) and *computer professionals* (the professionals that works in real life organizations). The paper focuses around the main question: is the long history of *computer ethics* finally starting to "make a difference" in the real world of information and communication technologies (ICT) where *computer professionals* work?

#### *Computer ethics: a long history of a study field*

*Computer ethics* as a research field has the same age of ICT: in the 1950s the "social and ethical implications of computing" were very clear to Norbert Wiener, one of the pioneers of the computer age (Wiener, 1950). Following Wiener, it is worth mentioning Joseph Weizenbaum, who in the 1970s distinguished the problems that can be analyzed and delegated to algorithms from the situations that cannot be "solved" by computational thinking, but require *judgment*, the "capacity to choose", a trait that makes people human (Weizenbaum, 1976). These recommendations appear visionary at a time when "artificial intelligence" applications are spreading and misused in many areas of society. In the 1980s the term *computer ethics* was introduced by Maner: "... a new field that studies ethical problems aggravated, transformed or created by computer technology" (Maner, 1980). The critical absent from this definition are the *computer professionals*: ICT are just machines designed by humans that executes software code developed by humans. This limit in the initial approaches to *computer ethics* was still present in its formal definition proposed by Moor: "there is a policy vacuum about how computer technology should be used" (Moor, 1985). In this definition, technology in itself is not questioned, it is still considered as "neutral" and, again, *computer professionals* are in the shadow, even if they are the main agents as designers of ICT complex systems. Thank to Deborah Johnson this connection became evident when she proposed to use the term "*socio-technical systems*" instead of "computer systems": according to her, technology is not neutral since technology and society co-shape each other: "... We have to keep stressing that engineering is a social activity" (Johnson, 1985). Other contributions to the theoretical foundations of the academic field of *computer ethics* come from Bynum, who describes it as an applied ethics that relates to the: "... identification and analysis of the impacts of information technology on such social and human values like health,..." (Bynum, 1999), and Floridi who proposes an analogy between 'suffering in the biosphere' and 'entropy in the infosphere' and introduces the term *information ethics*: "... what is good for an information entity and the infosphere in general? This is the ethical question asked by information ethics" (Floridi, 1999).

This field has now produced a vast amount of research and is a well established field with conferences and publications, but the main actors of this scenario, *computer professionals*, are still in the background.

#### Computer ethics and computer professionals

When *computer professionals* started to come to the foreground in the *computer ethics* debate? Probably the first researcher that focused on them was Donn Parker in the 1960s with its remarkable attention to people working with computer in real life and their relationship with ethics, he wrote: "*It seemed that when people entered the computer center they left their ethics at the door*" (Parker, 1968).

In the 1980s at *Xerox Palo Alto Research Center* a discussion group was formed by computer professionals concerned over the increasing role of digital technologies in war scenarios. This was the seed for the establishment of the *Computer Professionals for Social Responsibility*, CPSR, an organization dedicated to raising awareness among the profession and the public about the dangers of using computers in critical systems (Bruemmer, 1994). Unfortunately CPSR as membership organization dissolved in 2013 (Schuler, 2013).

In the 1990s Donald Gotterbarn focused on "professionalism" and on the importance of: "... *the values that guide the day-to-day activities of computing professionals*" (Gotterbarn, 1991). He made a fundamental contribution to the definition of a *Code of Ethics and Professional Conduct*, an important reference on "professional norms", released on July 2018 by the ACM (*Association for Computing Machinery*) (ACM, 2018).

In Europe this effort for "making a difference" in the real world of computer professional is becoming evident in the works of Simon Rogerson, he wrote: "computer and information ethics are defined as integrating ICT and human values in such a way that ICT advances and protects human values" (Rogerson, 2011). Ethics and ICT have to be strongly related and, by establishing in 1995 the *Centre for Computing and Social Responsibility* (CCSR) at De Montfort University, he gave a main contribution to the historical debate about the impact of strategic, managerial, and ethical issues of ICT inside real organizations.

Despite all these important efforts, recent events raise the question about the real impact of the *computer ethics* debate in the *computer professionals* domain and inside business organizations.

One is the *Wolkswagen "dieselgate"*. In September 2015 the EPA (*US Environmental Protection Agency*) communicated that the car manufacturer *Wolkswagen* had installed a software for manipulating the data about car emissions with potential dangerous consequences on humans' health. This kind of actions are strongly related to the attitude of *computer professionals*, and, according to Rogerson, put at risk their entire community's reputation. The importance of ethics in real contexts become evident: *computer professionals* must be aware about the risks of unethical practices (Rogerson, 2018).

On another side, more recently, Dr. Timnit Gebru one researcher in the *Ethical Artificial Intelligence Team* of *Google* was fired by the company in December 2020: she was raising ethical concerns about the use of AI in language processing applications (Criddle, 2020). A dramatic conflict between ethical concerns and real businesses.

## Conclusions and next future

The role of ICT in this century is becoming pervasive, with seven out of the ten greatest companies in the world that are the "titans of the Web", ICT are critically impacting society and the environment. They are now one of the main challenges of the Anthropocene.

Computer professionals represent the core node of the ICT stakeholders' network, they are at the center of fundamental design choices, but usually operate inside large organization: how can be balanced their "ethical competence" with the power of business companies, how can they cope with the power of the organizations in which they operate? How can they develop their "moral autonomy" in social situations where both *thinking* and *action* are involved? How can we educate computer professionals to acquire the necessary ethical skills? (Kavathatzopoulos, 1988, 2003; Patrignani, 2020). Can they act just individually? Maybe it is time to re-establish organizations like *Computer Professionals for Social Responsibility*?

**KEYWORDS:** Computer Ethics, Computer Professionals.

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## THERE ARE NO VIOLENT VIDEO GAMES

Kai K. Kimppa, Olli I. Heimo, J. Tuomas Harviainen

University of Turku (Finland), University of Turku (Finland), University of Tampere (Finland)

kai.kimppa@utu.fi; olli.heimo@utu.fi; tuomas.harviainen@tuni.fi

### EXTENDED ABSTRACT

It is usual to refer to some video games as violent. The term is often connected to various games depicting violent behaviour, such as shooting, hitting, kicking, and other forms of harming and killing another humans, humanoids or (often intelligent) animals (see e.g. Fothergill and Flick, 2015). Other forms of media, such as books, movies, series or comic books also depict violence, but the main difference between games and other media is the interactivity; the player, if they wish to play the game effectively, is forced to conduct acts that depict violence towards the targets. It is hard to imagine a non-violence-based first person shooter (FPS) even though one might use non-lethal methods in one (see e.g. the Thief series, where violent acts can be avoided almost constantly, even though they are available). Also, games such as Civilization series, Total War series, Master of Orion series, or other strategic rather than tactical or first person aligned games may have the player conduct rather gruesome activities including but not limited to slavery, war, massacres, or even genocide. However the argument against violence in games is often, if not always reserved for individual actions conducted in first or third person or while leading a small group of soldiers, not those conducted in the role of a leader of an expedition of new world immigrants, a civilisation, or a galactic empire.

Games as an art form are a masterful form of make-belief. This is due to the power of graphical representation combined with interactivity. The experience of acting in a first person or a third person game easily exceeds most of the feeling gained with non-interactive media due to the personification of the character in play; it feels like / am doing it. Therefore one might argue that the violence depicted in this media should be approached in an Aristotelian way, where if conducting a deed of murder one takes the murder and being a murderer as a part of oneself. However, the argument of this paper is that this is not the case. A murder in the game has no consequences in real life (IRL); a punch in the face has no consequences such as a punch in the face IRL. A punch to the face in the game is like scoring a goal in football, acting according to the rules, and after the game no human being has been harmed (with the exception of perhaps a 'punch' to the pride of the loser).

**Argument 1:** Computer Games have now been played by large portions of populations in at least in the industrialised nations for a couple decades, for example in Finland currently over 50% of all people play them (Suomen virallinen tilasto, 2017-2019) and worldwide 2,69 billion people play video games (Statista, 2020), and this statistic is likely low, as if they have not played anything else, they have at least played Solitaire (and many do not self-report that as having played a computer game) or mobile games such as Candy Crush Saga or Angry Birds. Also, violence depicting video games have been played by large parts of the population (for example, at the peak of its popularity, World of Warcraft had approximately 12 million players), none the less, violence has decreased rather than increased in the industrialised countries (see e.g. Pinker, 2011)? Yet again, why has this been the case especially amongst those who play, or at least have the possibility to do so?

**Argument 2:** Anderson (2004) claims that those who play violence depicting video games are more aggressive also IRL. However, other studies (see e.g. Ferguson, 2011 or Przybylski & Weinstein 2019) have shown that this is true for any game which requires attention – if a player is interfered with, they

will 'lash back' quite easily, irrespective whether the game is violence depicting or not. Larkin (2018) can be read so that playing first-person shooters online is a central reason for rampage shootings. However, in already the abstract of the chapter he states:

He [Elliot Dodger] followed a route typical of post-Columbine rampage shooters by socializing himself to the role of rampager through reading books that informed and reinforced his worldview, playing first-person shooter online games, visiting hate group websites, purchasing weaponry, and planning his rampage.

Note that out of the list of different reasons proposed, playing FPSs seems the least likely to cause rampage shootings. There are hundreds of millions of FPS gamers out there; according to Clement (2021), just selected mobile shooter games' first year downloads for the following three games, namely *Call of Duty: Mobile*, *PUBG Mobile* and *Fortnite* total 564 million. If FPSs really are a major contributing factor to rampage shootings why are there not millions of them yearly? Surely visiting hate group websites and reading books which reinforce already misguided worldview are more clear signs of what is coming? And, in any case there are two major problems with generalizing from chapters like Larkin's: the cases for mass shootings are so few that any generalisations are basically based on anecdotal evidence at best, and the age bracket of mass shooters is in the same bracket as most gamers who play FPSs. Furthermore, note that purchasing weaponry – as in having weapons readily at hand – may have contributed somewhat more to the actual mass shooting, as well as planning the rampage. It is also clear that mass shooters practice with the actual weapons. Not just play an FPS game, thus learning to use the weapons in real life – which is what we point to.

Do we really think that the gamers have so little agency that they are easily affected by influences in games? It seems clear that people who play Sims do not start to randomly build houses or enact the (often gruesome) social games in Sims in real life; it seems clear that people who play games in which they emulate being a surgeon do not start randomly doing surgical operations to people in real life; it seems clear that people who play role-playing games do not start to search for dragons and then slay them in real life like a medieval saint. Why then, would people who play first person shooters start to randomly kill people? This seems absurd.

**Argument 3:** It could be accepted that 'violence' (or rather its depiction) in games ought to be lessened if there was data that showed that it was considerably more prone to lead to violent or actually aggressive actions than other widely accepted ways to spend ones free time. As an example, American Football, which no one is seriously suggesting we ought to stop playing maims and even results in the death of children and youth yearly (CNN, 2018). If it was actually the case (and we only have the questionable studies by Anderson and Anderson et al. to support this) that violence depicting video games indeed did strengthen aggressive behaviour, surely similar studies have been done in regard to sports and other leisure activities. Even Anderson and his ilk do not claim that the players who play violence depicting games would actually *do* aggressive actions in which they harm others more than the average person, they just show increased aggressive behaviour, as in being more easily annoyed and lashing out easier with words. The reason FPS players are potential recruits for the military is true when the games, such as *America's Army*, are specifically designed for the purpose; to depict the kinds of behavioural traits which are desirable in soldiers. Also, many games – as noted above – can be used to teach those already in soldier education to work better as teams and get an understanding on how to operate in the field. This however can be learned from movies or even books as well. The reason why video gamers are more suitable for drone warfare than others is because they can *play videogames*, as the user interface resembles a video game user interface, not because they are more *violent*.

**Argument 4:** There can, of course be gamified information systems, the purpose of which is to teach violence, but those are not games, but *gamified* teaching applications. If one plays a game in which one plays a surgeon, one does not learn surgery, if one plays a game in which one plays football, surely one is no better football player; why would we expect that a game in which one shoots enemies would make one a soldier – or even more likely (even know how) to use guns? Anyone who has *actually* shot with a gun – which is a rather brutal, loud, impressive and a physical effect, compared to a thud from the speakers, and a flash on the screen, with no pain in ones' shoulder – understands the difference between a FPS and real gun use intuitively; there is hardly anything similar. However, tactics and even strategy can of course be learned from a gamified system which teaches these topics specifically (although not from games like Total War Saga or similar games).

While kids play at the yard, it is common to see toy revolvers, toy bows and arrows, foam 'swords' etc., and even adults act, play and LARP. The play may seem violent, but with a closer examination, it is only make-belief. They try to get to experience being in an actual battle to live the life of a knight, a cowboy, a Native American or a storm trooper and their imagination – as they are kids – is overwhelming those of us who have already lived through our teens (Robinson, 2007). What is described here is not violence. It is make-belief which contains the idea of violence, like the idea of sex from the movies is obviously not the same as actually having sex.

Games, including the toy play of children, are based on real-world referents of many types. These can range from direct simulation to abstract concepts such as just "movement" (Klabbers, 2009). When people play a game that contains simulated depictions of violence internal to its logic (e.g., a first-person shooter), they are accepting those activities as parts of the ethics of the information system (the game) they are interacting with, not as activities with external ethical consequences (Sicart, 2009). As argued by Suits (1978), play has its internal morality, so that within the magic circle of a boxing ring, not to try hit an opponent is the wrong thing to do, and hitting does not count as violence as long as it is done within the rules. Pretend play and digital play take this one step further, moving violence-like activities to a level of abstraction that is part of the fiction and has no direct relationship to real life.

The main point of our paper is that depictions of violence are not violence. Oxford dictionary definition on what is violence is (OED, 1989):

1.
  - a. The exercise of physical force so as to inflict injury on, or cause damage to, persons or property; action or conduct characterized by this; treatment or usage tending to cause bodily injury or forcibly interfering with personal freedom.
  - b. In the phr. *to do violence to, unto* (or with indirect object): To inflict harm or injury upon; to outrage or violate. †Also *to make violence*.
  - c. In weakened sense: Improper treatment or use of a word; wresting or perversion of meaning or application; unauthorized alteration of wording.
  - d. Undue constraint applied to some natural process, habit, etc., so as to prevent its free development or exercise. Now used in political contexts with varying degrees of appropriateness.
  - e. *Law*. (See quot.)
2.
  - a. With *a* and pl. An instance or case of violent, injurious, or severe treatment; a violent act or proceeding.
  - b. In weakened sense (cf. 1c and 1d).

3. Force or strength of physical action or natural agents; forcible, powerful, or violent action or motion (in early use freq. connoting destructive force or capacity).
4.
  - a. Great force, severity, or vehemence; intensity *of* some condition or influence.
  - b. Intensity or excess *of* contrast.
5. Vehemence of personal feeling or action; great, excessive, or extreme ardour or fervour; also, violent or passionate conduct or language; passion, fury.
- †6. Violation *of* some condition. *Obs.*–1

Out of these only the 5<sup>th</sup> even *remotely* resembles potential for games to be ‘violent’. However, even this is not the same. We need to either considerably change what violence means or accept that computer games are not violent, nor do they meaningfully enhance violence. In the full paper these arguments are further analysed.

It ought to be clear that an action in digital world can do no direct harm. Yet to claim the inflicting of harm, according to the aforementioned definition, requires extra steps one should be wary to take. Harm, as making people feel bad, does not necessarily incite violence. Yet harm, as threatening with physical harm can be understood, with a loose understanding, as violence (Krug et al., 2002, pp. 6-7), and the probability, social functions and the consequences determine whether it might be or not. Hence, mimicking or playing violence in a video game differs from the virtually offered threat of violence since the game itself does not act out nor even constitute a mere threat of violence.

“The blade itself incites to the deeds of violence”, states Homer, but the game itself does not.

**KEYWORDS:** Computer Games, Violence, Ethics.

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## THE PANDEMIC IS REVEALING HOW SOFTWARE DEVELOPERS CAN CHANGE UNIVERSITY NORMS

**Marty J. Wolf, Frances Grodzinsky, Keith Miller**

Bemidji State University (USA), Sacred Heart University (USA), University of Missouri - St. Louis (USA)

Marty.Wolf@bemidjistate.edu; grodzinskyf@yahoo.com; keith.w.miller@umsl.edu

### EXTENDED ABSTRACT

In February 2020, it was not uncommon for a student to stop by a faculty member's office and knock on the door, regardless of whether the door was open or closed, in hopes of chatting with that faculty member. Similarly, a faculty member might stop by the Dean's office, check with an administrative assistant, and then knock to see if the Dean had a couple of minutes available. Each campus had its own norms of behavior that were mediated by the social as well as the physical infrastructure of the campus.

All of that changed with Covid. At most universities, Zoom (or another platform) became the ersatz meeting space, replacing offices, conference rooms, classrooms, and social spaces. Several platforms adopted for use at universities were not specifically designed as software to support normal university functions but became the de facto means of teaching and communicating on campus. The adoption of the virtual campus is challenging existing norms and gives each university an opportunity to examine whether it is preserving its commitment to the public good. Floridi (2005:186-87) examines the ontological features of the infosphere and determines a specific degree of "ontological friction" regulating the information flow within the system. Combining ontological friction with Wolf, Miller, and Grodzinsky (2019), and Grodzinsky, Wolf, and Miller (2020) on the uses of downstream software we will analyze whether, and under what conditions, software developers ought to make a social norm preserving feature available to university IT staff and when those developers ought to encourage norms should be re-examined.

Faculty, faced with an impending crisis, had immediate practical questions about how to get virtual platforms to work effectively for teaching and meetings. In many instances, the practical matters overshadowed any ethical considerations; we needed to get something to work now. Nonetheless, some ethical distinctions were immediately apparent. For example, with a single button push, the host in a virtual meeting could record all the interactions (visual, audible, and typed). This is different from the typical expectation of ephemeral interactions in a physical classroom.

There were also many discussions about the important privacy and autonomy ramifications for all participants. Security concerns were significant enough for the US FBI to issue a warning about Zoom's security problems (Bond 2020). In response to these concerns, the Zoom's CEO wrote in an April 2020 blog post: "We recognize that we have fallen short of the community's – and our own – privacy and security expectations" (Iyengar 2020).

Surveys of students and faculty in October 2020 on the campus of one of the authors revealed a common complaint that distilled to this: We are not communicating effectively during the pandemic. Deans do not communicate well with faculty. Faculty do not communicate well with students. Regardless of whether those concerns are universally accurate, they do point to an interesting solution that is illustrated by considering a certain Zoom feature. Universities that have corporate Zoom accounts have a list of all their "Company Contacts." This list includes everyone from the President on

down to every student taking a single one-credit class. From this list, it is possible for any member of the community to request an immediate meeting with any other member of the community who is currently logged into Zoom and not in another meeting. In short, this feature has removed all of the physical and social infrastructure that supports norms for engaging with other members of the community.

Our paper will explore these questions: "What responsibilities accrue to developers of software used to create a virtual university experience?" "Should such software have features that can be used to replicate existing campus social norms?" And, "What is the responsibility of the university when virtual norms create a potential conflict with its mission of contributing to the public good?" Since most universities explicitly claim to be contributing to the public good, these questions are different from the analogous questions one might ask of software used in a for-profit, corporate environment.

In this paper we will identify stakeholders and their relationships to each other and to the university as an institution. Stakeholders include students, faculty, librarians, staff, administrators, the general public, prospective students and their parents, and textbook representatives. Developers of software that is used to create a virtual university can be challenged by different sorts of relationships. "Zoom bombing" was a consequence of allowing "outsiders" easy access to meetings. However, viewed from a university perspective, it was an opportunity to consider more deeply the impact physical classrooms have on access to learning. It afforded us the opportunity to ask "How do we justify keeping people out of our classrooms and does limiting access contribute to the public good?" But the responsibility to prevent Zoom bombing was placed squarely on software developers and system administrators. They responded by forcing meetings to require either a passcode or a waiting room.

From an economic perspective, creating specific Zoom rooms for each class and only allowing students who are registered for the class into the Zoom room, preserves the norm of the locked physical classroom where the person in charge determines who gets to participate. Regardless of the initial intent to prevent Zoom bombing, Zoom's use at universities raises the question of who should be making these sorts of decisions? The developers? Teams that include people who understand the social context in which that feature is to be used? One possibility is to make such aspects a configurable feature so that downstream users of the software can make informed choices about implementing policies that reflect campus values.

We will contrast general software like Zoom, which apparently does not take an explicit position on existing campus norms, with software developed specifically for campus use, such as learning management systems (LMSs). Some LMSs take a strong position on establishing new campus norms. For example, prior to the advent of LMS, it was the responsibility of students to ensure that they were reading the material for their courses. LMSs typically include a significant number of surveillance tools. For example, it is possible to identify how much time a student spent engaged with a particular activity or precisely when a student turned in a particular assignment. This opportunity for faculty to engage in the surveilling of students more actively can have both negative and positive results. (See (Shade and Singh, 2016) for an analysis on high school students.) On one hand, a cultural shift may be happening as faculty participate in this form of intense surveillance. In the best case, faculty can offer early intervention, encouraging students who are not sufficiently engaged. On the other hand, faculty might become reluctant to help students unless there is evidence that they have sufficiently engaged the material. Furthermore, faculty may be asked to micromanage students' learning, creating a system that less effectively encourages the development of learner autonomy.

Students are not the only stakeholders at increased risk of intense surveillance (Sketit 2020). Universities may be becoming a double panopticon where both students and faculty are more closely watched.



As these examples suggest, there are options that software producers can employ with regard to specific university norms and practices. At one end of the spectrum software producers essentially disregard specific contextual norms (as in the case of Zoom) and at the other software producers intentionally introducing new, potentially disruptive features (as in the case of LMSs). We will identify options available to software developers that better support the university market. Imagine Zoom providing tools that only allow virtual door knocking when the “right relationship” (i.e., as defined by university norms) exists between the two users. Since the classes of relationships are unique to each university, it stands to reason that Zoom would have to provide the ability to add this restriction and that someone local to campus would then actually have to implement it. These sorts of considerations are even more complex when the software is going to be used globally. Norms of university behavior vary widely both within a single country and across countries.

**KEYWORDS:** downstream responsibility, changing norms, surveillance, university norms, virtual classroom, virtual campus.

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## RELIGION IS LURKING ONLINE

**Richard Volkman**

Southern Connecticut State University (USA)

volkmanr1@southernct.edu

### EXTENDED ABSTRACT

Few would dispute that Western culture has become increasingly secularized since the dawn of modernity, a process widely believed to be accelerating today due to the internet. This view is not without basis. “Religiosity in the U.S. is in sharp decline,” reports the *Wall Street Journal* (Lovett, 2019), based on a Pew Research survey showing the number of Americans listing “none” for their religious affiliation has increased from 17% to a whopping 26% in the past decade. Meanwhile, there is evidence that “Internet use is associated with decreased probability of religious affiliation” (Downey, 2014) and “Internet use is associated with increases in being religiously unaffiliated and decreases in religious exclusivism” (McClure, 2018).

However, it is a mistake to equate this “rise of the nones” with a more secular culture. While 26% of Americans report no religious affiliation, only 4% of Americans describe themselves as “atheist” with another 5% identifying as “agnostic.” A majority of “nones” actually acknowledge some form of religiosity—including the “spiritual but not religious” and many others whose exact religious life is not well captured by traditional institutional designations. Moreover, there is good reason to think that those identifying as atheist or agnostic typically operate from a belief system that provides meaning, purpose, community, and ritual—the standard hallmarks of religion amongst psychologists, sociologists, anthropologists, and others involved in the scientific study of religion (Burton, 2020). That is, there is an important sense in which even agnostics and atheists are religious in all but name.

So, perhaps religion is not so much disappearing as it is being transformed. Tara Isabella Burton, a journalist with a doctorate in theology, makes a strong case for this view in *Strange Rites: new religions for a godless world* (2020). The book identifies the unmistakably religious themes and functions that run through so many cultural trends and movements of the internet age. From mythologizing in online fandoms to the spiritual wellness culture of SoulCycle to the explosion of witchcraft and neo-paganism online to the techno-utopian transcendence of transhumanists and the online rationalist community to dueling culture warriors of Twitter social justice mobs and shitposters of 4Chan meme magick, all these communities have a distinctively religious style that animates them and makes them what they are. If computer ethics includes especially the study of the “transformation of social institutions” (Moor, 1985), then computer ethics needs to be especially careful not to mistake the transformation of religion for its decline.

I will defend a philosophical extension of Burton’s thesis to the effect that any perceived decline in religiosity has to be an illusion, since religion and morality are too intimately tied together in humans to have one without the other. We ethicists of the internet age need to recognize and understand the religion lurking online for what it really is.

The empirical case for the view that religion and morality cannot be neatly distinguished comes from recent moral psychology, which suggests our responses to morally charged stimuli are the result of a complex system of emotions that are about as likely to be expressed in religious as in moral terms (Haidt, 2013). But the broader philosophical case for the inextricably religious nature of morality comes

from what may seem an unlikely source: proponents of error theory in meta-ethics. For example, purposefully using the language of Dawkins (2006), Garner (2011) shows how the same arguments atheists use against the existence of God imply that there are no moral facts and morality is “the final delusion,” while Marks (2013) declares, “My delusion of morality was as absurd, as flagrantly in opposition to the facts of the world, as are the Biblical beliefs of any fundamentalist. In fact, the kind of morality I espoused was simply theism without God...the *command* quality of obligation...the *mystery* of its origin...an absence of *rationale* for its authority...the *lack of fit* with the spatiotemporal universe known to science.”

If moral psychology is correct that humans have evolved moral/religious emotional responses as part of their basic repertoire for navigating the social world, and error-theorists are correct that morality and religion come or go together, then we should expect (to the disappointment of error-theorists) that religion and morality together will be a permanent feature of the human condition. Any apparent decline will merely hide the transformed religiosity lurking just below the surface.

None of this would be news to Nietzsche, who anticipated exactly this in his famous declaration, “God is dead.” For Nietzsche, the death of god does not simply assert that god does not exist. Indeed, god’s one-time existence in some cultural sense is even presupposed by the metaphor. Nietzsche’s main point is rather about a whole strategy for organizing a culture, perhaps the only strategy that had ever existed, and it is not just about the demise of this or that god in some narrow sense as described by this or that religious tradition. The death of god means, “the belief in the existence of god has become *unbelievable*” (Nietzsche, 1887), and what is asserted to have died extends to anything that could play a role like historical Christianity once played in organizing a coherent culture. That is, what has become unbelievable is the assertion that any objective story of what is ultimate or highest can enjoy sufficient assent to ground a whole culture. What has died goes well beyond the particular claims of particular religious traditions to include *any* conception of transcendent truth around which one might organize a life, and Nietzsche explicitly takes this to include morality itself. Nietzsche’s “God is dead” expresses not only religious skepticism but moral skepticism generally.

But Nietzsche did not expect religion or morality to just disappear. Rather, he predicted a cultural and social fragmentation occasioned by the introduction of new values and projects promoted with religious zeal to fill in the god-shaped hole left in our collective psyche by the dissolution of old values and their legitimation. Rather than denying ourselves religiosity, Nietzsche suggests we need to find a way to *invent* new values to replace the old, and we need to somehow cultivate a settled confidence in them despite having become aware of their status as inventions. In the end, “It is not the works, it is the *faith* that is decisive here,” but this will not be the now unbelievable faith in God, but a faith in ourselves: “*The noble soul has reverence for itself*” (Nietzsche, 1886, emphasis original).

I will argue that these predictions about the aftermath of the death of god are realized in our present cultural circumstance. In particular, the cultural fragmentation and polarization that has caused so much consternation and sometimes outright violence in recent years can be readily understood as so many efforts to rekindle the religious attitude in a circumstance of global information technologies and their relentless tendency to expose newly minted pieties to the discord and uncertainty about ultimate values that characterize the modern world. Gorniak-Kocikowska (1996) suggests the transformative effects of computing are analogous to the Printing Press revolution, extending to our very conceptions of morality. Postman (1992) similarly noted this tendency of modernity—starting with the printing press—to fragment and undermine coherent worldviews, and he predicted the Computer Revolution would accelerate this. Burton is operating from the same understanding of where all this comes from, tweaked by her training in religious studies: “Scholars of religion often claim that it’s impossible to separate out the invention of the printing press from the Protestant Reformation...

Protestantism is, perhaps, the ultimate religion of the printed book. The Remixed religions we're about to explore are the religions of the Internet."

If we mean to understand our cultural circumstance after the Computer Revolution and develop a global information ethics suited to this transformed moral landscape, we need to recognize that religion is lurking online.

**KEYWORDS:** meta-ethics, religion, computer ethics, internet culture.

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## REASONS FOR RESISTING THE ACCEPTANCE OF HYPERNUDGES

Yukari Yamazaki

Seikei University (Japan)

yyamazak@bus.seikei.ac.jp

### EXTENDED ABSTRACT

As the development and prevalence of artificial intelligence and machine learning (AI/ML) have progressed at a surprising speed, the acceptance of AI artefacts has drawn the attention of scholars. While early arguments on the technology acceptance model and human–computer (or robot) interactions (HCI) have discussed the factors promoting acceptance and utilisation of new technologies, there has been another stream of thought about the factors evoking avoidance or resistance of systems.

There are approximately two streams of discussions on the avoidance or resistance to new technologies or systems. As the first issues in the fields of human–computer (or human-robot) interaction (HCI) (e.g., Kahn et al., 2006) indicates that autonomous systems make individuals feel controlled physically and psychologically (Norman, 1994; Stein et al., 2019), restrict their freedom (Kang, 2009), and take away jobs meant for humans (Waytz and Norton, 2014). The research on the organizational contexts, as the second issue, has focused on the factors for experience with similar technology (Martinko et al., 1996), systems being implemented (Markus, 1983), the context (e.g., individual or group) of its use (Joshi, 1991), stress or pressure for misuse (Marakas and Hornik, 1996), and so forth. Overall, since resistance represents a normal psychological reaction when a person perceives the consequences of system implementation or new technologies as negative (Hirschheim and Newman, 1991; Lorenzi and Rile, 2000) or a threat (Kim and Kankanhalli, 2009), the guidelines for overcoming resistance would be constructed as models (e.g., Lapointe and Rivard, 2005).

Linkages between nudges (nudging) in behavioural science and hyper technologies such as self-tracking, utilising location information, recommendation systems using behavioural history, and AI have been propounded as a neologistic word, Hypernudges. On the one hand, steering people in a better direction using the tremendous power of big data and algorithms seems to be a convenient, effective, and wonderful service. On the other hand, Hypernudges might cause several unintended side effects; as is said that good medicine tastes bitter. Indeed, quite a few studies have argued about the negative effects and concerns of Hypernudges. Examples of concerns for Hypernudges include the legitimacy and legal implications of these techniques (Yeung, 2017), invasion of privacy (Lanzing, 2018), personalisation (Peer et al., 2019), and ethical and philosophical matters in Hypernudges (Sætra, 2019).

Both nudges and Hypernudges are basically gentle and mild, neither is obtrusive or disturbing, and they promote better direction. However, it is necessary to pay attention to two aspects. The first concerns the depth of interventions. Several prior researchers have found that people tend to disagree with deeper (excessive) interventions, such as mandatory choice architecture, than shallower ones (Yamazaki, 2020) as well as unconscious (overt or transparent) interventions where people are unaware of being supported than conscious ones (Felsen et al., 2013; Jung and Meller, 2016).

Second, there are several features that make Hypernudges different from nudges. Because Hypernudges utilise big data, such as individual purchase history, they are too personalised. In

addition, such information is dramatically updated every moment, and feedback from Hypernudges is dynamic, synchronous, and flexible. The other features are in line with the traits of AI, such as autonomy, unpredictability, and complexity of the mechanism because Hypernudges might utilise AI artefacts.

To reveal the reasons that people hesitate or resist to be supported by Hypernudges through AI artefacts, in this study, we developed on prior survey studies that examined the acceptance of traditional nudges (Thaler and Sunstein, 2008). We proposed eight reasons to resist AI use and support; 1) opacity, 2) mismatch between own feeling and AI proposals, 3) unpredictability, 4) without consent on using personal information, 5) demotivation, 6) indulging themselves, 7) inconsistency with own will, and 8) indifference. Totally seventeen hypotheses which were related to these eight reasons were examined the following examinations.

A total of 1,211 participants were asked to answer whether they agree or disagree with 16 types of Hypernudges of various categories (contents) and depth. As for the categories of AI supports, for example, placing healthy food at prominent positions in shopping site, requiring meat-free day, reducing for childhood obesity, mobile security, and so on. Participants were asked to choose eight reasons mentioned above for their resistance to AI use.

The results showed that only two reasons, 2) mismatch (65.73%,  $\chi^2(1) = 119.869$ ,  $p < 0.01$ ) and 4) without consent (56.56%,  $\chi^2(1) = 20.876$ ,  $p < 0.01$ ) were chosen by more than half of the participants, that is, significant reasons to resist AI artefacts. The reason that was least chosen is 6) indulging yourself (16.43%,  $\chi^2(1) = 545.804$ ,  $p < 0.01$ ), and the next was 5) demotivation' (20.86%,  $\chi^2(1) = 410.425$ ,  $p < 0.01$ ). 1) Opacity (32.29%,  $\chi^2(1) = 151.974$ ,  $p < 0.01$ ) was also chosen relatively fewer times among all the reasons. In addition, 3) unpredictability ( $\chi^2(1) = 3.489$ ,  $p < n.f.$ ) has no significant effect as a refusal reason.

Four out of 16 Hypernudges were significantly higher percentage of rejection, but six Hypernudges were significantly more acceptable to more than half of the participants. The contents of four rejected Hypernudges were 'requiring meat-free day' (70.57% of rejection,  $\chi^2(1) = 104.08$ ,  $p = 0.000$ ), 'subliminal advertisement' (66.61%,  $\chi^2(1) = 65.779$ ,  $p = 0.000$ ), 'free of unhealthy food on top page' (60.00%,  $\chi^2(1) = 24.6$ ,  $p = 0.000$ ), and 'placing healthy food at prominent positions' (54.87%,  $\chi^2(1) = 5.644$ ,  $p = 0.018$ ). Furthermore, the results of the interactions between resistance reasons and reject of Hypernudges shows that, overall, only three resistance reasons; 'the mismatch between the suggestions from AI' (e.g., choose of resistance reason and reject of Hypernudges vs. not choose and accept of Hypernudges are 310 vs. 95,  $\chi^2(1) = 31.859$ ,  $p < .001$ ), 'the unpredictability of AI' (e.g., 206 vs. 123,  $\chi^2(1) = 9.978$ ,  $p < .001$ ), and 'without consent' (249 vs. 111,  $\chi^2(1) = 18.462$ ,  $p < .001$ ), have significant effects with the reject for Hypernudges.

The results indicate that people approximately agree the support by AI and they neither proactively choose nor hesitate the resistance reasons of AI artefacts, rather they welcome to receive the support from AI artefacts in many situations. These results would cause a stir that users have not deeply consider the acceptance and consequences of AI artefacts. On surface, the next issues we will interests are what categories and type of hypernudges are people's tastes. However, it must be necessary to alert and deliberate the unconscious effects from them, before coexisting with AI artefacts hereafter.

**KEYWORDS:** driven-by AI artefacts systems, acceptance of Hypernudges, privacy, concern for AI artefacts.

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## INTEGRATION OF PUBLIC ENGAGEMENT MECHANISMS IN AN ONLINE LANGUAGE COUNSELLING PLATFORM

Urška Vranjek Ošlak, Helena Dobrovoljc

ZRC SAZU, Fran Ramovš Institute of the Slovenian Language (Slovenia), ZRC SAZU, Fran Ramovš Institute of the Slovenian Language (Slovenia) and University of Nova Gorica, School of Humanities (Slovenia)

urska.vranjek@zrc-sazu.si; helena.dobrovoljc@zrc-sazu.si

### EXTENDED ABSTRACT

#### Introduction

This extended abstract presents an upgrade of the existing software infrastructure of an online language counselling platform with public engagement mechanisms. At the time of the upgrade planning, the platform in question was already well established among users and had great potential to serve as a platform for public-oriented research; however, it was primarily intended to help users with standard language communication. This abstract presents steps taken towards consensual integration of the public in the research process through the GRACE project.<sup>20</sup> This upgrade is currently in progress and will be completed by October 2021.

GRACE aims to contribute to the European Commission goal to spread and embed Responsible Research and Innovation (RRI) in European research, i.e. achieve institutional change. The concept of RRI implies that stakeholders in the research process work together in order to meet the needs of society, namely through democratisation of science, responsiveness and responsibility (*GRACE*, n.d.; Owen et al., 2012). The vision associated with participation in the GRACE project is to develop a plan for defining more advanced forms of collaboration between researchers and the public, and to upgrade the existing platform accordingly. More specifically, we envision a language counselling service that relies on citizen science, based on the perception that the public is competent to conduct carefully structured research in areas that are readily accessible to citizens, such as the language they speak (Svendsen, 2018). Reliance on citizen science will pave the way for the formation of new, more participatory, institutional agendas such as the production of modern language manuals.

#### Current situation

The central language counselling platform for the Slovenian language (*Jezikovna svetovalnica*, available at <https://svetovalnica.zrc-sazu.si/>) managed by ZRC SAZU is a good example of how the public can be involved in the scientific process. The platform relies on contributions from the public in the form of language questions and dilemmas, which are answered by linguists and published on the platform. The platform receives up to 1,000 views per day and publishes about 30 answers per month. It is widely used for addressing ambiguities in language and seeking advice on linguistic choices; researchers use it to identify language description gaps (Dobrovoljc et al., 2020).

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<sup>20</sup> This contribution is part of a project that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824521.



Platform users are mostly Slovenian language speakers. They are willing to actively engage in constructive linguistic discussion and research; they see standard language as a vital part of their common identity. They seek straightforward linguistic advice on specific issues as well as in-depth explanations of linguistic phenomena. The platform is a reputable consulting body for lay people and professionals alike; however, language-related professions such as proof-readers, translators, teachers, etc. prevail (Dobrovoljc et al., 2020).

Involved language counsellors are in-house linguists who provide language advice as an addition to their professional assignments and scientific research. They sometimes experience assignment overload and therefore have limited time and energy to devote to language counselling. To some extent, they are sceptical about public participation in the research process.

Language users are already involved in the upstream stage of the research process as they provide language questions and ambiguities. At the time of the upgrade planning, the public was not yet officially and in the narrow sense involved in the mid- and downstream stages of the research process.

### Methodological approach

In the process of identifying the main points where the platform could benefit from a broader aspect of public engagement activities, several steps were taken. First, the Editorial Board of the platform gathered their thoughts and expectations regarding the announced upgrade. Then, a good practice study was conducted by the authors of this contribution to gain insight into similar activities in the field of linguistics. A questionnaire was created to explore the experiences and needs of language counsellors. With all the findings in mind, an upgrade plan was drafted and tested through a consultation process. Through the analysis of the consultation process, the final upgrade plan was devised.

The Editorial Board meeting revealed that mid- and downstream research stages of the platform have the greatest potential for improvement in terms of public engagement. The platform does not yet include midstream public engagement activities. There is potential in this direction as the platform reaches a wide audience and has over 1,800 registered users. Editorial Board members were in agreement about including the public in the downstream research stage, namely through the addition of a structured feedback gathering mechanism to the platform.

The study on good citizen science practices in linguistics presented opportunities this methodology enables in the field. Since language is one of the areas of particular interest to the public, language-oriented citizen science activities are likely to be successful in providing large and useful datasets. Most resources (Svendsen, 2018; Stoll, n.d.; *SNF-AGORA*, 2020; *IamDiÖ*, 2020) describe citizen science activities in the up- and midstream of the research process; downstream citizen science activities are less common, which is to be expected given that decision-making in science is usually the preserve of scientists. This was also the case with the involved language counsellors - they too were hesitant when it came to user feedback.

The challenge at this stage was to educate the language counsellors who were unwilling to accept public participation about the positive impact of such activities on the research process. A questionnaire was prepared to explore their experiences and needs. Next to assignment overload, a lack of formal evaluation for language counselling activities was discovered. This problem was communicated to superiors and the search for an appropriate evaluation solution is pending. The scepticism of language counsellors towards involving the public in the research process was significantly reduced by presenting the findings of the above mentioned good practice study. In addition, a webinar was organised to familiarise the language counsellors with a similar and successful

Dutch language portal Meldpunt Taal (represented by Marc van Oostendorp, the portal can be found at <http://meldpunttaal.nl/>).

The purpose of the consultation process was to test the upgrade plan. The consultation process consisted of an online stakeholder consultation organised on Zoom and a questionnaire for lay language users. The stakeholder consultation included three professional language users and three researchers. The lay users were invited to complete a questionnaire on the main issues discussed during the online consultation. The questionnaire was published on the platform and was active for one week. The 32 respondents with no linguistic background were predominantly professionals or officials with higher education (mostly BA or MA).

## Results and conclusions

The results of all the activities listed above were used to create the final upgrade plan that describes the public engagement activities and mechanisms that will be integrated into the online language counselling platform in Spring 2021. These are as follows:

- Upstream: No changes.
- Midstream: Additional editable section will be secured on the platform homepage where news and announcements will be posted and which could in the future include links to midstream research (language use questionnaires, etc.).
- Downstream: There will be two feedback collecting mechanisms – (1) for registered users asking questions about language, and (2) for visitors in general. The modules will be separate and feedback will be stored in separate databases. Feedback results and relevant findings will be communicated to the public.

The planned upgrade aims to fully involve the public in the research process. Language users will not only provide research material (upstream), but they will also be able to provide feedback on the research conducted and actively participate in linguistic activities (downstream). In the future, midstream research initiatives could also be published on the platform.

Public participation in all research stages will further democratise the answering process; answering strategies will be adapted to the needs of language users. The platform and the organisation behind it will become more responsive to society, namely by aligning the research process and its outcomes with society's values, needs and expectations as expressed through the public engagement mechanisms described above.

**KEYWORDS:** linguistics, citizen science, public engagement, language counselling, internet.

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## **BLOCKCHAIN AND BIOMETRICS AUTHORIZATION; WHAT WE ACTUALLY COUNT TRULY COUNTS?**

**Kazuyuki Shimizu**

Meiji University (Japan)

shimizuk@meiji.ac.jp

### **EXTENDED ABSTRACT**

The purpose of this paper is to explore the possibility of sharing value among complexly related stakeholders using blockchain, the core technology of cryptocurrency (Bitcoin) (Nakamoto, 2008). In particular, the value interaction between human input (smell, taste, touch, sound, sight) and human output (tactile, symbol, writing, sound, voice) as IoB (Internet of Body) via the Blockchain is concerned. This interaction is related to the cognitive circuits in the brain (Turnbull, 2012). The dilemma is the autonomous decentralization of systems through P2P (peer-to-peer authorization) and the digital invasion of biological privacy. IoB privacy data is a human rights issue and must be protected appropriately and evaluated. Personal physical data give possibilities for understanding effective predictions of the collective human action. This is like such adopting process of bitcoin into society. In other words, it is similar to finding a causal correlation with a logical way of thinking as the background of data. Does society (collectively cognition) admit new things like Bitcoin? Here, the correlation between Bitcoin prices, Nasdaq and other variables such as a massive amount of E-commerce data are concerned. As a result, Bitcoin strongly correlated with NASDAQ (.844 \*\*), and e-commerce data had a weak standardization factor (-.299). It assumed Bitcoin does not work as a major payment method for E-Commerce when the price of Bitcoin continues to rises and fluctuate. However, if Tesla and Visa purchase Bitcoin as their payment method, the price will rise as trustworthy. Therefore, this phenomenon shows that the blockchain technology as a proxy variable the Nasdaq has been very promising.

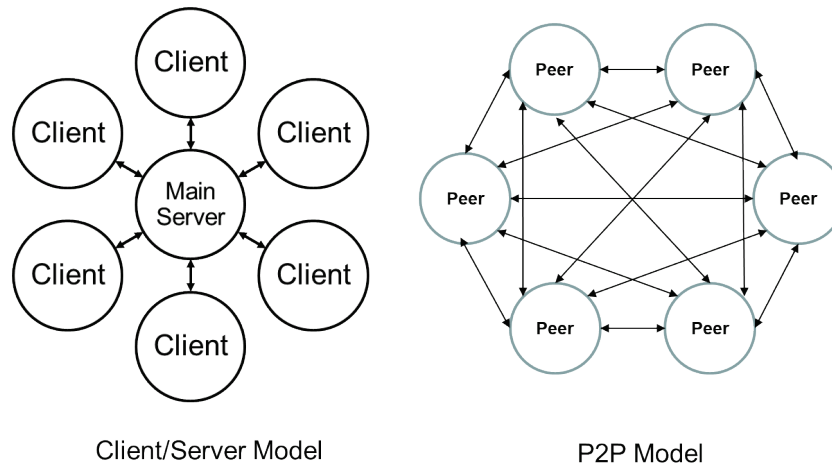
### **Blockchain**

There is legal currency (money) as a method of measuring value. Before the Nixon shock, dollars were proportional to the value of gold (gold standard). As a primary usage, money mediates the exchange of goods and services. Gold stands at roughly \$10 trillion in 2020 Dec. For example, how long it took the company to be trillion dollars monetary network; Microsoft 44 years, Amazon 24 years, Apple and Google 22 years, Bitcoin 12 years (Michael, 2021).

Currently, money is a settlement function for mediating various values. Therefore, it can be seen that the function of mediate means using Blockchain, such as Bitcoin, can be used for multiple value exchanges. For example, on YouTube, advertising revenue is determined by the number of followers.

There are two essential principles in Blockchain. One is the P2P authentication system, and the other is the computational processing speed that depends on the development of technology such as CPU and GPU (graphics processing unit) development. To understand the P2P authentication system, Figure 1 below shows the P2P method and the client-server model.

Figure 1. Client/Server Model versus P2P Model



Source: Created by the author with reference to Jaime Galán-Jiménez and Alfonso Gazo-Cervero

The P2P model is an autonomous decentralized system, and the client-server model is a centralized system. The P2P model shows DAO (Decentralized Autonomous Organization), which realizes democracy in virtual space.

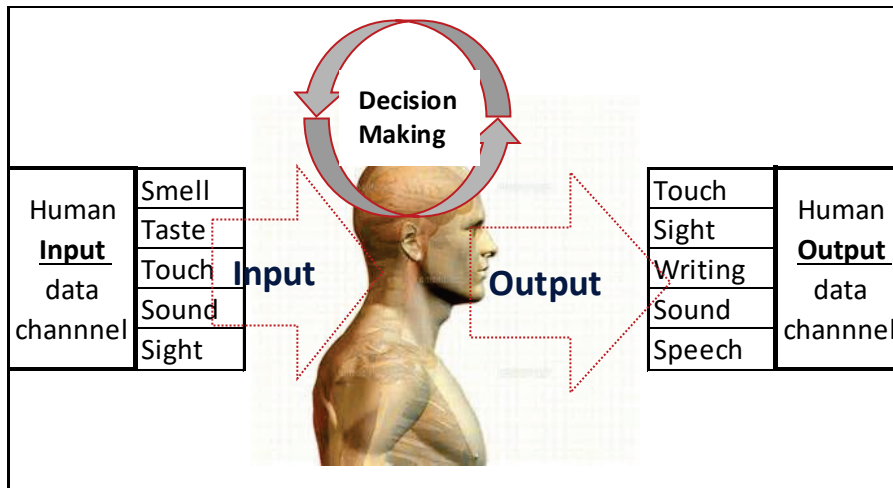
From this, it can be understood from the comparison that the P2P model is a stable system in which information is not concentrated. A definition of P2P networking is a set of technologies that enable the direct exchange of services or data between computers. Implicit in this definition is the fundamental principles that peers are equals. P2P systems emphasize sharing among these equals. A pure peer-to-peer system runs without any centralized control or hierarchical organization. Cennamo suggests the success of digital currencies depending on their business type (i.e. platform) and on their technology type (i.e., Coin and token) (Cennamo, Marchesi, & Meyer, 2020).

The consensus mechanism that Bitcoin uses is called Proof of Work (PoW). PoW is necessary for security, which prevents fraud, which enables trust. This security ensures that independent data processors (miners) can't lie about a transaction. Blocks are produced roughly every ten minutes and are made up of transactions. Therefore, the miners (block creators) need powerful computer equipment like a GPU or, more realistically, an application-specific integrated circuit (ASIC). To get a sense of how much computing power is involved, when Bitcoin launched in 2009, the initial difficulty level was one. As of 2019, it is more than 13 trillion (Euny, 2020).

### Biometrics

The human brain is a massively parallel computer processing many bits of data at once rather than one bit at a time. The personal computer could only "emulate about a million neuron connection calculations per second, which is more than a billion times slower than the human brain" [Kurzweil, 2016]. Figure 2 shows the influential factors of human decision-making from input and output as physical actions. When such individual physical activities can be captured as digital data, the interaction between individual autonomy and an organization also could be control.

Figure 2. Concept of Human Transaction



Source: Created by the author (Shimizu, 2016)

Physiological measurements are made possible, for example, through wearable devices supported by widely used and inexpensive sensors. This technology is currently being introduced to markets. Stream mileage, calories burned, exercise intensity, heart rate and other data to the wearer's mobile device. The Internet of Things (IoT) is built on strong internet infrastructure. Radio Frequency Identification embedded (RFID-embedded) smart cards are ubiquitous, used for many things, including student I.D. cards, transportation cards, bank cards, prepaid cards, and citizenship cards. The development of biometric identification technologies has continued to advance. For example, Blockchain methodologies have been successfully adopted in the library, where based on integrated technologies using Blockchain and finger-vein Biometrics (Meng-Hsuan , 2020 Sep).

Is blockchain trustworthy?

IoB privacy data is a human rights issue and must be protected appropriately and evaluated. Personal physical data give possibilities for understanding effective predictions of the collective human action. This is like such adopting process of bitcoin into society. In other words, it is similar to finding a causal correlation with a logical way of thinking as the background of data. Does society (collectively cognition) admit new things like Bitcoin?

Various problems of Bitcoin using such blockchain technology will be solved through the trust of society. Bitcoin adapts the mainstream adoption of cryptocurrencies by PayPal, Square, VISA and Tesla. Here we consider the relationship between Bitcoin and the technology companies that should give Bitcoin trust. In other words, the correlation between Nasdaq, an indicator of mainstream tech companies, and Bitcoin prices. In conclusion, there was a strong positive and significant relationship between Nasdaq and Bitcoin. Here analyze the correlation and regression rate between Bitcoin monthly price (Y) and six variables (a), such as Bitcoin volume (a1: Volume Z), the interest rate of two major currencies (Euro (a2; De Z) and Dollar (a3; US Z)), gold price (a4; Gold Z), NASDAQ price (a5; Nasdaq Z) and E-Commerce transaction data (a6; E-commerce Z) and using the following statistical figures (BIDITEX Exchange, 2020). The numerical data-target period was from October 2014 to April 2021. The variable numbers calculated using the Z score to improve the correlation and regression rate analysis accuracy. Therefore, "Z" has written in the table for all variables.

## Discussion

The dilemma is the autonomous decentralization of systems through P2P and the digital invasion of biological privacy. Murata suggests that in the society where widespread use of artificial intelligence (A.I.)-based information systems, the truths would become meaningless or worthless. To prevent the emergence of the post-truth society, everyone has to acquire the sufficient knowledge and skill for good computing practices, particularly the ability to consider socially and ethically, through undergoing well-organized ICT educational programmes [Yamazaki, Murata, Orito, Shimizu, 2020].

**KEYWORDS:** Blockchain, Peer to Peer (P2P), Biometrics authorization, Decision Making process, Internet of Body (IoB), Nasdaq.

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## **PRIVACY IN THE NEW NORMAL: THE IMPLICATIONS OF COVID-19 TRACKING AND TRACING TECHNOLOGIES ON PRIVACY AND CYBERSECURITY**

**Debora Christine, Mamello Thinyane, Christy Un**

United Nations University Institute in Macau (Macau SAR)

debora@unu.edu; mamello@unu.edu; unchristy@unu.edu

### **EXTENDED ABSTRACT**

The COVID-19 pandemic has led governments worldwide to resort to data-driven digital technologies to monitor and curb the spread of the virus. These tracking and contact-tracing technologies employ different design approaches with varying potential for intrusive data collection and personal privacy violations. Their deployment has necessitated considering and balancing competing values and addressing ethical concerns in the interest of personal and public safety.

This article positions the deployment of tracking and tracing technologies as a continuation of the pattern of securitised response to the COVID-19 pandemic - normalising digital surveillance during states of emergency. It then unpacks the privacy concerns in the collection, processing, and use of COVID-19 data vis-à-vis the different forms of privacy breaches. Further, it proceeds to highlight the compatibility and tensions between values central to cybersecurity practices to provide a nuanced understanding of the implications of tracking and tracing technologies on privacy and cybersecurity.

Securitisation has increasingly become a critical lens to interpret global health as it provides a modality to understand the nexus between health and security. The deployment of tracking and contact-tracing technologies in response to the COVID-19 pandemic is one element of this securitisation pattern. While digital technology deployment is meant to strengthen pandemic management capacities and, by extension, national and global health security, the technological and data approaches that are used raise questions about rights and justice in the context of cybersecurity.

Several social and political justice codes, including UN resolutions, recognise the need to promote and protect people's enjoyment of human rights online. In general, these codes recognise that the rights to privacy, freedom of opinion and expression, and the rights to data ownership, access, and representation are fundamental to the achievement of fairness and justice.

The deployment of COVID-19 surveillance technologies and excessive and intrusive use of data generated from these technologies constructs a utilitarian notion of technology and data as a measure to safeguard national security, thereby alluding to an approach to cybersecurity that focuses on the nation-state as the referent security object at the expense of individuals. Meanwhile, human-centric cybersecurity places the protection of the aforementioned individuals' rights and wellbeing at the centre of cybersecurity practices (Deibert, 2018).

While COVID-19 tracking and contact-tracing technologies contribute different insights towards monitoring the virus spread, both technological solutions and the data they generate have potential conflicts with human-centric values, including privacy.

Privacy is understood as "the right to be let alone" (Warren & Brandeis, 1890), "control over access" (Moore, 2003), and "informational control" (Westin, 1967). Privacy protects against encroaching social control by others through their access to one's information or their control over decision-making.

Attempts to identify the main categories of privacy and the different privacy problems have yielded several typologies of privacy (see, for example, (Koops et al., 2017)) and taxonomies of privacy harms (see, for example, (Solove, 2006)). Solove’s taxonomy highlights the multidimensionality of privacy and the multitude of ways privacy can be violated, thus providing a useful framework to unpack potential privacy harms enabled by the functionalities of COVID-19 tracking and tracing technologies (Table 1).

Table 2 The mapping of potential privacy harms of COVID-19 tracking and tracing technologies to Solove’s (2006) taxonomy

<b>Domain</b>	<b>Privacy breach</b>	<b>Potential privacy harms due to approaches in technology use and data process</b>
Information collection	Surveillance	Automated, real-time collection of data (e.g., geolocation, symptoms) via mobile networks; reporting to health databases
	Interrogation	Questions asked to users through the technologies
Information processing	Aggregation	Violation of context integrity from combining different pieces of information of data subjects from multiple databases
	Identification	<ul style="list-style-type: none"> <li>– Symptom-based case identification</li> <li>– Re-identification of individuals following anonymisation</li> </ul>
	Insecurity	Potential data breaches linked to the centralisation of large amounts of personal data
	Secondary use	Repurposing of the tracking and tracing technologies and data for new uses
	Exclusion	Data subjects not having legibility to personal data collection and processing; not having access to aggregated data; and not being able to correct errors in automatically collected data
Information dissemination	Breach of confidentiality	Mishandling - data leaked or sold to commercial service providers
	Disclosure	Automated alert sent to those who have been in close vicinity with suspected/confirmed cases
	Exposure	N/A
	Increased accessibility	<ul style="list-style-type: none"> <li>– Better precision and easier access for data collection from data subjects in more connected areas</li> <li>– Centralised database being made accessible to the state</li> </ul>
	Blackmail	Being subjected to extortion and blackmail because of potential data breaches
	Appropriation	Future repurposing contexts of data may include commercial services and new government controls
	Distortion	Automated alert sent to those who have been in close vicinity with false positives
Invasion	Intrusion	<ul style="list-style-type: none"> <li>– Altering users’ behaviour into complying with COVID-19 guidelines through nudging and persuasive techniques</li> <li>– Alerting authorities and citizen vigilantes about those violating quarantine rules</li> </ul>
	Decisional interference	<ul style="list-style-type: none"> <li>– Altering users’ behaviour into complying with COVID-19 guidelines through nudging techniques</li> <li>– Enforcing curbing measures through geofencing techniques</li> </ul>

Source: authors’ elaboration based on the functionalities of COVID-19 tracking and tracing technologies (Ada Lovelace Institute, 2020; WHO, 2020)

Tracking and tracing technologies collect sensitive data, including those related to personal identity, communications, location and movement, and transactions which can trigger inter-related privacy issues (Martinez-Balleste et al., 2013; Santucci, 2013).

The COVID-19 tracking and tracing technologies have highlighted key privacy paradoxes associated with value conflicts in cybersecurity, i.e. between security, privacy, fairness, and accountability (van de Poel, 2020). Security can be understood as the state of being free from threats; fairness is related to equality, justice, and non-discrimination; and accountability concerns transparency, openness, and explainability. Understanding how these values correspond and conflict with privacy will depend on the specific context.

Privacy-preserving measures integrated into technologies and data approaches, for example, could provide individuals with both privacy and cybersecurity. On the other hand, while centralised database and risk scoring can contribute to fewer false alerts, hence more security, this strategy risks data being accessed and used beyond the immediate emergency, which in turn can harm individual privacy.

Accountability measures such as imposing strict purpose, time, and access limitations to data, and establishing an independent oversight to scrutinise technology deployment and data use could contribute to preserving individuals' privacy. However, some degree of revelation of personal information which might be privacy-sensitive, such as socioeconomic status, might be needed to obtain the bigger picture of the effectiveness of the pandemic handling.

Fairness and privacy conflict in at least two instances. First, less access to the digital devices of people living in less connected areas (i.e., more privacy) implies imbalances in data in terms of demographics, geography, and socioeconomic vulnerabilities, which can lead to unequal access to COVID-19 benefits and services. Secondly, automated contact-tracing is more likely to return false positives for marginalised populations and vulnerable communities living or working in relatively crowded, high-contact conditions with less resources to self-isolate, thus risks compounding historical discrimination.

These instances of value conflicts between privacy and fairness can be framed from the perspective of data justice – “fairness in the way people are made visible, represented, and treated” in data and data-related outcomes (Taylor, 2017). Data justice, which is increasingly explored in critical data studies scholarship due to the intensified datafication of society and everyday life, provides frameworks for analysing these conflicts.

Applying a human-centric lens to cybersecurity centres individuals as the primary objects of security and foregrounds ethical concerns often overlooked in the rapid experimentation and adoption of technology, particularly in emergency circumstances. The deployment of technological solutions in the new normal requires better identification and addressing cybersecurity value tensions to balance protecting individual privacy and safeguarding public health and security.

**KEYWORDS:** privacy, security, technology, COVID-19, cybersecurity, value.

**ACKNOWLEDGEMENTS:** This work is supported by the Science and Technology Development Fund of Macau (FDCT) under Grant No. 0016/2019/A.

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## SOME REMARKS ON THE ETHICAL RELEVANCE OF LEAKY ABSTRACTIONS

**Marco Almada**

European University Institute (Italy)

Marco.Almada@eui.eu

### EXTENDED ABSTRACT

Algorithms occupy a central place in the current debates on the ethics of computing. As computers are used to replace human labour in various tasks, the greater level of scrutiny over automated decision-making has led to increased attention to the computational procedures that lead to an automated decision. Consider, for example, how “Ditch the algorithm” – and its less polite variants – has become a slogan for protesting against unjust algorithmic decisions, both in the case of British students who had their grades determined by predictions based on historical data and not on their in-class performance (Amoore, 2020) and of American medical professionals who were deprioritised for vaccination despite working in the frontlines of the response to the pandemic (Wamsley, 2020). Nevertheless, while the focus on algorithms can be useful both as a slogan and as an instrument for revealing ethical issues on partially or fully automated decision-making processes, this paper argues that reducing the discussion over computer systems to a debate about algorithms misses relevant questions about the ethical premises and consequences of automation.

The term “algorithm” is often used in one of two meanings. In the narrow sense, used among computer scientists, an algorithm is a formalised description of a procedure that starts from some input values and produces outputs (Louridas, 2020, pp. 21-22). This definition highlights three elements of the computing system that follows such steps: the data that the system receives as an input, the computing steps that are applied to these inputs, and the resulting data that will be returned as an output. By attending to these steps, a growing body of analysis of computer systems has managed to not just identify undesirable outcomes of computation but also to show how such outcomes are produced by biased data collection methods or the application of discriminatory or otherwise inadequate procedures for arriving at a decision from the input data (see, e.g., Washington, 2018). This efficacy, in turn, has contributed to a broader, *metonymical* use of “algorithm” as a description of the entire sociotechnical system that is responsible for the total or partial automation of a decision-making process (Dourish, 2016, p. 3).

Both senses of “algorithm” are relevant for understanding how decision-making processes are automated and the social consequences of such automation. However, adopting an algorithm-centric perspective of automated decision-making systems may mislead analyses of the ethical implications of automation. This paper analyses two such modes of failure – *algorithm reductionism* and *algorithm fetishism* –, describing their impact on how we understand decision-making systems and their common origin: the idea that there is a single privileged perspective that must be used for the analysis of a computer system.

Algorithm reductionism consists of the conflation of the narrow and broad meanings of “algorithm”. Since an algorithm is a mathematical description of a procedure, it will only produce results if *something* follows this procedure – and, in the case of automated decision-making, this something is a computer system. Referring to computer systems as algorithms is a *pars pro toto* substitution that obscures other elements of an algorithm, such as the code that implements an algorithm into an executable program, the tools used in this development process, and the material support in which

the program is executed. These elements provide the backdrop for an algorithm's functioning but might introduce ethical issues of their own. Background elements of a system become relevant whenever they shape the operating premises or the outputs of an algorithm: for example, decision-making systems validated against biased benchmarks have been shown to reproduce these biases (Buolamwini & Gebru, 2018; Caliskan et al., 2017). However, the technological infrastructure behind an algorithm might raise ethical issues not directly related to that algorithm's main function, as shown by the substantial footprint left by large-scale AI systems (Crawford & Joler, 2018). Consequently, any ethical analysis that looks solely at the algorithm as a decision-making procedure might fail to identify and address the reasons why an AI system generates certain effects.

Algorithm-centric analysis may also contribute to algorithm fetishism, that is, the treatment of algorithms as entities that independently produce social effects (Chun, 2008). Fetishism is not wrong *per se*, as the social meaning ascribed to computer systems often goes beyond the technical properties displayed by those systems (Thomas et al., 2018). Still, tracing broader social, economic, and cultural outcomes to an algorithm can be misleading if one fails to distinguish between the term's broad and narrow senses. This can be seen in the two cases described above, in which the algorithm became a scapegoat for the harm generated by the application of criteria established by human stakeholders (educational and medical authorities, respectively). An algorithm-centric discussion of computer ethics may thus be weaponised by human actors that seek to avoid responsibility for their decisions by placing the blame upon a computational system that cannot deal with the ethical and legal consequences of its actions (Bryson et al., 2017).

At first glance, fetishism and reductionism may seem to pull ethical inquiry toward opposite directions: while reductionism disregards aspects of computing that are not described in the algorithm, fetishism overextend that algorithm's reach by blaming (or praising) it for things that are at best mediated – but not caused – by computation. However, these issues can be traced to the same source: the idea that ethical analysis of computer systems can proceed by adopting a single, privileged point of view: that of the algorithm that drives its operation.

Ethical and legal analyses centred on algorithms rely on the computer science method of *abstraction*, which moves to the background information not related to the elements of interest for the question at hand (Colburn & Shute, 2007). In this sense, both meanings of “algorithm” provide different abstractions: the narrow sense of algorithm moves to the background information about the material and social context in which the procedure is followed, while the broad sense hides many of the technical contingencies internal to the sociotechnical system. However, these abstractions are often *leaky* (Spolsky, 2004) in the sense that the technical and human factors that were abstracted away might themselves have consequences for the ethical and legal consequences associated with the system.

In this context, algorithm reductionism and fetishism provide signs that an abstraction is leaking and, consequently, obscuring relevant elements for ethical analysis. This paper argues that leaky abstractions should not be addressed through a change of unit of analysis. Instead, these systems should be understood as assemblages (Nail, 2017) formed by a multiplicity of elements and their relations, which are subject to changes as time passes and social contexts change. Recognising that abstractions leak and that such leakages can have ethical and legal consequences, the paper thus proposes a framework for multi-layered analyses, which look at AI systems from various levels of abstraction at the same time. By combining insights from these various perspectives on a system, multi-layered analyses can contribute to the design of effective ethical and legal interventions in technology, ensuring that they target elements in which change can be effected and reducing the risks

of misleading fetishism and reductionism that might follow from the choice of a single analytical vantage point.

**KEYWORDS:** sociotechnical systems, assemblage theory, algorithms, abstraction, levels of abstraction.

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## **EVOLUTION IN THE MUSEUM NETWORK AND ITS USE IN THE COVID-19 PANDEMIC**

**Raquel García-Martín, Ana María Lara Palma, Bruno Baruque Zanón**

Universidad de Burgos (Spain)

rgm0004@alu.ubu.es; amlara@ubu.es; bbaruque@ubu.es

### **EXTENDED ABSTRACT**

The city of Burgos, in the north of Spain, is home of one of the few museums in the world dedicated to Human Evolution: The Human Evolution Museum or (*Museo de la Evolución Humana*, MEH). It was originally created as an environment to show to the public the achievements of the archaeological research in the Atapuerca archaeological sites (also neighbouring to Burgos) but it has evolved to a landmark to the city, becoming also central to its international attractive and cultural life.

Although the theme of the Museum revolves around the evolution of man since prehistory, we find ourselves in the 21<sup>st</sup> century, in a relatively young museum -cutting edge in many aspects- and a reference scientific dissemination center, where digital technology, internet, and social networks are very present.

The objective of this paper is to observe the positive impact on society, for the acquisition and accessibility of information and data, through "Cultural Digitization" in museums and to the way of using New Technologies.

An empirical study has been carried out with interviews with experts and a study by questionnaires at the state level, where the great use of new technologies and the possibility of improvement is detected if workers are trained in it. (Figures, 1-2).

The use of new technologies in the cultural sector is demonstrated, in line with the data obtained, that it increases the use of digital and technological training by 31%, enhances scientific dissemination by 26% and requires improvements in implementation and usability of data base algorithm by 35%.

The analyzes in this study generate many potential lines such as communication, education, accessibility, trust, equality, inclusion or, thanks to the digitization of museums, eliminate "knowledge gaps" such as the "Generation gap", adapting to the new media and the "physical gap" due to the impossibility of geographical displacement, mobility or the Covid-19 pandemic.

The benefits provided by the Museum when interacting with users through digital media and social networks, being open and accessible to all citizens, is to contribute to the growth of a "Cultural Society", eliminating "knowledge barriers" has been corroborated with the event of the World Health Pandemic, it's a fascinating and very interesting topic to describe in this contribution.

It is such a current topic that no specialized literature has been found on this topic and the one that has been found has been at the informative level. Although there were many digital tools, there are many novelties, both in dissemination and communication, connecting public and private organizations and society, which is why there is a need for the development of ethical policies and practices in the use of ICTs, which is the technology of the future and of the present. For this, communication between research communities and professionals in ethics, information, informatics and ICTs is essential.



The world in 2020 has undergone a drastic change, due to the global pandemic of the Covid-19. It has affected all areas, there have been changes in regulations issued by the governments, and restrictions of health administrations, which directly affect the functioning of every public administration and service, as well as in the world of museums and research.

But there have also been changes devised to continue with daily activities, where creativity, imagination, illusion and initiative, among other things, which human beings have developed in this crisis, that have also been exceptional. Many of these contributions have been made in digital media, using the internet, social networks, digital platforms, etc, in order to be able to follow communications without the strict need of on site presence.

At the state level, museums are indicated during the pandemic, the different measures and restrictions that must be adapted, as well as at the regional level, but the MEH also leads different initiatives to continue with its objectives in pandemic conditions.

During the time that the Museum, as well as the Atapuerca Foundation and the Research Center, with which the museum collaborates, remained closed due to the Covid-19 health alert, they continued to interact with their users and followers through all digital platforms and social networks, promote debates and scientific dissemination, book presentations and interviews and different activities, among others with different hashtags (#elMEHdesdecasa, #Quedateencasa y #CENIEHencasa ). Promoted their website and content, and provided free content downloads, therefore resuming their scientific and cultural activities and encouraging users to continue getting to know the Museum virtually.

This way, the museum has been able to continue to offer "the product" to all visitors, even in a non-physical way.

The museum became a meeting place with citizens through its programming, providing science and culture encounter, albeit virtually, which favour the dissemination of knowledge to the expert and the general public, as well as contact between researchers for research collaboration and to proposing future work.

Different technological options that the museum uses to achieve one of its objectives, to bring culture, science and knowledge to the widest possible audience are described here:

1. Websites and Newspaper: Offering information of the MEH, the Archaeological Sites, the excavation campaigns and their investigations, virtual visits, activities, offering free downloads and from the dissemination point of view, various publications, educational resources, documentaries, videos, the Atapuerca Newspaper (monthly frequency, mainly in digital format, with a didactic vocation, but scientifically rigorous, it has a page in English and texts adapted for easy reading), among others.
2. App: Free application, with three routes of guided visits (MEH, Archaeological Sites and "Atapuerca Experimental Archaeology Center"), in Spanish and English. This is extremely interesting to receive explanations during the visit. It greatly favours accessibility for people with visual, hearing and mobility disabilities, and groups with functional diversity; since it has images and audios adapted to people with visual or hearing disabilities, including subtitles and video in Spanish sign language, and for those who cannot come to the museum in person.
3. Social Networks (RRSS): The Museum has more than 180,000 followers adding all its Social Networks. (Table 1) and increase of visits (Table 2).
4. Sustainable Development Goals of the "2030 Agenda": To join the Sustainable Development goals of the 2030 Agenda, the Museum aims to develop a high quality, inclusive and equitable

education programme, and promote learning opportunities for all people. Promoting and supporting the ethical teaching of ICT applied to professionals.

Table 1 Anual Memories MEH. Social Networks MEH

	2014	2015	2016	2017	2018	2019	2021 March
<b>TOTAL</b>	<b>45.000</b>	<b>45.000</b>	<b>67.189</b>	<b>92.078</b>	<b>101.623</b>	<b>105.738</b>	<b>181.322</b>
FACEBOOK	13.000	24.010	24.010	24.010	38.227	39.618	41.898
TWITER total	32.139	40.839	40.839	52.458	58.398	59.569	63.496
<i>Twiter MEH</i>	<i>17.400</i>	<i>23.800</i>	<i>23.800</i>	<i>32.158</i>	<i>34.600</i>	<i>36.320</i>	<i>38.005</i>
<i>Twiter MIGUELÓN</i>	<i>9.000</i>	<i>11.300</i>	<i>11.300</i>	<i>13.500</i>	<i>15.325</i>	<i>16.200</i>	<i>16.842</i>
<i>Twiter LUCY</i>	<i>5.739</i>	<i>5.739</i>	<i>5.739</i>	<i>6.800</i>	<i>7.598</i>	<i>7.924</i>	<i>8.649</i>
Google		727	727	727			
INSTAGRAM		483	483	1.600	2.475	3.367	6.092
YOUTUBE		939	939	1.264	2.160	2.840	5.950
PRINTEREST		215	215	270	305	318	361
ISSUU		21	21	24	26	26	29

Source: <https://www.museoevolucionhumana.com/es/memoria-2019>

Table 2 Anual Memories MEH Visits MEH and Archaeological Sites

	2014	2015	2016	2017	2018	2019
<b>MEH Permanent Exhibition</b>	151.941	147.634	148.921	150.430	150.817	151.877
<b>National</b>			129.691	131.128	133.451	134.319
<b>% National</b>			88.92%	88.70%	88.49%	88.44%
<b>Foreign</b>			16.155	16.711	17.366	17.558
<b>% Foreign</b>			11.08%	11.30%	11.51%	11.56%
<b>TOTAL Visits MEH</b>	-	<b>59.003</b>	<b>195.400</b>	<b>197.143</b>	<b>195.923</b>	<b>194.957</b>
<b>Archaeological Sites</b>	73.423	72.506	71.279	80.601	76.963	77.567

Source: <https://www.museoevolucionhumana.com/es/memoria-2019>

The Museum implements innovative solutions, offering educational resources and Use of streaming to broadcast face-to-face activities and workshops under the idea of “Safe culture”.

The monitoring of the data that the MEH disseminates by digitization is truthful and demanding, showing its transparency portal, while it does not harm the institution and benefits. In social networks there is what the MEH wants to teach or show, what is said about it, but also the comments of users, which can sometimes be classified as anonymous and which are a representation of society, these comments have also to be ethical.

It is necessary to place in the vanguard the technological Ethical point of view (set of moral norms that govern the conduct of the person in the field of technology) in society, organizations and governments.

As a conclusion: New technologies have come to stay. Its use can facilitate Knowledge Management in all areas, which also include museums and similar meeting places for culture and science dissemination among society. but keeping in mind the need for a Technological Ethics in its use.

**KEYWORDS:** Dissemination of knowledge, New technologies, Museum, health crisis Covid-19, Safe Culture, Generation Gap.

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## **BARRIERS TO HUMANITIES AND SOCIAL SCIENCE FACULTY SUPPORTING RESPONSIBLE COMPUTING IN COMPUTING COURSES**

**Colleen Greer, Marty J. Wolf**

Bemidji State University (USA)

Colleen.Greer@bemidjistate.edu; Marty.Wolf@bemidjistate.edu

### **EXTENDED ABSTRACT**

In this paper we analyze challenges associated with infusing responsible computing discussions into humanities and social science instruction and programmatic considerations, and we examine the level of leadership and intentionality necessary to support these discussions at public teaching universities in the United States. These conclusions result from interviews we conducted with department chairs in humanities and social science departments. Our inquiry included a focus on the role that computing and collaboration play in the pedagogy, curriculum, and research within the department. We asked about perceived barriers to collaboration and incorporating computing concerns into the curriculum. We also asked about the role that computing and collaboration play in the tenure and promotion process. Our questions about collaborative efforts among faculty were asked to discern how faculty in the departments engage in intradisciplinary and interdisciplinary efforts broadly speaking, and whether these efforts are rewarded by the institution in any particular manner. We also conducted a direct survey of the faculty that uses a quantitative instrument based on the same pattern of questions.

Three themes emerged from our qualitative review of humanities and social science responses: digital natives and digital immigrants, trainings, and tension. Faculty acknowledge that they often teach about technological issues in passing, or in an applied manner, “tech as a tool,” or “ethics as informed consent,” rather than engaging in a critical analysis of how technology is conceptualized, built, employed, and its affects. Responses to interviews and descriptive details from survey questions centered on the tension of how it felt to shift the mediums of instruction, what was or seemed to be missing when shifting into greater digitally enhanced delivery, or the integrity of the process of teaching remotely. Both those that labelled themselves as digital natives and digital immigrants were concerned about the necessity of efficient delivery within constrained higher education environments. While this data was collected pre-COVID adjustments to instruction at many universities, the perspectives presented underlie the extensive discussions and challenges that have occurred since the onset of changed delivery during the pandemic. It is important to remember that these programs are positioned within a broader university structure, and that the configuration of that structure and the direction of university leaders informs the framework for delivery and for future understandings of what is and should be delivered.

While the discussion of digital native and digital immigrant is not a new one and has been explored at length across various levels of education (Margaryan, Littlejohn, Vojt, 2011; Oomen-Early and Early, 2015; Prensky, 2001, 2005), responses related to the infusion of responsible computing in other disciplines provide a new understanding of the siloed nature of deep understandings of computing and informational technology. At first glance the challenges of delivering on responsible computing topics appears to be associated with the programs and faculty within computing programs and the choices they are making about the direction of their curricular delivery. Yet, a more expansive understanding needs to be explored. Faculty and programs reside within a university system functioning under

neoliberal conditions with a marked acceleration of control even as much seems to be out of control (Giddens, 1991: 144-145; Rustin, 2016; Buroway, 2012; Collini, 2012).

Functioning more and more as a political and economic entity that must manage multiple perceptions internally and externally, the university and its leadership seeks to expand and grow while also constricting opportunity (Field and Klingbert, 2001; Rosenzweig, 1998; Battin 2015). This occurs at multiple levels and elicits a form of tension described by participants in this project. Respondents described the training that they received and how their doctoral programs positioned them to deliver on particular substantive areas. They also spoke to the need for additional professional development so that when a particular, deeper, interpretation was needed in the classroom they could address it in a broader manner. This form of professional development, however, did not easily fit within the preexisting, and structured, interpretation of what it takes to deliver in their fields. Nor is it easily associated, directly, with tenure and promotion, and while voiced support for collaboration is present, particular types of collaboration can be challenging. Collaboration in scholarship may be rewarded but identifying options for team teaching and cross-delivery is complicated and at points not possible. These realities are tied to what is considered to be foundational and efficient within university systems and among administrations.

Higher education leadership often calls for collaboration and adherence to professional development that will enhance instruction and scholarship while creating efficiencies for the institution (Berman 2012; Battin 2015; Dyson, 2015; Robinson, 2016). To accomplish these goals, which are often not carefully aligned, and which often stand in opposition to each other in practice, administrations have turned to information and computing technologies. It is not too surprising that online delivery is often encouraged for delivery in the humanities and social sciences, and the responses of our interviewees, when pressed on computing issues, explored the conundrum of moving courses online as a first concern rather than the ethics and/or primary social issues associated with responsible computing as systems are developed and implemented. The practical issues of delivering online and the need for better understanding of the various mechanisms for delivery were first order concerns, with ethics placed at a distance for most participants. This is due in large measure, as they themselves noted, to their lack of training and to the pressures felt within the university system. The siloed nature of the university, even with efforts to support collaboration, and the continuing interest in efficiency and growth or survival, is predominant. This context, and the results of this context will be explored as we discuss what next steps are possible to enhance cross-disciplinary understanding and delivery of responsible computing for undergraduate delivery in public universities.

**KEYWORDS:** computing ethics, teaching computing ethics, collaboration in higher education, integrating computing ethics, social responsibility in computing.

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## A REVIEW OF TRAFFIC ANALYSIS ATTACKS AND COUNTERMEASURES IN MOBILE AGENTS' NETWORKS

Rafał Leszczyna

Gdańsk University of Technology, Faculty of Management and Economics (Poland)

rle@zie.pg.edu.pl

### EXTENDED ABSTRACT

Mobile agents are software components that autonomously roam over networks to perform tasks on behalf of a user (Oyediran et al., 2016; Yang et al., 2017). This is not a new concept, but nowadays, in the era of Big Data, the Internet of Things (IoT), Smart (Cities, Grids, Factories, Buildings, etc.), Sensor Networks or Vehicular Networks, mobile agents regain attention due to the new applications, for which they appear to be particularly suitable (Calvaresi et al., 2019; Kampik et al., 2019; Kem & Ksontini, 2019; Urra et al., 2017; Yang et al., 2017; Zrari et al., 2015). Moreover, to an extent, mobile agents can be used as a metaphor for other mobile autonomous systems, e.g. autonomous vehicles. In this respect, the awareness of attack techniques against mobile agents can help in understanding attack vectors in these environments.

The indubitable difficulty for mobile agents is to assure their security. This is especially because agents are dependent on the systems they visit when migrating. During the years of research, various attacks have been identified and countermeasures proposed (Alami-Kamouri et al., 2020; Bouchemal & Maamri, 2016; Jolly & Batra, 2019; Madkour et al., 2014; Sanae et al., 2019). A separate subject that requires particular attention today, when Internet users' privacy has become a great concern (Choi et al., 2018; Lopez et al., 2017), is to assure that in sensitive application areas, such as healthcare, insurance, banking and many others (Isern & Moreno, 2016; Pellungrini et al., 2017; Xia et al., 2017) agents could not be traced to their owners, neither by reading the agents' data nor by performing traffic analysis.

The term *traffic analysis (TA)* comes from military intelligence. It describes the process of tracking, intercepting and analysing messages to deduce information from their patterns of communication (Sobh & Elleithy, 2015). With the advent of the Internet, TA was soon applied to Information Technology. There, it refers to the analysis of network traffic flow to deduce information that is useful to an adversary (Atkinson, 1995). Examples of such information are frequency of transmission, the identities of the conversing parties, sizes of packets, flow identifiers used, etc. Another definition is brought in by Chaum (Chaum, 1981) who describes the traffic analysis problem as the problem of keeping confidential who converses with whom, and when they converse.

While the subject of traffic analysis has been studied extensively for classical, message-based communication, only a few studies have been dedicated to mobile agent networks (Kulesza et al., n.d., 2006). At the same time, the whole branch of studies has been devoted to the reverse subject, namely the mobile agents used for traffic analysis. For instance, Dasgupta and Brian (Dasgupta & Brian, 2001) used this approach to build a distributed intrusion detection system that monitors network traffic that, owing to the mobile agents, could emulate mechanisms of a natural immune system.

The research presented in this paper aims at addressing the subject of traffic analysis in mobile agents networks comprehensively, based on an extensive study of the literature dedicated not only to the TA for mobile agents but also to classical message-based communication. No limiting assumptions are

made regarding the complexity or size of agent networks, conversely – all types are taken into consideration, the large, and crowded environments, but also small, and deserted ones, where only a few agents roam.

An important question concerns the ethical component associated with the application of anonymisation mechanisms. As much as the technology is devoted to protecting the fundamental right of privacy, it can be also used for malicious purposes. Proxies, onion routing or encrypted communications (Koch, 2019; Montieri et al., 2020) are primary instruments that enable immersing in the anonymous world of the Dark Web and engage in deleterious or illegal activities including criminal or terroristic. Essential questions arise that regard the extent to which the technologies can be applied. One of the challenges is that the technology may lower states' ability to access the necessary information when it is justified to protect citizens. This is because it hinders collecting intelligence used to detect, locate and prevent a range of potential threats. Yet, it is a state's ethical obligation to protect its citizens. On the other hand, the processed data may represent the most intimate and private values to the individual (Bellaby, 2018). Thus, there are important concerns related to the individual's right to establish the technological barriers, the necessary circumstances, and, how the state should respond. Besides, it needs to be decided which forms of state intervention are justified. Whether the technology should be completely prohibited or more gradual measures need to be introduced.

In the paper, the TA adversaries are described, followed by the presentation of attacks and potential countermeasures. For each attack, the required setting of an adversary (the adversary type) is indicated. Also, the countermeasures have been identified based on a broad study of the available literature. The paper ends with concluding remarks. Ethical concerns related to the application of the anonymisation technology are introduced.

**KEYWORDS:** mobile agents, anonymity, privacy, ethics, traffic analysis, tracking, autonomous systems, Internet of Things (IoT), Big Data, Dark Web, privacy management, cybersecurity management, organisation management.

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## **CULTIVATING AN EMPATHIC LEARNING PEDAGOGY: EXPERIENTIAL PROJECT MANAGEMENT**

**Shalini Kesar, James Pollard**

Southern Utah University (USA); Southern Utah University (USA)

kesar@suu.edu; jamespollard1@suu.edu

### **EXTENDED ABSTRACT**

The motivation for this research started with the belief that core skills such as teamwork, communication, professionalism and ethics are part of experiential learning pedagogy. These skills in turn prepare the students to deal with challenges faced in today's technology related businesses. This paper reflects on experiential learning pedagogy for a project management class that was modified during the beginning of the COVID-19 outbreak. The Information Systems (IS) project management class gives senior-year students an opportunity to manage a major information systems development/enhancement project, in which they apply what they have learned in various other courses to a single project. The emphasis is on enterprise-level project management. The instructor encouraged guest lectures attend the course from different departments, including English, communication, and law. This provided background information and learning skills about technical writing, communication and presentation skill and related the importance of these skills in the context and working environment in which they will be exposed to after graduation. The class duration was fifteen weeks and was conducted in the last semester before the students graduated.

The beginning of the semester started with the intent of using the National Society Experiential Education (NSEE) framework to design the project management class that included a Forest Service application that was under development entitled, Design and Analysis Toolkit for Inventory and Monitoring (DATIM). The National Society Experiential Education was founded in 1971, an "open and pluralistic society of individuals and institutions dedicated to mutual learning and support across the varied roles and responsibilities represented in the field of experiential education" (NSEE, 2011). The Board of Directors, staff, and membership of NSEE have been governed by policies and practices that guide ethical actions, relationships, and decisions. This research was guided by Principles of Best Practices as well as ethical principles outlined for NSEE. These principles are guided by the Statement of Shared Ethical Principles (Council for the Advancement of Standards in Higher Education), National Education Association, American Association of University Professors, and Code of Ethics for Education Abroad (NSEE, 2011).

The National Society for Experiential Education's framework proved to be useful in developing the curriculum. Eight weeks into the semester, the global pandemic resulted in the cancellation of face to face course structure which was being replaced with remote classes. Subsequently, deliverables of the projects, assignments, weekly reporting, and presentations were modified to adjust remote teaching.

The NSEE model continued to provide an experiential leaning environment for the students. The mission of the NSEE is to cultivate educators who effectively use experiential education as an integral part of personal, professional, civic and global learning. The National Society for Experiential Education society advocates the use of experiential learning throughout the educational system; to disseminate principles of best practices and innovations in the field; to encourage the development of research and theory related to experiential learning; to support the growth and leadership of experiential educators;

and to create organizational partnerships with the community. The eight Principles of Good Practice for All Experiential Learning Activities include: Intention; Preparedness and Planning; Authenticity; Reflection; Orientation and Training; Monitoring and Continuous Improvement; Assessment and Evaluation; and Acknowledgment. Given that this is an ongoing research, in this paper, this NSEE framework is used a methodology to reflect on the approach used to cultivate an empathic learning experience.

The COVID-19, global pandemic has brought many challenges to the educational system to the world. One report stated, “Students from privileged backgrounds, supported by their parents and eager and able to learn, could find their way past closed school doors to alternative learning opportunities. Those from disadvantaged backgrounds often remained shut out when their schools shut down. This crisis has exposed the many inadequacies and inequities in our education systems – from access to the broadband and computers needed for online education, and the supportive environments needed to focus on learning, up to the misalignment between resources and needs.” (Schleicher, 2020). By the end of March, all 46 countries in Europe had closed some or all of their schools (Schleicher, 2020, also see Al-Samarrai, 2020). This and other similar reports clearly indicate that pedagogies need to reflect on specific needs of the learning environment and allow pedagogy to adapt to the changing environment associated with the developing effects of the pandemic.

Various studies highlight the importance of extensive pedagogical and technological resources as faculty begin to prepare an empathic approach with resilient teaching components for academic year 2020-2021. For example, Ravitch (2020) outlines five dimensions of flux pedagogy, where she describes integration of existing theories and pedagogical frameworks into the teaching components during this pandemic. The benefits of using NSEE as a foundation to design the capstone project class prior to COVID-19 has proven to be beneficial in providing students an experiential learning environment (Kesar, 2016, Kesar and Pollard, 2020). However, teaching and experiential learning platforms must incorporate an empathic approach in designing current pedagogies. The authors argue that this will help students traverse complex systems during chaotic times, build relational trust, and welcome pedagogical flexibility as part of an experiential learning model. Beyond the electronic connection, it is important to connect with students with empathy, especially in times of anxiety and uncertainty. Sarkadi and Casmana (2020) state, “Learning empathy is one of the educational models to be able to educate students' characters, especially the character of empathy. This character is very important to be applied to students, because it can improve good relations between students. They can help each other, especially if students find it difficult in the distance learning process that is carried out at home. Students can help their friends if there are those who find it difficult, such as those who have difficulty connecting to the internet while the learning process is ongoing” (pg. 1043).

This paper reflects on the continuing collaborative research which is exploring experiential learning pedagogy for senior information systems students in project management. It specifically reviews the modification made by the author (instructor) in the middle of the semester, when classes changed from in person to remote teaching due to COVID-19 pandemic. It also discusses how changes in assignments, responsibilities, and presentations were modified during the remote teaching period. This paper discusses how the instructor enhanced the National Society for Experiential Education (NSEE) existing eight principles by including empathy as an additional aspect to the existing principles. Finally, lessons learned will be discussed and how these lessons helped in our continuing development of the information systems project management class.

**KEYWORDS:** Project management, Information systems, Experiential learning, DATIM, NSEE.

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## THE ORIENTATION TO ONENESS OF TECHNOLOGY AND MEANINGS OF LIFE BY PEOPLE IN JAPANESE TECHNOLOGICAL ENVIRONMENTS

**Makoto Nakada**

Univesrsity of Tsukuba (Japan)

nakadamakoto@msd.biglobe.ne.jp

### EXTENDED ABSTRACT

In this paper, the author will try to make an attempt to enlarge the scope of ethical, cultural and existential discussions on the meanings of people's encountering with the technological matters including robots, AI and others in the informatized environments. The author will do this by focusing on the Japanese data which are gained by the author's own researches performed in Japan for a decade. Through the quantitative analysis on these researches grounded on a kind of qualitative and critical inquiry on the meanings of people's life with the presuppositions that people can't live without various sort of orientation to the wholeness of meanings, the author has found a very important finding which almost anyone else has never gained as a sort of empirical data, i.e. the finding that (at least not a few) Japanese people of today share a kind of ways of thinking and feeling about 'what is a good and virtuous life?' And the author has found too that these ways to pursue the meanings of life tend to determine the direction of evaluation of the meanings of technologies and informatized styles of life. This finding shows us that the technologies don't influence the meanings of life at least in some aspects of life, rather the meanings of life influence the meanings of technologies. This is quite the opposite direction of influence which a lot of people with orientation to a kind of techno-determinism might expect. For example, so far as the author's research performed in Japan in 2020 shows, people's orientation to a good and virtuous life is found to be strongly correlated with the evaluation of ethical problems in the informatized environments such as the so-called the trolley problem, i.e. the degree of acceptance of the ideas about the choice of victims by the machine. More concretely, people's orientation to the depth of meanings of life to be gained through sharing hardship or sincerity is found to be correlated with people's ways of evaluating the meanings of robots or other technological products in their life.

In the author's view, this suggests us the importance of reconsideration of the meanings of our life in the informatized environments. And in this sense this suggest us that we need to reflect on the meaning of our life by re-examining of various discussions by various authors in Japan and Western cultures with orientation to the wholeness of life in the informaized environments such as Andrew Feenberg, Kitaro Nishida, Rafael Capurro, Bruno Latour, Toru Nishigaki and others.

One of the important points about the wholeness of meanings in life, suggested by our empirical research(s), is that the wholeness seems to be related with a kind of self-reference in Japanese minds, i.e. the tendency that in many cases the experience of something in every-day's life is associated with its self-reflective evaluation in the form of the inquiry, 'what does this mean for our life?' at least in a potential way within one's mind.

This reflexivity is practical in the sense that individuals perform reflexivity in the form of awareness and cognition. This point is suggested by various authors. Kitaro Nishida's idea of fusion of thought and practice or the idea that our experience is originally such a fusion ("pure experience") is related to this. And Hideo Kobayashi says, based on the idea of Motoori Norinaga,, 'Monoaware (aesthetic

consciousness associated with fragility = or Japanese sensitivity itself) is not a noun but a practice to know the origin of Mononoaware.' In other words, he says that in many cases, everyday aesthetic and ethical experiences are recursive acts of re-experiencing the origin of ideas in Japan.

What we have reaffirmed in this study is that encounters with robots and artificial intelligence are also experienced in such a recursive and practical scheme. In other words, the frame of recursive recognition tends to work as a horizon, and the meaning of technology tends to be integrated into that frame.

As can be seen in the table below, some sort of recursive and subjective consciousness such as 'awareness of the meaning of work' strongly defines the meaning of 'encounter with a robot.' (It is hard to imagine the opposite direction in which robots define recursive consciousness.) However, as shown in the table, concerning mere 'length of Internet use' and 'individualist tendency,' it seems that these have little to do with or has only a weak association with the evaluation of robots in life. The act of simply using the Internet is not related to recursive recognition. And Japanese individualism is not related with Japanese awareness or self-reflection. On the other hand, the evaluation on the role of the Internet is found to be related with the evaluation of robots and autonomous cars. This suggests us that reflection on meanings of the Internet works in a different way than the mere use of the Internet.

What we can see through this table is that the meanings or evaluations of people's encounter with robots, AI or autonomous cars tend to be formed through the inner self-reflective schema which are themselves the set of people's self-awareness deriving from their cultural-historical-hermeneutical experiences or practices. (The following table shows part of the research findings through the research '2020HTKG.' This is the research done in Japan for 600 respondents in the age of 25-44 living in Fukushima, Miyagi and Iwate Prefectures and also in Chiba and Ibaraki Prefectures. This survey was designed as quota sampling, and ratios of gender and age were quoted from the official statistical report of the Japanese government about Internet users in Japan). (Generally speaking, the findings of 2020 research are consistent with the findings of the author's past researches with regard to Japanese orientation to a wholeness of life. This time the self-reflection is one of the main foci.)

Conversely, this suggests that recursive cognition and self-refelctive awareness tend to strongly define the meaning of encounters with robots and artificial intelligence. Or this suggests us that the meanings of people's encounter with robots, AI or autonomosu cars can't be understood without psitinoning these techonoligical issues on a map of meanings of life.

Perhaps by linking this with the (potential) reflective ideas discussed by Finberg, Varela and others, we should be able to expand the framework of the discussion beyond Japanese issues.

Table 1. Correlations between people’s views on robots and their orientation to ‘a good, virtuous and aesthetic life’ (Data: 2020 HTKG in Japan)

	Denial of autonomous car’s judgment for safety including judgment on human life	The degree of acceptance of the view; To give a name to a robot will affect human emotion.	Anti-empathy for trolley problem	Acceptance of robot’s diagnosis on condition with support by human doctors.	Rejection of robot’s diagnosis for one’s own children
The degree of acceptance of the view ; Craftsman’s effort and sincerity are part of the goods.	<b>.357**</b>	<b>.483**</b>	<b>.408**</b>	<b>.471**</b>	<b>.317**</b>
The degree of acceptance of the view ; We feel a kind of human like- good soul in the spacecraft called <i>Hayabusa</i> which struggled to do an effort to return to the earth.	<b>.309**</b>	<b>.440**</b>	<b>.349**</b>	<b>.432**</b>	<b>.292**</b>
The degree of acceptance of the view; We want our children to learn a lot of important things for life through their experience to overcome hardship.	<b>.360**</b>	<b>.427**</b>	<b>.319**</b>	<b>.362**</b>	<b>.373**</b>
The degree of sympathy with <i>Mononoaware</i> as Japanese sensitivity with beauty through transience.	<b>.287**</b>	<b>.413**</b>	<b>.367**</b>	<b>.347**</b>	<b>.347**</b>
Length of use of the Internet per day	.011	.051	.036	.027	<b>.185**</b>
Length of time spent on the Internet via smartphone per day	<b>-.135**</b>	<b>-.117**</b>	<b>-.117**</b>	<b>-.148**</b>	-.069
Evaluation of the importance of the Internet as a source of information	<b>.247**</b>	<b>.236**</b>	<b>.307**</b>	<b>.276**</b>	<b>.121**</b>
Individualism	<b>.137**</b>	<b>.111**</b>	<b>.114**</b>	<b>.083*</b>	<b>.240**</b>

1) The figures of the table show correlation coefficients. 2) \*\*= $p < 0.01$ , \*= $p < 0.05$ , without \*\* or \*=ns= non (statistically) significant.

(The other tables are omitted because of limited space.)

**KEYWORDS:** Japan, robots, autonomous car, the wholeness of life, self-reflection.



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## **ETHICAL DILEMMAS ON THE MEDICAL DATA PLATFORM FOR PATIENT-CENTRED APPROACHES: CONSIDERATION FROM MACRO AND MICRO PERSPECTIVES**

**Yoshiaki Fukami**

Keio University (Japan)

yofukami@sfc.keio.ac.jp

### **EXTENDED ABSTRACT**

Utilisation of big data in medicine and healthcare can be classified into various macro (such as improvement of public health, AI diagnostic algorithms, drug discovery) and micro (such as personalised medicine and lifestyle intervention) points of view. In Japan, records of health insurance claims are utilised for macro analysis in perinatal care (Maeda et al., 2018) and emergency medicine (Murata & Matsuda, 2013).

On the other hand, the integration and standardisation of electric health records (EHRs) are promoted in the United States (Blumenthal & Tavenner, 2010) and Australia (National E-Health Transition Authority of Australia, 2007, 2011, 2014) to improve the lifestyles of individuals and personalised medicine. Methods to provide personalised medicine are being developed using data from EHR and personal health records (PHR). It also leads to the realisation of patient-centred medicine (Laine & Davidoff, 1996) because therapeutic measures and services according to patients' characteristics and needs can be determined using personal data.

There are cases in which the personal data of patients are used not only for an individual's health but also for community public health. In Kobe City, Hyogo Prefecture, Japan, a demonstration experiment of life intervention, aimed at preventing aggravation of diabetic patients—especially suppressing diabetic nephropathy—was conducted with a financial scheme of social impact bond (SIB). A SIB is a new investment product with a framework that supports social benefit programs, using private capital rather than tax revenues, allowing willing investors to take on risks previously borne by taxpayers (Liang, Mansberger, & Spieler, 2014).

The National Health Service (NHS) of the United Kingdom have implemented pay-for-performance (P4P) schemes and commissioning for quality and innovation (CQUIN) framework since 2007 (Feng et al., 2019; Kristensen, McDonald, & Sutton, 2013), which is one of the triggers for the development of the SIB method (Tan et al., 2015). The NHS also promotes the utilisation of medical data through big data analysis (Jackson et al., 2018). Outcome-based payment models (OBPMs) (Vlaanderen et al., 2019) similar to projects have been spread. In other words, medical and public health measures have come to be designed according to the base registries (European Commission, 2016, 2017) or master data (European Commission, 2017) of governments, such as public health insurance expenditure history and resident registration. The effects are then analysed and used for subsequent policy planning and improvement of operation methods. In Estonia, one of the advanced countries in terms of electronic administration, X-road, a data-sharing platform among the government and private organisations (Vassil, 2015) has been implemented since 1998. Medical services are already provided based on government-issued digital IDs, and the history is shared by the public and private sectors.

Tamba city, Japan, has launched an immunization implementation determination system that links medical data of clinics and government data. The system is designed to prevent inoculation accidents

and inoculation for non-subsidized individuals, using data from the basic resident register ledger. In Japan, where there is strong opposition to the use of personal information for purposes other than its intended use, Tamba City has succeeded in developing a data platform for improving public health, based on administrative master data by establishing a mobile virtual network operator (MVNO) with a closed network (Fukami & Masuda, 2019). Personal information on the subjects is processed and managed within the facility of the municipal government. Tamba city and the stakeholders in the region have decided to extend the system to regional comprehensive care. Various data types are generated at multiple organisations and will exchange information such as prescriptions, caregiver visit records, results of a medical examination, and healthcare directives are accumulated in the system.

The system has two ethical issues. One issue involves expanding information asymmetry between the government/medical staff and citizens because only service providers can access patient records, and citizens cannot access these records. Another issue is the risk of abusing accumulated privacy data by the government and certain stakeholders (Fukami & Orito, 2020). Moreover, efforts to reduce macro-medical resource consumption by intervening in life, based on vital data and behavioural history means limiting individuals' free will to maintain the welfare of the society. If the goal is to improve the macro balance rather than the dignity of the individual, then in extreme cases of patients who are unlikely to be cured or have no money would die early. Especially from the viewpoint of the quality of life, patient-centred medicine must not only aim to help the patient recover from the disease but also determine the selection criteria according to the patient's needs in the selection of treatment policy.

Especially in small communities like Tamba City, there are other ethical issues for governments, such as accumulate and manage personal medical and health care records centrally and link them to the public master database. Such integrated data enables governments to discriminate against residents when providing public services on the basis of patients' medication status and lifestyle. The municipal government of Tamba uses accumulated data to match the prescription issued by the doctor with the prescription given by the dispensing pharmacy to confirm that the prescribed medicine is being taken correctly and that the generic drug is selected. If the data to be analysed is expanded to include all areas related to comprehensive community care, the municipal office will have a detailed understanding of residents' actual living conditions.

The introduction of a common data platform among governments and private organisations can improve the efficiency of administrative operations and revitalise economic activities. However, when its application is introduced into the medical and health fields, there is a risk of infringement of individual self-determination rights by the government and deviation from the patient-centred principle. Data platforms must be designed to balance socio-economic efficiency at the macro level while maintaining individual dignity at the micro level.

**KEYWORDS:** EHR, PHR, patient-centred medicine, self-determination right, regional comprehensive care, master data

**ACKNOWLEDGEMENTS:** This work was supported by JSPS KAKENHI Grant Number 20H02384.

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## ETHICAL DILEMMAS WITH POLICE BODY-WORN CAMERAS

**Marie Eneman**

University of Gothenburg (Sweden)

marie.eneman@gu.se

### EXTENDED ABSTRACT

Figure 1



Police authorities in a number of countries have recently introduced body-worn cameras. With the use of body-worn cameras, the police have gained access to new forms of wearable and powerful law enforcing technologies. These new cameras are associated with expectations of improving effectiveness and security in society. However, the technologies are also associated with concern of threats to individuals' privacy and integrity since large volumes of personal and sensitive data easily can be collected and processed both within and between different systems (Eneman et al., 2018). Surveillance technologies can be described as means extending police officers' capacity to see, hear, communicate, record, and analyse (Haggerty et al., 2011). Information gathering about human behavior is a fundamental component in police work and novel technologies can, from a police perspective, be seen as ideal to collect, process and store large volumes of information. Digital surveillance has come to play a central role in police work and is expected to increase even further in the near future. In addition, the most recent developments in algorithms and artificial intelligence advances the analytical capabilities in surveillance further, e.g. enabling large-scale face and motion recognition.

Even though surveillance is not a new phenomenon in society, digitalisation has changed the surveillance capabilities radically (Zuboff, 2019). One of the most significant changes is that digital technology enables surveillance system to become more powerful, further automated and can be used for large-scale collection and storage of data. Additionally, surveillance systems are today often concealed and embedded in the environment (ubiquitous) and are thus invisible (Lyon, 2018). A consequence of this is that individuals are not always aware of when being exposed to surveillance, which could be seen as a serious threat to individuals' privacy (Stahl, 2008). Murray (2016) argues that digital technology enables even more powerful surveillance and control of citizens than what George

Orwell predicted in his dystopian classic “1984”. Despite that the concept of panopticon (Foucault, 2003) has been subject for certain critique for its limitations to adequately understand contemporary surveillance systems where many watches many, it is still central and valuable in the discourse regarding surveillance, since panopticon is such a multifaceted concept that could be used for interpretation in a number of ways and in different contexts (Lyon, 2006).

The use of body-worn cameras enables the individual police officer to monitor the surrounding of both citizens and colleagues (and at the same time being monitored by other colleagues), which could be understood by the concept of governmentality (Rieken, 2013) to capture aspects connected to that everyone can collect information and monitor and control their surrounding/environment. In addition, the individual police officers’ use of body-worn camera could be understood as a form of self-regulation since their own behaviour is monitored. By wearing a camera, regardless if it is on or off, the potential risk or possibility of control is visible and constitutes in itself a form of disciplinary power (Foucault, 2003). Another effect of the camera use is that large volume of information about individuals is collected, which means that material consisting of personal information must be managed and stored within the organisation. Joh (2016) argues that the use of body-worn cameras within the police must be regulated and that the regulation should focus both on the actual use of the cameras and the control of the data, for example during what circumstances data is allowed to be collected, how it should be analysed, stored and who should have access to the data.

Even if this camera initiative is motivated as a way to strengthen legal practices and public trust in police professionalism, there are concerns expressed about extended surveillance and the risk of violating citizens integrity and rights (Thomsen, 2020). Legitimacy and accountability in relation to both their own organisation and the citizens are then seen as components that are always relevant to public authorities. However, due to extensive demands on how to represent both their specific authority and societal democratic principles (with violence if necessary) such legitimacy concerns emerge as particularly evident in the case of the police. It is because of such demands on legitimacy that police officers in many countries are encouraged to use body-worn cameras to document incidents and actions both among citizens and officers. There are extensive expectations that the use of these cameras will improve accountability as well as strengthen trust in the police (Lee et al., 2016). Body-worn cameras has emerged as a tool that may contribute in “civilising” the police as well as consolidating their legitimacy. However, concerns are also expressed about what effects the technology may have on the ability to monitor and whether there is a risk that they may violate citizens’ integrity (Lippert & Newell, 2016; Mateescu et al., 2016). The fact that these are concerns that to a high extent still awaits investigation, have not prevented authorities in many countries from introducing the technology (Mateescu et al., 2016). Amongst other things, it is both seen as a preventative measure as well as a way to reveal when officers violate their own public assignment, e.g. by using unjustified violence. By filming their own actions, the idea thus is that they improve their accountability, but officers are also said to learn how to adapt their behaviour to any situation where there is a risk of being filmed. They tend to apply ‘camera friendly work’ (Sandhu, 2016), which take the shape of strategies aiming at controlling how they are perceived by different people and officers filming them or looking at the films.

To ensure citizen’s privacy and to protect individual’s right to control personal information about themselves a number of legislations and statutes have also been created and implemented, both on national level (e.g. The Swedish Camera Surveillance Act (2018:1200)) and on EU-level (e.g. The General Data Protection Regulation GDPR). Nevertheless, balancing the opportunities of digital surveillance, such as body-worn cameras, while at the same time enforce protection of citizens’ integrity generate different dilemmas for police officers.

Therefore, this paper aims to reflect upon ethical dilemmas that police officers' encounter when using body-worn cameras as part of their daily work practices.

The paper is empirically based on recent introduction of body-worn cameras within the Swedish Police Authority and thus designed as a qualitative study with interviews with police officers. Theoretically the paper draws upon the theoretical concepts of technological affordance and the growing research field of surveillance and privacy.

**KEYWORDS:** Body-worn cameras, police authorities, ethical dilemmas, integrity, privacy.

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## ROBOT FRIENDSHIP: APPEARANCES AND REALITY

Alexis Elder

University of Minnesota Duluth (United States of America)

amelder@d.umn.edu

### EXTENDED ABSTRACT

In discussions of robot ethics, one question raised has been whether robots, artificial intelligences and other artificial entities can be our friends (Danaher, 2019; Elder, 2018; Wales, 2020). Research has focused on whether artificial agents (existent or anticipated) are capable of friendship, whether Aristotelian *philia* or other conceptions of it. In this project, I identify an overlooked role in friendship for robots and AI (referring here to hardware and software, respectively, and significant insofar as they are capable of quasi-social interactions with human beings; while there may be interesting differences in how people relate to them, for present purposes I focus on their similarities as artificial social agents). This role is that of extending and mediating extant human friendships, shifting our attention from grounds for friendship between an artificial agent and a person, to the boundaries of inter-human relationships when artificial agents are “in the mix”. This conceptual work can help with both philosophical and empirical work on human-robot interactions. I begin by surveying extant discussions of robot-human friendships, understood as sustained, emotionally rich interpersonal relationships in which friends value each other as unique individuals (Elder, 2018). I then show how a shift in framing opens up new ethical and conceptual territory.

On the one hand, theorists such as Sharkey and Sharkey (2010) and Sparrow and Sparrow (2006) argue it is deceptive to pass robots off as friends, because they do not possess human mental and emotional abilities, and succeed at social interactions by manipulating human emotional responses and triggering anthropomorphic responses. Turkle (2011) extends this, arguing that accepting artificial social agents as “real enough” for friendship and other intuitively valuable interpersonal relationships amounts to giving up on important values associated with sociality. Bryson (2018) argues that because we own and control robots and AI, we cannot conceptualize of them as people without at the same time conceptualizing ourselves as slave owners and these robots as slaves, which seems an insurmountable obstacle to friendship. And Johnson and Verdicchio (2018) argue that we cannot even consider robots to be analogous to nonhuman companion animals because we do not discover them, but create them ourselves, not just as one might ‘create’ a child but retaining design control over every aspect of their natures. Others maintain that we should think of our instinctive empathetic social responses to robots as “referring” to the human beings who designed them (Wales, 2020), or that emotional benefits of (at least) some social robots justifies bonding with them (Prescott and Robillard, 2020) or that robots can provide opportunities to practice social responses that will ultimately enhance (real, interhuman) friendships (Elder, 2018).

On the other hand, perhaps appearances of sociality count for more than critics give them credit for. John Danaher argues that we have the same epistemic grounds for friendship with humans as for friendship with robots. Evidence about our friends’ beliefs, values, mental states, and dispositions is behavioural in nature. (We form beliefs based on what they say and do; we do not have direct access to others’ hearts or minds.) But robots can, at least in principle, exhibit these behaviors too. Whatever our grounds for believing we can be friends with human beings, then, can also apply to robots and so we have equally good grounds to think we can be friends with robots (Danaher, 2019, 2020a, 2020b),

although the foundations of his views on epistemology have been challenged (Smids, 2020). Daniel Estrada argues that drawing distinctions between humans and bots exemplifies problematic human supremacist tendencies and that identifying with and embracing relationships between humans and robots or AI is morally preferable (Estrada, 2020).

These debates about the possibility of friendship, despite different conclusions and emphases, share a common concern about the ways that robots and AI resemble human beings. Whichever resemblances they focus on, they are assumed to be generic: they involve comparisons between robots or AI and generic human features, especially those involved in social interactions. But this overlooks the ways artificial entities that extend ongoing human-to-human interactions and resemble *particular* human beings, from machine-learning-customized email auto-completes to chatbots trained on human chat conversations and social media histories to imitate those who have died (Elder, 2020).

This takes us from a search for universal and impartial grounds for relationships with things that resemble human beings in general, to particular, relational, embedded and historically informed grounds for interacting with unique others in already-established relationships. It orients us toward the details of interaction between particular individuals, to the ethics and ontology of interpersonal relationships, and in so doing transforms the potential ethical status of artificial agents. As an example, consider the example of auto-complete suggestions in email drafts. How should we think of the software's role in emails exchanged between (human) friends' email accounts?

A completely automatically generated email would replace a human-to-human interaction with a human-to-AI one. auto-complete suggestions do not *substitute* for human-to-human interactions. With auto-complete suggestions, the human retains selective oversight. These AI draw initial suggestions from conversational datasets and pre-programmed responses in order to anticipate what the human would say, and may further adapt suggestions over time on the basis of what the 'author' tends to select from amongst the suggestions, and how a particular user tends to modify them. At the same time, it would be inaccurate to claim that the human being should get full authorial credit for the completed text, as the suggestions may introduce some new possibilities and foreclose others.

A skeptic might claim that in reinforcing the generic, scripted response with ease of access or a bias toward the generically acceptable suggestions, people's interactions might become less authentic or genuine. And yet this overlooks the importance of scripted social rituals to cementing human interactions to begin with. To reject an email as not coming from a friend even when the literal text of the message is exactly what a friend *would* have said is to miss the role of culture and social scripts in even non-mediated exchanges. Accepting an email as both coming from a friend *and* involving auto-completion software in its authorship avoids an implausibly atomistic conception of human sociality and move from a false dichotomy between interacting with a human or an artificial agent, to one that admits the possibility of both at once, and can even reject the distinction entirely.

In addition to considering whether humans and artificial social agents, considered generically, can be friends, then, we need to consider how their mediation of human interactions can fit into our social ontology. Remains of loved ones, letters and manuscripts from those who have passed on, in-jokes, mannerisms, and other artifacts can all be bound up in established human relationships (Norlock, 2017). In asking whether a robot can be a friend, we need to consider cases where the entity is also bound up in inter-human friendships in like manner. The project of identifying prospects for human-robot friendship, then, and what it means to care for others, needs to be understood in light of the ways interpersonal relationships can involve caring about friends' avatars, artifacts, email assistants, encoded patterns and images. Doing so involves extant concerns in new ways, and this, in turn, presents new kinds of reasons to both accept and reject the possibility of artificial agents as our friends.

**KEYWORDS:** robot friendship; human-robot interaction; appearance-reality distinction; robot ethics; moral status.

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## WHY DISABILITY IDENTITY POLITICS IN ASSISTIVE TECHNOLOGIES RESEARCH IS UNETHICAL

**Reuben Kirkham**

Monash University (Australia)

reuben.kirkham@monash.edu

### EXTENDED ABSTRACT

#### Introduction

Assistive technologies research concerns the development and design of novel technologies for people who have disabilities. The development of new assistive technologies is of great importance to the inclusion of disabled people in wider society. Indeed, the UN Convention on the Rights of Persons with Disabilities (“the UN CRPD”) recognises this as a means for helping to address the unfortunate position that many people with disabilities live in (including systematic violations of their human rights (Hendricks, 2007; Ryan, 2020).

Some academics have been recently advancing identity politics (or ‘critical’ disability studies) in the assistive technology community. In practice, these amount to two claims: first the identity of the persons saying something matters more than the substance of what is being said (with these academics effectively claiming to be the special representatives of disabled people at large because they themselves have a disability, e.g. as in ) (Ymous et al., 2020.). The second claim is that we should reject a rational approach towards disability in assistive technology approach, but instead follow postmodernism and the teachings of Foucault and his successors (Pluckrose and Lindsay, 2020). This raises a number of ethical problems:

#### Disabled academics do not really represent most disabled people

The underlying difficulty is that the average academic with a disability has very different life experiences compared to the average person with a disability. Most disabled people – even in Western societies – are unemployed (or underemployed) and are being subject to systematic discrimination in their day-to-day lives. This is a world away from the average academic with a disability, whilst likely be suffering from discrimination in their jobs (see e.g. Kirkham et al. 2016; Sukhai and Mohler, 2016), will still normally have had a middle class experience and lifestyle. The identity politics approach has also been criticised for overlooking the importance of impairment in the lives and politics of disabled people (Jenks, 2019), again underscoring the distance between ‘critical’ disability studies practitioners and most disabled people. The truth is that the needs and goals of these asserted ‘proxies’ is far away from the average disabled person. Unfortunately, this is reflected in the shape of the research that is done in the assistive technology community – very little has been done on disability benefits (despite it being a major issue), and until recently, people with intellectual disabilities and cognitive impairments were mostly excluded from research on new assistive technologies (Mack et al., 2021).

### Making disability inclusion controversial

The international standards in respect of the inclusion of people with disabilities are not controversial – these are now all agreed by way of the UN CRPD. Nor is it controversial to claim that people with disabilities are widely discriminated against. Similarly, we have moved from the medical model and onto the social model, where people with disabilities are to be included in decisions about them. Yet, the ‘critical’ activists seek to make these matters controversial once again, which can only benefit a minority of people whose interest is not primarily disability rights. In this endeavour, the ‘critical’ activists have already succeeded in making the Social Model subject to doubt (see Pluckrose and Lindsay, 2020): they also risk sweeping up *empirical* disability studies in a similar manner. If they succeed then this will likely undermine genuine advances in disability inclusion, moving the existing assistive technology research out of the mainstream, and in turn risking an emphasis on the medical model again in most assistive technologies research.

### Diverting resources

The unhappy truth is that time spent on identity politics and Foucauldian ‘analysis’ amounts to public resources being diverted away from creating assistive technologies for disabled people. Furthermore, it is not difficult to see how off-putting this could be for (more generalist) computer scientists outside the assistive technology community. This group could otherwise contribute a great deal to the creation of new assistive technologies, but now must deal with identity politics before making that contribution (creating the risk that they will often just deploy their talents elsewhere). The likely result is that many disabled people will get less of the assistive technologies that they sorely need to have a better quality of life. One imagines that when most disabled people eventually realise what is happening, they will likely be disappointed and upset, to say the very least.

### Obstructing access to assistive technology on ideological grounds

Unfortunately, some advocates of disability identity politics have been claiming that certain bona fide assistive technologies should be banned (Pluckrose and Lindsay, 2020), even though these technologies might be genuinely beneficial (by way of an example of such a troubling proposal, consider (Williams and Gilbert, 2020)). This is unfair to those disabled people who might wish to use them. Despite the loud noises being made, the simple truth is that disability identity politics is subscribed to by *only* a very small minority: indeed, given the incoherent and inaccessible nature of ‘critical disability’ theory, most people with disabilities are simply unaware of it (Berghs et al., 2016). As part of their pursuit of postmodernism, the proponents of ‘disability identity politics’ have even gone as far as to make claims against rational thought and evidence as being inappropriate (see for example recent submissions made to a ‘Critical Disability Studies’ workshop<sup>21</sup>, or Ymous et al. (2020)). Such an irrational approach would presumably be the opposite of the *ACM Code of Ethics*, which imposes professional expectations and a minimum standard of competence (see Part 2 of the Code generally).

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<sup>21</sup> These were to be presented at a critical disability studies workshop <https://katta.mere.st/nothing-about-us-without-us/> (<https://perma.cc/4HJR-B3Z7>), where one (example) paper made some strange criticisms of statistics and the scientific method (<https://perma.cc/CGW7-LV5U>)

### Promoting pseudo-law

Pseudo-law is a form of fake-law, normally promulgated by tax-protestors, or other people who wish not to be subject to the laws of the land (McRoberts, 2019; Netolitzky, 2018). Unfortunately, 'critical' disability studies follow the same notorious model: it is promoted as an alternative form of (discrimination) law which must be followed, whilst often being the opposite of what the law actually requires. Promoting some of the ideas in this area whilst holding out an expert is something that is likely to attract civil liability for unlawful disability discrimination: this is because it would amount to incitement of discrimination (especially attempts to prevent the use of legitimate assistive technologies on the basis of Foucauldian objections). In certain circumstances, it could even attract criminal liability (e.g. in the UK under Part 8 of the Equality Act (2010)). Such an enterprise is unethical: there is no good reason not to follow discrimination law. It is also the opposite of the *ACM Code of Ethics*, which expects a proper respect for the rule of law (see 2.3 in the code) and challenges the promotion of unlawful discrimination (see 1.4).

### Conclusion

A discussion on how to address 'disability identity politics' (or 'critical' disability studies) and whether or not this complies with existing ethical codes is of great importance. Ultimately, most of the people behind it want the same goal – the inclusion of disabled people in wider society – the problem is that their approach is misguided, often the opposite of what the law requires, and is bound to fail. It is time to consider a more ethical approach towards the development of assistive technologies that does not rely on identity politics, but instead is based on evidence and human rights.

**KEYWORDS:** assistive technologies; disability discrimination; ethics; identity politics.

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## **ETHICS AND AGENT-BASED COMPUTATIONAL SOCIAL MODELS: DO IMPLEMENTATIONS OF SOCIAL SIMULATIONS HAVE MORAL SIGNIFICANCE?**

**Nuno David**

Iscte – Instituto Universitário de Lisboa (Portugal)

Nuno.David@iscte-iul.pt

### **EXTENDED ABSTRACT**

Social simulations and implementations

The focus of social simulation on representing the social world suggests an investigation of whether its implementations are inherently value-laden. The purpose of algorithms is both functional and representational. Some algorithms may be said to have functional purposes, such as deleting an email or ordering a list. The purpose in some simulations may be said to be essentially representational – to represent other things in the world, such as a model to investigate the problem of ethnical segregation, as in Schelling's (1971). Algorithms may also be purposely designed for certain values, according to certain requirements, such as protecting or undermining privacy. Despite articulating values, algorithms need not be essentially value-laden, that is, they need not comprise essential value judgements. In general, it can be said that an algorithm comprises an essential value judgement if, for the same purpose and everything else being equal, designers who accept different value judgements would have rational reasons for designing different algorithms (Kraemer et al., 2011).

A comprehensive way to approach the purpose of a computational artefact is to take as a starting point that computerization involves an implementation process, of which the algorithm is only an ingredient. I consider the extent to which implementations in social simulation have moral significance on the account of essential value judgements. I use the term social simulations to refer to computational models of the social world in the field of agent-based computational social science. Modelling the social world involves more than representing facts of the physical world, including values and institutional facts whose meanings themselves in the social world depend on human agreement. Insofar as we accept that simulations model social reality, two intricate questions are raised. At stake is, on the one hand, what implementation is and how it participates in the constitution of a social simulation. And, on the other hand, whether representing the social world by simulation defines its implementations as inherently comprising essential value judgements.

Essential value judgments are closely related to the flexible way in which the implementation of simulations is interpreted. Insofar as computers are semantically interpreted, intended to represent other things in the world, computers can be said to have interpretive flexibility. This is similar to Moor's concept of logical malleability (1985), the fact that the states of computers may be used to stand for anything representable in terms of inputs, outputs and logical operators. If simulations are meant to represent cultural, social and political issues, it is worth addressing the extent to which their designs have moral significance. Not just for the sake of epistemic issues of truth with respect to what they model but for the fact that simulations are interpreted by their users.

The argument I discuss regarding implementation and its moral significance is outlined in three parts, which I briefly introduce below.



### Interpretative flexibility

The finding that the meaning of a technology is not homogeneous among its users is corroborated in different scientific and philosophic domains. Studies in social studies of technology, and philosophy of technology argue that the early stages of design have interpretative flexibility, meaning that design responds to the requirements of different social groups and values, which eventually define the technical functions that the artefact will provide. I advocate that social simulations have high interpretative flexibility, which remains beyond design stages. The intention to represent institutions in social simulation makes implementations susceptible to essential value-judgments, deeming simulations interpretively flexible. Consider Schelling's model and the controversy over the meaning of segregation. That is, whether the resulting patterns result from the agents' individual preferences or from illusory mathematical artifacts. The last claim is placed to the extent that the model does not take proper account of the institutional factors of social reality (see e.g. Forsé and Parodi, 2010). Interpretative flexibility is found at two levels. Designers who accept different value judgements may have rational reasons for proposing different implementations. And for a given implementation, individuals who accept differing value judgements may have rational reasons for interpreting the implementation in different ways.

### Representation gaps

The purpose of representing the social world through computers implies distinguishing between malfunction and representation gaps. Representation gaps in social simulation go hand in hand with interpretative flexibility. Representations underscore the role of meaning in the purpose of social simulations and whether such meaning is coherently maintained among the conceptual and computational models that make up the implementation process. Representations in computers depend on the existence of interpretations, which require programmers and/or users. Once a set of stipulative definitions is read as a model and the latter implemented on computers, the new model becomes a specification-of-a-model: the definitions are intended to be implemented for the purpose of representation. The model is given a normative mood towards implementing the representations that the model ought to specify. Semantic gaps between the specification and the implementation give rise to representation gaps: When representations expressed through an implementation do not live up to the representations as intended by the specification, that counts as a representation gap.

Hence, if the computer hardware and its resident software are assumed to work properly, at least two reasons exist for an implementation not doing as intended. The first is miscomputing (Fresco and Primiero, 2013). Miscomputations are objective, non-conformities between an implementation and its functional specification, which refer to verification stages in software development. Another reason concerns representation gaps between an implementation and any forerunner specification, in that the implementation may not represent what was specified. This falls within the scope of validation. It is not always clear whether representation gaps result from poor implementation or from the epistemic difficulty of representing social reality in computational models. Several reasons may be advanced: such technical reasons as the use of floating-point variables, which may lack enough precision to represent intended aspects of the model, or epistemic reasons, given the low syntactic complexity of formal and programming languages and the resulting difficulties in expressing social reality.

### Techno-symbolic ends

Another way of looking at interpretive flexibility is to observe that implementations have – cumulatively with their technical purposes – symbolic ends. The purpose of a social simulation is determined not only by its computational structure (the computer function) but by its intended meaning in the social world. Meaning, and not just technical function, makes implementations in social simulation morally assessable. Implementation has techno-symbolic ends, which hinge on both technical function and meaning in terms of the institutional world. The computational artefact is interpretatively flexible. If it is morally assessed, this requires looking into the artefact's implementation.

High interpretive flexibility reflects the fact that implementations of social simulations are hardly neutral with respect to the purpose of representing institutions, which depend on different value judgments. For instance, in Schelling's model a token is said to be tolerant if it does not want a majority of coloured-like tokens in his/her neighbourhood. Regardless of how the relation between tolerance and segregation is mathematically interpreted, this implementation carries an essential value judgement. Whether the threshold is above or below the majority, there is no objective fact involved in specifying that a certain threshold represents tolerant, somewhat tolerant or intolerant agents. To do so, eventually amounts to take a moral stand through the artefact. Different designers may have different value judgements, possibly conflicting ones, despite being rationally justified.

Many social simulations are presented as purposely 'abstract', of which Schelling's is a canonical example. Some authors present them as 'metaphorical'. Indeed, 'abstract', in this sense, seems not to convey value neutrality, but interpretative flexibility. Flexibility is the condition for the purpose of the simulation as a metaphorical vehicle of representation of the social world, capable of coping with different value judgements of the institutional world that the computational artefact is specified to represent. From empirical and moral perspectives, high interpretive flexibility warns us that social simulations should always be implemented with open-source code. Greater digital skills will be required among those individuals and groups affected by the resulting policies of simulations, in order to be able to critically interpret computer simulations of the social world.

**KEYWORDS:** social simulation, ethics, interpretative flexibility, implementation.

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## ETHICS AND SOCIAL ROBOTS: HOW DO I LIVE WITH A SOCIAL ROBOT?

**Ryoko Asai**

Ruhr University Bochum (Germany)

Ryoko.Asai@ruhr-uni-bochum.de

### EXTENDED ABSTRACT

Since early spring in 2020, we've been overwhelmed by the corona pandemic. In order to prevent infection-spread, people stay home and work from home (home office), restaurants and shopping centers are closed except supermarket and pharmacy, children study at home (home school), and festivals and events are canceled. Furthermore, many of us learned how to cut hair by ourselves at home! Our 'normal' daily life was totally messed up by the corona virus, and we had to adopt new habits to protect ourselves and others from the virus.

Once our daily life was strongly regulated, it directly damaged economic activities locally and globally. Under the pandemic, many people lost their job and many companies had to give up their business all around the world. However, in Japan, since the pandemic started, social robots for family use have been an explosion in sales (Tokyo Shimbun, 2020; FNN Prime Online, 2020). Amongst various features of social robots for family use, the most popular one is LOVOT, which was developed and sold by the Japanese robotic startup company GROOVE X. One LOVOT costs around USD 3,000 at the point of purchase and USD 200 for monthly subscription to welcome it to our home (GROOVE X, 2020). Even though many people worry about their economy under the Corona economic depression, there is a growing need for social robots for family use.

On the other hand, many researches have already shown security and ethical concerns for using social robots for family life (Asai, 2020). One of the typical ethical concerns is about privacy and data security: how our personal information is being used by who? Furthermore, invisible influences of social robots are perceived as more serious ethical concerns: how the interaction between children and social robots affects children's growth mentally and socially (Asai, 2020). Especially during the lock-down, many children have to stay at home without going out and meeting friends. Under this circumstance, customers who bought family-social robots are using their robots as their children's playmate at home (Tokyo Shimbun, 2020; FNN Prime Online, 2020). Whereas social robots are growing in use and popularity at the family level, its users don't recognize the ethical problems very well, just enjoy the convenience and benefits of the robots.

First, we illustrate the necessity of ethical consideration rather than moral consideration in robot use. That does not mean morality is unnecessary for robot use. Rather, "the demands of the modern world on ethical thought are unprecedented" (Williams, 1986), and we try to explicitly explain the reason of high demand for ethics in robot use.

The importance of ethics has been emphasized and addressed since advanced technology became the key infrastructure in society. Especially artificial intelligence technology (AI) initiates the strong interest of ethical thoughts not only in academics but also in industries and politics. Nowadays, many people turn fervent eyes on ethics in the context of technology. Generally, we all know that ethics is a kind of crucial factor in this high-tech society as well as in our life, and we try to be ethical in technology use. However, it is not so easy for many people to explain what is ethics, how ethics is different from morality, why ethics is needed, and how it is possible to be ethical. Sometimes, scientific arguments,

which refer to the ethical aspect in technology development/use, are structured on the assumptions that the importance of ethics is self-evident and incontrovertible.

As is well known, ethics is different from etiquette, manner, rules or laws. Ethics seems to be something difficult to articulate what it is. Then, is it the same as morality? Conventionally ethics has been described in the philosophical contexts, and the distinction between ethics and morality has not always been very thorough even in academic arguments. Apparently there are some commonalities and overlaps between ethics and morality though, ethics cannot be explained by morality solely. As an easy-to-understand example, we very often see “robot ethics” or “roboethics” instead of “robot morality” or “robomoral”<sup>22</sup>. This study takes a position that ethics has some uniqueness and importance which are not covered by morality, particularly when we grapple with societal and humane issues in robot use.

Actually, morality emphasizes the need and importance of ethics. Because, morality reflects the sense of social expectation, and clearly notes what one should and what should be good (Williams, 1986). In other words, morality is established based on virtues which are formed over a long period of time throughout human history, and it offers an off-the-shelf “good” and “right” (Furuta, 2013). Therefore, morality is very static and indisputable, and also “has some peculiar presuppositions” (Williams, 1986).

As we know from our experiences, there are definitely many cases where we know what to do based on morality but we cannot act in fact as morality defines. Furthermore, at the present day, highly advanced technology has been developing day by day and it has been drastically changing a human life and society. That means some peculiar presuppositions are not applicable enough to give us a clear answer about “what we should do”. In other words, it is unavoidable for us to confront a dilemma between “what *one should do*” and “what *I can do*”<sup>23</sup>. By contrast, ethics does not have particular presuppositions, and it opens up “a range of considerations that falls under the notion of the ethical” (Williams, 1986). When we confront a dilemma or a conflict which is difficult to eliminate by morality, ethics provide support to our problem solving and decision making. Thus, we suggest that ethics is dynamic and contingent and also it is always there for each of us and support us as necessary<sup>24</sup>. Ethics asks us to contemplate yourself and garner an insight into yourself more than morality does.

Then, why do we need to think of ethics for social robot use? A social robot is just a robot which doesn’t have any own autonomous will, and it still stays far behind from robots which appeared in Karel Capek’s script R.U.R. (Rossum’s Universal Robots) in 1921. Because a social robot changes/will change our daily life radically like AI is changing our life and society. It might bring new, sometimes more complicated, dilemmas and conflicts into our life when we adopt it into our life. Actually, security and privacy problems with a social robot have been already recognized by the developers and the users (Asai, 2020). In order to protect privacy and assure the security of the users’ personal data, many regulations and laws have been established and enforced recently, for example General Data Protection Regulation (GDPR) in EU 2016.

Those regulations, guidelines and laws clearly describe what *one* (individual and organization) should not do and cannot do. However, *one* lives in different social/cultural contexts, physical conditions, political/economic situations and religious beliefs. Consequently, one has to make a decision in

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<sup>22</sup> “Moral robot” is not relevant to this context. It is related to introducing moral senses into a robot itself and develop or research on a robot with moral senses. In extremely short, the subject of “moral robot” is a robot and the one of robot ethics is human (developers, designers, researchers, sellers and users).

<sup>23</sup> This kind of dilemma is sometimes related to “Quality of Life (QoL)” problem. For example, mechanical life support system causes various ethical dilemmas and QoL problems for patients and their families.

<sup>24</sup> A person thinks of ethical concerns not only for his/her own good/happiness but also for others.

consideration of his/her/its individual situation, and act in the own situation. Nonetheless, one lives with others who have different living conditions with security. The universality or generality of ethics which are stipulated in these regulations and laws works as the premise to inhibit *one* from taking an excessively contingent decision and act (Badiou, 2013; Ito, 2020). In terms of privacy and data security in social robot use, we can decide how to use a social robot by ourselves under guidance of these regulations and laws<sup>25</sup>.

However, a social robot is materially existential as well as a data-collecting device. According to Hegel et al., “A *social robot* is a robot plus a *social interface*. A *social interface* is a metaphor which includes all social attributes by which an observer judges the robot as a social interaction partner” (Hegel et al., 2009). When we have a social robot as a social interaction partner, we perceive it as something more than a robot: a pet, a friend, or a family member. We anthropomorphize it and reconstruct the relationship and reality between it and us. We breathe a new lease of “life” into a non-living and impersonal machine through its social interface.

When we establish a partnership with others, the relationship between *me* and others is basically equal. If a social robot becomes a social interaction partner, the relationship could be equal in social interaction, and also this equal relationship leads to trust building. Barber explains “trust is an essential constituent of all social relationships and all societies”, and there are “two forms of trust (which) are quite distinct from each other”; one is “an expectation or prediction that an assigned or accepted task will be competently performed”; the another is “the reposing of fiduciary obligations and responsibilities in an individual or on an individual” (Barber, 1987). In short, the first one is referred from others’ ability and technical side, and the latter one is related to morality. When we apply these trust forms in trust between a social robot and a user, the first trust form looks reasonable and plausible for the robot-human relationship. In other words, this trust is directed to the robot designers, developers and distributors, and also assured by the regulations and laws related to developing and distributing a social robot.

However, the user tries to repose trust, which is described as the second trust form, in a social robot through anthropomorphization of it. That means the user expects trust, which is aspiring to morality, and this trust is aimed at an anthropomorphized robot<sup>26</sup>. It also affects emotional attachment to a social robot<sup>vi</sup>. Once the user establishes trust in a social robot and an emotional attachment to it, the user tries to share life (personal information, time, daily/life events etc.) with it. How much can I trust in a social robot? How do I form the relationship with a social robot emotionally? How much do I share our life with a social robot? Rather, the question is simple: how do I live with a social robot? We need to consider about this question between our own conditions and morality, and ethics supports us to find our own answer.

**KEYWORDS:** Ethics, morality, security, social robot, trust.

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<sup>25</sup> This paper doesn’t consider whether/how much people understand these regulations and laws in fact.

<sup>26</sup> Obviously a social robot is not a moral subject, and the trust cannot be established mutually at present.

<sup>vi</sup> From the perspective of attachment theory, there is the accumulation of researches on attachment and trust (Simmons, et al., 2009).

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## **7. Surveillance of Activist Movements**

Track chair: William Fleischman, Villanova University; Leah Rosenbloom, Brown University





## STUDYING THE SURVEILLANCE OF ACTIVISTS: RISK, CONSENT AND ETHICS

**Glencora Borradaile**

Oregon State University (USA)

glencora@oregonstate.edu

### EXTENDED ABSTRACT

To examine the digital security needs and the surveillance experiences of activists, it is our ethical obligation to do so with their consent, protect their privacy and only publish content that will not put them or their movements at risk. We can do so by adopting participatory research practices and upholding ethical standards in our research community. These principles apply to the study of the surveillance and communications practices of any at-risk group, but particularly those groups that have heightened surveillance concerns, such as Muslim Americans or undocumented communities. However, the study of activists is additionally complicated by ideology. A researcher can never be truly neutral and may be challenged in reasonably assessing the risks and benefits of their research to activists, either those that aligned with the researcher's ideology and those that are not.

It is not enough for the researcher to protect the (human) subject of their research (assuming they would do so, at the very least, out of requirement by policy); the researcher is also ethically obligated to protect the underlying movement of the activist, for otherwise the activist would surely not consent to participate in the research (either explicitly, as in human subjects research, or implicitly, as in research on scraped or public data). The risks can be complicated, but we can draw on history to understand how the fruits of surveillance have been used to undermine the efforts of activists, notably in the US during the Red Scare and Civil Rights Era through FBI COMINFIL and COINTELPRO efforts (Select Committee to Study Governmental Operations with Respect to Intelligence Activities, Senate, 1976). This history underscores that surveillance data is used to aid in infiltration and punishment of groups that are voicing or acting in dissent of the State or powerful corporations. As researchers, we are ethically obligated to ensure our research activities are not aiding the opponents of our research subjects.

I am a computer scientist who studies the privacy needs and surveillance experiences of activists and have given digital security trainings to activist groups over the past 4 years. I am also a member of my university's Institutional Review Board that oversees human subjects research. In these roles, I approach this topic as both a research practitioner and a reviewer of research protocols.

### Risks versus benefits of research

A better understanding of the surveillance of activists and activists' responses to surveillance can of course benefit social movements. Surveillance research can better inform the subjects of surveillance and inform the creation and growth of privacy-enhancing technologies. At the risk of fatalism, however, we focus on the risks of such research in this brief abstract, which may be indirect, unintended, and difficult to predict. We illustrate our concerns with three hypotheticals:

(H1) A researcher uncovers the networks corresponding to a social movement from public social network postings and identifies key players from this information. The researcher makes

the data available for others to use for research in a deidentified way. However, other researchers are then able to reidentify the data.

(H2) A researcher describes a method used by someone to disguise private messages as other meaningless but grammatically correct messages using a book as a key. Although the specific book is withheld and the specific messages in question are not posted publicly, someone reading the research was able to decrypt meaningless online messages (not necessarily from the subject of the research) that uses this method for public postings.

(H3) The communication practices of an activist movement are reported on by a researcher. Even though the information is anonymized, the practices are described at a high level. It was enough information to allow opponents to impersonate members from allied groups that use the same methods.

These hypotheticals illustrate that it is not just the primary subject of the research who may be put at risk, as in H1, but also people who use methods similar to the primary subject (i.e. third party subjects) as in H2. In particular, since groups across a social movement will share information and methods, although a researcher might take into account all the risks for the group they are directly studying, the researcher might not be doing enough to protect other groups using similar methods, as in H2 and H3. Particular care needs to be given to methods that are not cryptographically robust, like the method of H2, which does not satisfy Kerckhoff's principles<sup>27</sup> (Kerckhoff, 1883). Finally, it is not just identifiable individuals who may be put at risk as in H1 and H2, but the health of entire movements as could happen through infiltration in H3. We need to ensure that we are not aiding in the work of the opponents of the movements we study, as doing so, particularly with the use of private information, would violate the trust of the research subjects.

#### Risk determination in human subjects research: The limitations of the IRB

The research described in H2 and H3 would fall under the oversight of the Human Research Protection Program at the research institute if the researchers used, for example, surveys or interviews of participants of social movements. While the Institutional Review Board (IRB) should ensure that research minimizes risk to the subjects of the research and that subjects of the research meaningfully consent to participate, this oversight may not be sufficient for establishing ethical standards in the research into the surveillance and digital security practices of activists for two reasons.

First, the direct subjects of the research may not be the only people put at risk. Guidance to IRBs on risks to third parties is subject to debate (Resnik and Sharp, 2006; Hausman, 2007). In most cases, IRBs can stay compliant while not considering risks to third parties (but may consider these risks if they wish).

Second, IRBs may not have the expertise to appropriately evaluate risks that are highly technical. Consider hypothetical H2. The protocol reviewer may have the expertise needed to put in protections for the group that is being studied but may not be able to predict consequences for third parties, which may require deep knowledge of data security and threat modelling.

While these points are not unique to surveillance research, they are exacerbated by the novelty of the research, that the research may be pursued by intellectuals with a lack of experience in human subjects

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<sup>27</sup> Kerckhoff's principles state that a method of encryption should not need to be kept hidden to provide protection.

research and not seek guidance from their IRB, and that the risks are difficult to evaluate or predict. Further, while research participants may understand their personal risk from participating, they may not foresee risks to their broader social movements and may not consent if they were fully aware of those risks.

Risk determination in data science: The expectation of privacy and true consent

Unlike H2 and H3, the research described in H1 would likely not fall under the oversight of most IRBs. Public data is usually considered *carte blanche* for research. Oversight boards usually determine that an individual's implicit consent is obtained by having posted their information publicly. However, research has shown that this attitude does not reflect users' beliefs (Fiesler and Proferes, 2018). In many cases, there is little choice for an individual to refrain from posting public content where social and work expectations might remove individual's autonomy to not participate (Zuboff, 2015). In other cases, private data has become public and then been used for research; for example, both the Enron corpus of email (Enron Corp and Cohen, 2015) and the ProPublica recidivism dataset (Mattu et al., 2016) were obtained through public records and published, including private and personally identifiable information.

Whether data is scraped by the researcher or others, the researcher should consider any risks their analysis might pose for individuals who were sources of that information. Would the source of the information consent to their information being used for research? Would they consent to the *particular* research being done? What risks are entailed from the research being performed? What can we do to minimize those risks? Though this data is not necessarily subject to IRB protection, we should hold the research to the same standards by asking these questions.

Toward responsible conduct of research of surveillance and activist movements

In the end, we do need to explore the balance between benefits and risks. However, as we have hopefully illustrated, this can be challenging, and made even more challenging when examining population-level risks such as entailed by surveillance studies and social movements. But researchers need not explore that balance in an academic vacuum. Even in cases where we cannot obtain permission from the subjects of the researcher (as might be in the case of scraped or public data), researchers could engage in participatory research in which researchers engage the target population to define the research questions and outline the methodologies at the outset of the research (Nind, 2011). That is, by involving activist communities from the start, the research will be more likely to be truly beneficial to the communities being studied. By involving activist communities in the design of the methodology and decisions about what to publish, we will have the knowledge of these communities to draw on to minimize risks and achieve a benefit-to-risk balance with which the community agrees.

**KEYWORDS:** surveillance, digital security, activists, research ethics.

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## TOWARD SECURE SOCIAL NETWORKS FOR ACTIVISTS

**Leah Rosenbloom**

The Workshop School (USA)

leah.rosenbloom@workshopschool.org

### EXTENDED ABSTRACT

Activists are a vulnerable population who risk personal harm to advocate for social, political, or environmental change. Recent technologies simultaneously threaten activists and facilitate their work. In particular, both activists and their antagonists use social media platforms to track movements for change. While some activists combat surveillance using end-to-end encrypted text and email, these tools do not provide adequate infrastructure to form and maintain connections between large groups of people. This paper presents an analysis of the current role of social media in activism, and explores new ways in which platform designers might leverage advancements in cryptography to build safer, more effective networking tools for activists.

### Introduction

Activists are people who work to effect political, social, or environmental change. They seek to challenge and disrupt existing power structures, and have therefore been the frequent targets of surveillance, censorship, prosecution, and state violence (Churchill and Vander Wall, 1990; Poell, 2014; Breuer et al., 2015; Rihl, 2020; The Moscow Times, 2021). This targeting not only threatens activists' lives and livelihoods, but also creates a chilling effect on the right of the people to petition the government for change, a cornerstone of democratic freedom.

Activists rely on community engagement, collective identity, and trust to organize successful movements for change (Della Porta, 2012; Mundt et al., 2018). We note the important distinction between activists, who organize based on community will to challenge or threaten *power structures*, and hate groups, who organize around discrimination and violence to challenge or threaten *people*. This work foregrounds the needs of activists, and considers how technologists might build tools that could maximize the effectiveness of activist organizations while minimizing the ability of states and hate groups to leverage the same tools against marginalized communities.

Over the past decade, activists have increasingly organized ideas, groups, and actions over the internet, and in particular on social media platforms such as Facebook, Twitter, Instagram, and YouTube (Howard et al., 2011; Valenzuela, 2013; Bohdanova, 2014; Lee et al., 2016; Johnson, 2017; Mundt et al., 2018). Social media has become a powerful tool for activists and state powers alike: the ubiquitous and public nature of the platforms simultaneously creates infrastructure for organizing people and ideas, and for streamlining the surveillance and manipulation of those people and ideas.

Activists are thus caught in an uncomfortable position: as powerful as social media can be in support of organizing, it can facilitate intimidation and abuse just as effectively. While tools like Signal and PGP can provide secure, end-to-end encrypted alternatives to SMS and email, they depend on established relationships and context. Social media, on the other hand, is a networking tool that allows activists to form new relationships and build context collaboratively. One might expect an inverse relationship to exist between networking capabilities, which afford the visibility and accessibility necessary for

movements to scale, and security measures, which generally make networks inaccessible to anyone who is not already a trusted participant. This paper argues that secure social network developers might use advancements in anonymous authentication and searchable encryption to build a tool with the best of both worlds: the power of social media to engage the public and build community, and the power of cryptography to authenticate legitimate members of the movement and thwart state surveillance.

Social media as a tool to effect change

#### *Facilitation of Traditional Organizing: Speed, Scope, and Scale*

Researchers are careful to distinguish social media as a *facilitator*, rather than a direct or independent cause, of activist movements (Valenzuela, 2013; Bohdanova, 2014; Lee, 2016; Mundt et al., 2018). Social media platforms and other digital organizing mechanisms must therefore be considered tools that people can build, manipulate, and improve. Specifically, activists use social media networking to increase the *speed* and *scope* of information dissemination and participation, as well as to facilitate the organization of essentials like funding, food and water, legal assistance, and medical brigades. This efficiency allows movements to quickly *scale*.

#### *Bridging Local and Global Communities*

Social media has given people unprecedented access to the thoughts, struggles, and activities of communities all over the world. The movement for water protection in Standing Rock, North Dakota was perhaps the most stunning example of a highly-local-turned-global protest that leveraged social media to receive millions in funding, attention, and solidarity from 95 different countries (Johnson, 2017). Similarly, Black Lives Matter organizers highlighted the importance of social media in helping to achieve broad, long-term coalitions with other activist groups (Mundt et al., 2018).

Social media as an arm of the state

#### *Surveillance*

Social media platforms provide law enforcement access to users' personal data both directly and indirectly (Mateescu et. al., 2015). Facebook and Google both have designated "Law Enforcement Request Systems" that streamline requests for data acquisition and removal (Facebook, 2020; Google, 2020). The exact criteria and frequency of these requests is not publicly available. In the worst case, states have used evidence gathered on social media to murder and prosecute activists in retaliation for civil disobedience (Breuer et al., 2015; Rihl, 2020; The Moscow Times, 2021).

#### *Disinformation Campaigns*

Transnational disinformation campaigns became an internationally-recognized issue in the months preceding the 2016 U.S. Presidential election, when Russian state actors used targeted advertising, bots, and local groups on social media to spread election misinformation, amplify racist and anti-immigrant sentiments, and rapidly destabilize societal norms (Faris et. al., 2017). The threat of misinformation and state actors posing as average users on social media has severely degraded activists' ability to engage legitimate supporters from a place of trust and community, which are both essential to the success of social movements (Della Porta, 2012).

## The role of cryptography

### *Using Anonymous Authentication to Create Trust Guarantees*

Anonymous authentication is a process by which activists might prove to one another that they are legitimate members of an organization without revealing any other identifiable information about themselves. Revocable anonymous credentials (Camenisch & Lysyanskaya, 2004) would allow for anonymity that activists could moderate, helping them create trusted community spaces online.

### *Using Searchable Encryption to Organize Private Information*

Searchable encryption (Cash et. al., 2014) would allow activists to store and interact with sensitive data on an untrusted server. Having a secure way to collaborate on content such as event plans, protest routes, presentations, guides, or videos would further empower activists to control how and when they reveal information to the public.

**KEYWORDS:** activism, social media, surveillance, cryptography, inclusive privacy and security.

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## **SOCIAL MEDIA AND THE RISE OF THE PROPAGANDA-INDUSTRIAL COMPLEX**

**Leah Rosenbloom, William Fleischman**

The Workshop School (USA), Villanova University (USA)

leah.rosenbloom@workshopschool.org; william.fleischman@villanova.edu

### **EXTENDED ABSTRACT**

The riots at the U.S. Capitol have thrown the impact of social media-spread propaganda into sharp relief. While the 2020 Presidential election was independently confirmed by thousands of state and local officials, part of the U.S. population still believes that the election was stolen. On January 6<sup>th</sup>, 2021, with help from white supremacist organizations and a handful of sympathetic Capitol police, hundreds of them carried out an armed insurrection against the U.S. government.

Proposals for the mitigation of social media-fueled extremism often include surveillance and censorship. These solutions not only harm legitimate movements for social change and democracy but are also ineffective against terrorism and miss the root cause of the Capitol violence. Advertising-based technology services like social media are designed to profit from the wildfire-like spread of content with high shock value. They intentionally and systematically propagate anything clickable and therefore monetizable, creating wells of misleading information.

Moreover, the problem with white supremacist propaganda extends far beyond social media. Police participation in the riots as well as centuries of selective law enforcement and police brutality illustrate that institutional powers are not held accountable for criminal activity including murder, the incitement of violence and insurrection, subornation of treason, hate crime, fraud, and abuse of power for financial gain. Institutional lawlessness is often coupled with propaganda which serves to deflect attention from criminal activity and vilify political opposition. The financial incentives of social media companies and the political incentives of institutional powers have coalesced to create a new challenge to democracy: the propaganda-industrial complex. We argue that the proper response to the propaganda-industrial complex is not to censor, but rather to strengthen the foundations of democracy: to demand legally-binding transparency from technology companies, government, and law enforcement agencies, to protect and elevate the right to demonstrate against institutional lawlessness, and to create digital space for people to express and engage with ideas free from commodification and algorithmic bias.

### **Introduction**

This is a pivotal moment to reevaluate the regulation of social media, the investigation of domestic terror, and societal perception of democratic free speech and assembly. Lawmakers and technologists alike must draw the critical distinction between groups coordinating to commit violence and those exercising their right to speak freely for the purpose of social and political change.

Legitimate activist groups are harmed by pervasive surveillance and censorship. Civil liberties groups have long noted that “federal law enforcement already has powerful tools to investigate and prosecute acts of domestic terrorism without any new laws, and that importing the anti-terrorism framework risks creating broad and vague powers that could be used to go after activists or religious minorities”

(Emons, 2021). The history of the NSA's PRISM program and the USA Patriot Act illustrates the propensity for "mission creep" in regard to electronic surveillance.

Furthermore, these measures are not effective tools against terrorism. Without human intelligence to direct the inquiry, dragnet programs generate large numbers of false positives (Kirschner, 2015). Many of the 54 cases of reported terrorist activity in the U.S. between 2001 and 2013 were thwarted by "standard investigative techniques" rather than NSA surveillance (Landau, 2013). Meanwhile, the NSA collected data on millions of Americans.

Surveillance programs disproportionately target immigrants and activists (Churchill and Vander Wall, 1990). During the Capitol riots orchestrated by white supremacists, federal law enforcement did not interfere. Rather than being infiltrated by law enforcement investigators, white supremacist groups are themselves host to law enforcement and military personnel who join out of sympathy for their aims (Westervelt, 2021). This paper examines the relationship between industrial complexes and white supremacist ideology. We introduce the idea of the propaganda-industrial complex, comparable to the surveillance-industrial complex, that is created by the commodification of white supremacist messaging. We argue that the proper response to this combination of profit and state control is neither censorship nor surveillance, but rather the regulation of social media and imposition of restrictions on both corporations and law enforcement. In order to establish effective, sustainable solutions to industrial complexes, however, it is not enough to regulate technology, or even put in place more robust measures to deter and respond to domestic terrorism; we must also address systems of oppression that allow state powers and technology industries to profit from the perpetuation of white supremacist ideology.

#### Defining the propaganda-industrial complex

An industrial complex is a symbiotic union between profit-based institutions and social or political institutions. The term was first coined in 1961 by U.S. President Dwight Eisenhower, who warned against the integration of U.S. military with arms dealers to create a military-industrial complex (NPR Staff, 2011). Researchers have studied the proliferation of many subsequent industrial complexes, among them the prison-industrial complex (Schlosser, 1998) and the surveillance-industrial complex (Ball & Snider, 2013).

#### *The Attention Economy*

In *The Attention Merchants*, Tim Wu describes the evolution of mass and systematic commodification of human attention, from the primitive beginnings of the advertising industry to the media capture finesse of "The Attention Merchant Turned President" (Wu, 2016). In particular, the rise of the clickbait economy and "free" advertising-based services has turned the attention economy into a self-sustaining industry. Content with a high shock value is more likely to retain attention, desensitize users to the truth, and create a fertile environment for propaganda, shock doctrine capitalism, and kleptocracy (Klein, 2007).

#### *Exploitation of the Attention Economy for Political Power*

Social media's global-scale, black-box attention economy is uniquely positioned to serve powerful state institutions and political influencers. In 2016, state actors in Russia purchased targeted political advertisements on Facebook, spreading election misinformation and race-baiting propaganda in the

U.S. (Calabresi, 2017). Conversely, after detaining opposition leader Alexei Navalny, the Russian government censored calls for protest on various platforms, claiming they would “illegally incite minors to attend unauthorized rallies” (The Moscow Times, 2021). State actors can thus use their power to exploit the attention economy or shut it down, influencing public perception and socio-political outcomes with little to no accountability.

### *Big Tech Profit + Dissemination of Propaganda = Propaganda-Industrial Complex*

Companies specializing in cameras, spyware, and artificial intelligence provide state powers with new infrastructure to bolster and expand state surveillance capabilities. Similarly, ubiquitous social media platforms provide state powers with new infrastructure to capture attention and spread propaganda.

### *A call for an intersectional perspective*

Government regulation of social media is long overdue. Technology professionals and public welfare advocates have called for the suppression of election misinformation (Eisenstat, 2020) and incitement to violence (Fleischman and Rosenbloom, 2020), as well as the establishment of social media companies as a content-responsible publisher rather than a neutral “internet intermediary” that merely hosts third-party content (Eisenstat, 2021). While these regulatory fronts are important, they do not cover two key causes of the propaganda-industrial complex: the platforms’ underlying algorithms and their ability to profit from propaganda.

### *All the Moderators in the World Could Not Stem the Flow of Clickbait*

The machine-learning algorithms employed by social media companies are specifically designed to propel the most sensational, monetizable content to the forefront of targeted users’ feeds. Assigning a team of human beings to the task of moderating the overwhelming volume of content on these platforms is not only traumatizing (Newton, 2019), but also futile. The proliferation of sensationalist content exists and is promoted by algorithmic design; moderators can ban one user to take down a hundred violent videos. The next most sensational content will float right to the top.

### *The Regulation of Algorithms and Advertising is Better Than The Regulation of People and Content*

Given the limits of content moderation, it would be useful to focus our first regulatory efforts on the underlying algorithms and advertising models that purposefully amplify sensational content. Effective regulation of the machine-learning algorithms must start with two-fold transparency: companies must not only provide the structure of the algorithm, but also an (anonymized) summary of the data they are collecting and using to train the algorithm.

In response to criticism concerning its role in the 2016 U.S. presidential election, Facebook pledged to establish a publicly searchable archive of political ads that was supposed to include the identities of advertisers, cost of each ad, and viewers’ demographic information. Studies of the archive uncovered missing ads (Kelly et. al., 2019) and \$37 million in undisclosed spending (Silverman & Mac, 2020). Regulators must make such archives a legal requirement in order to understand exactly how content is spreading and to whom.

Regulatory requirements must also include information about microtargeting and transparency about changes in algorithmic structures and parameters.

*The Urgency of an Intersectional Perspective*

The world is currently experiencing a rise in white nationalism (Becker, 2019). While it is true that social media companies perpetuate, amplify, and profit from these trends, it is also not reasonable to expect social media companies to eradicate them. Police openly welcomed insurrectionists into the U.S. Capitol, removing barricades and taking selfies with them (Westervelt, 2021). It is therefore critical for society through regulation, law, and norms, to address the institutional and financial systems of oppression that create a permissive environment for white supremacist ideology—not only among citizens, but within the government and throughout law enforcement agencies.

**KEYWORDS:** regulation of social media, activist movements, propaganda, surveillance.

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## **8. What Will Cybersecurity's “New Normal” Look Like?**

Track chair: Shalini Kesar, Southern Utah University; Sabina Szymoniak, Czestochowa University of Technology





## **FALSE FRIENDS ARE WORSE THAN OPEN ENEMIES: CYBERSECURITY OF MEDICAL IOT IN A LEGAL CONTEXT**

**Jaroslav Greser**

Adam Mickiewicz University (Poland)

jarek.greser@gmail.com

### **EXTENDED ABSTRACT**

The development of the internet has led to the emergence of new modes of providing medical services. One of the most dynamically developing technologies are machine learning (ML) and artificial intelligence (AI), which supports medical professionals as they interpret results, select diagnostic methods or develop disease progression models. These technologies are used both in emergencies such as serious cardiac events or premature labour, in chronic conditions, such as the Parkinson's disease or cancer, and in behaviours which affect health, e.g. sleep patterns or dietary habits<sup>28</sup>.

Studies demonstrate that the implementation of such solutions reduces healthcare costs, lowers hospitalization rates and improves the standard of care provided to chronically ill persons<sup>29</sup>. At the same time, the Covid-19 pandemic has deepened the existing problems of healthcare such as a shortage of skilled workers and has created new ones e.g. more difficult access to medical advice and no possibility to examine patients in person. The widespread use of these technologies could significantly reduce some challenges by speeding up diagnosis and remotely exercising constant supervision over patients in their homes. Therefore, their implementation is a priority for private entities which thus seek to increase their competitive advantage, as well as a goal of national and European Union development policies.

The foreseeability and correctness of diagnosis provided by machine learning and artificial intelligence algorithms are dependent on the data that was used to train them. The research shows that there is a correlation between the amount of data and the correctness of diagnoses<sup>30</sup>. The simplest way to describe it is: the more data, the better diagnosis. For practical reasons, access to this data may be difficult. On one hand, it is often scattered across various actors. Additionally, it is often processed in paper form, so its use requires additional, often costly and time-consuming activities. In the case of data processed in digital form, a frequent problem is the lack of data interoperability through the use of different systems and formats of their records. In this situation, stakeholders using algorithms have high hopes for the increasing use of IoT devices, which are capable of delivering large amounts of standardized data in real-time. These expectations have a high chance of being realized, taking into account the actions of various actors to increase the presence of data processed by IoT.

Although using the IoT to collect data may be seen as the answer to the problems of effective functioning of ML and AI algorithms, in practice it rises a serious challenge. As indicated in the

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<sup>28</sup> Pfizer Taps IBM for Research Collaboration to Transform Parkinson's Disease Care, <https://www-03.ibm.com/press/us/en/pressrelease/49475.wss>

<sup>29</sup> D. Su, J. Zhou, M. S. Kelley, T.L. Michuad, M. Siahpush, J. Kim, F. Wilson, J.P. Stimpson, J.A. Pagán, Does telemedicine improve treatment outcomes for diabetes? A meta-analysis of results from 55 randomized controlled trials, *Diabetes Research and Clinical Practice* 2016, 116.

<sup>30</sup> N. A. Obuchowski, J. A. Bullen, Statistical considerations for testing an AI algorithm used for prescreening lung CT images. *Contemporary clinical trials communications* 2019, 16. <https://doi.org/10.1016/j.conctc.2019.100434>

literature, the weakness of this technology is the issues related to cybersecurity<sup>31</sup>. The reasons behind this are their design and prototyping, the relatively weak computing power, which results from the small dimensions of the device<sup>32</sup>. Therefore, they can be used in the activities of cybercriminals in various ways. The main ones are:

1. using IoT as an attack vector, i.e. a measure by which an attacker takes control of a computer system to carry out the intended activity, for example, data theft or launch a ransomware attack<sup>33</sup>.
2. using IoT as the target of an attack, i.e. a situation in which the device is the main target of an attacker, for example, violating the security of a modern pacemaker may lead to the death of the person to whom it was implanted<sup>34</sup>.

When using IoT data for medical algorithms, a poison pill attack is a particular threat. Its essence is to provide such an amount of processed information that will allow the algorithm to obtain false results while the algorithm considers them valid at the same time. The effects of such actions are indicated in both general algorithms<sup>35</sup> and medical ones<sup>36</sup>. This is how the acquired data can become false friend.

While the attack is highly sophisticated and needs a considerable amount of resources it may have devastating effects. In particular, it may be part of the cyberwar or malicious action of an enemy state to achieve certain political goals. Recent events show that there are opportunities to launch such attacks e.g. the attack on the SolarWinds Orion program library<sup>37</sup>, which resulted in the surveillance of the US government and military systems and 425 largest companies in the world according to Fortune 500<sup>38</sup>. The problem is further exacerbated by the existence of the "black-box" phenomenon, based on which it is impossible to trace the way the AI and ML algorithms make decisions. Combined with the confidence in the results, it can lead to severe consequences for patients and the healthcare system as a whole.

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<sup>31</sup> Hewlett Packard Internet of Things Research Study, 2015, s. 3, <http://www8.hp.com/h20195/V2/GetPDF.aspx/4AA5-4759ENW.pdf>

<sup>32</sup>OWASP Internet of Things (IoT) Project [https://www.owasp.org/index.php/OWASP\\_Internet\\_of\\_Things\\_Project](https://www.owasp.org/index.php/OWASP_Internet_of_Things_Project)

<sup>33</sup> A. Stando, Żarówki Philips Hue z poważną luką. Pozwoliła na włamanie do sieci komputerowej, <https://www.dobreprogramy.pl/Zarowki-Philips-Hue-z-powazna-luka.-Pozwolila-na-wlamanie-do-sieci-komputerowej,News,106179.html>

<sup>34</sup> B. Rios, J Butts, Security Evaluation of the Implantable Cardiac Device Ecosystem Architecture and Implementation Interdependencies, [https://drive.google.com/file/d/0B\\_GspGER4QTYkJfaVlBeGVCSW8/view](https://drive.google.com/file/d/0B_GspGER4QTYkJfaVlBeGVCSW8/view)

<sup>35</sup> Tay, Microsoft's AI chatbot, gets a crash course in racism from Twitter, <https://www.theguardian.com/technology/2016/mar/24/tay-microsofts-ai-chatbot-gets-a-crash-course-in-racism-from-twitter>

<sup>36</sup> M. Eichelberg, K. Kleber, M. Kämmerer, Cybersecurity Challenges for PACS and Medical Imaging, *Academic Radiology* nr 8 /2020, <http://doi.org/10.1016/j.acra.2020.03.026>.

<sup>37</sup> Customer Guidance on Recent Nation-State Cyber Attacks, <https://msrc-blog.microsoft.com/2020/12/13/customer-guidance-on-recent-nation-state-cyber-attacks/>

<sup>38</sup> Highly Evasive Attacker Leverages SolarWinds Supply Chain to Compromise Multiple Global Victims With SUNBURST Backdoor, <https://www.fireeye.com/blog/threat-research/2020/12/evasive-attacker-leverages-solarwinds-supply-chain-compromises-with-sunburst-backdoor.html>

## The aim of the paper

In the view of the above remarks, a series of questions arise regarding ways to ensure the cybersecurity of IoT devices. In my paper, I would like to focus on one aspect of this issue which is a legal obligation to fulfill cybersecurity of computer software controlling medical IoT. It needs to be noted that the cybersecurity of software is not comprehensively regulated. Furthermore, because of their nature, the software falls within the purview of laws applicable to personal data protection, cybersecurity, responsibility for the dangerous product, consumer rights or intellectual property.

In my paper, I intend to conduct an inquiry into the cybersecurity regulation in the light of European law. It will consist of five parts:

1. Analysis of the historical development of regulations applicable to computer software controlling medical devices, focusing particularly on the scope of implementation of Directives 90/385/EEC, 93/42/EEC and 2000/70/EC;
2. Analysis of the current state of regulation, in particular regarding the implementation of Directive 2007/47/EC;
3. Analysis of Regulation 2017/745 which comes into effect in May 2021, concentrating on the obligations imposed by this act;
4. Analysis of other regulations which affect the status of computer software as a medical device, focusing in particular on the NIS Directive with respect to cybersecurity and Directives 770/2019/EC and 771/2019/EC in relation to consumer rights;
5. Conclusions of findings.

**KEYWORDS:** cybersecurity, medical devices, IoT, AI, M-IoT, poison pill attack.

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## A NEW SECURITY PROTOCOL FOR PROTECTION AGAINST FALSE LINKS

Sabina Szymoniak

Czestochowa University of Technology

sabina.szymoniak@icis.pcz.pl

### EXTENDED ABSTRACT

In recent months, we have observed an increased demand for services provided on the Internet. Scientific conferences, training and schools have moved to the virtual world. We can take part in various webinars that allow you to acquire knowledge on a specific topic often than usually. The increase in this type of activity has also contributed to the growth in cybercrime (Ispahany et al., 2020). Training or webinar offers are very often made available via social networks or e-mail messages. In the sheer volume of various suggestions, it is possible to accidentally reply to a false advertisement by clicking on the attached link. There may be a script attached to the URL. This script may contribute to the infection of our devices as well as to steal our login data.

There are two solutions to protect against such situations. The first is the detection of false links. This solution uses artificial intelligence methods to detect which URL contains deceptive content. Recently, there have been many attempts to solve this problem by using artificial intelligence techniques. Yang noted that vulnerabilities in recommender systems may encourage deliberate manipulation by malicious users (Yang et al., 2020). Also, Lai looked at the impact of social recommendation systems on the presence of malicious URLs on social networks (Lai et al., 2020). In (Song et al., 2020), the authors presented a novel method of detecting malicious JavaScript code, based on deep learning. Baccouche proposed an LSTM model that will identify mischievous text regardless of the source (Baccouche et al., 2020).

The second solution is related to the technical aspect of internet communication. This solution uses security protocols to secure the exchange of messages by users. The protocol is a sequence of steps that prepare a secure communication channel for users. This solution supports the correct setting up of such a channel. Only users who have the appropriate encryption and decryption keys will be able to read the transmitted messages. Security protocols and application have been considered in many scientific papers (Steingartner et al., 2019), (Radaković et al., 2018), (Čibej et al., 2019).

In this paper, we propose a new security protocol. This protocol purpose is to implement AAA (Authentication, Authorization, Accounting) logic. This logic relates to a dedicated security framework used to mediate network and application access. Authentication describes a way of identifying a user for a network or application. The authorisation is connected to the process of enforcing policies for users. Accounting logs session statistics and user information. Thanks to this solution, it is possible to control access to resources, including the audit rules. Only authorized users will have access to the network, resources or applications (Galinec et al., 2019).

Our protocol consists of two parts: preparatory and verification. In the first part, the user must agree on his unique identifier with the trusted Distribution Center (DC). The event organizer must perform a similar action. In the second part, the user (who wants to participate in any event) will verify the correctness of the URL used to make the connection.

In Figure 1, we presented a diagram of the proposed protocol first part in Alice-Bob notation. The preparatory part consists of four steps. In the first step, the user (marked as A) who wants to

participate in any event, sends a query to the trusted DC. In the message, he includes his text identifier and a newly generated timestamp. The text identifier of a user is his name and surname. He encrypts this message with his private key. Upon receipt of this message, DC must generate a unique  $UID_A$  and a special timestamp. Next, he encrypts the prepared UID and the previously obtained user ID with the A's public key. Then, he hashes the ciphertext obtained in this way. The final step to prepare for the second step is to encrypt with the symmetric key shared by DC and Authentication Center (AC) the bundle containing hash and timestamp generated by DC. DC sends the entire message to the AC. After decrypting the message, AC saves the new user data in its database. Then it sends to A the same information it got from DC. This time it uses A's public key for encryption. In response, A sends to the AC the timestamp generated by DC in the message encrypted with the AC's public key. Thus, it confirms its identity with the AC.

Figure 1. Scheme of the protocol preparatory part

$$\begin{aligned}
 \alpha_1 \quad A \rightarrow DC &: \{i(A), T_A\}_{K_A^-} \\
 \alpha_2 \quad DC \rightarrow AC &: \{\#hash(\{UID_A, i(A)\})_{K_A^+}, \\
 & T_{DC}^A\}_{K_{DC-AC}} \\
 \alpha_3 \quad AC \rightarrow A &: \{\#hash(\{UID_A, i(A)\})_{K_A^+}, \\
 & T_{DC}^A\}_{K_A^+} \\
 \alpha_4 \quad A \rightarrow AC &: \{T_{DC}^A\}_{K_{AC}^+}
 \end{aligned}$$

Source: self-elaboration

In the same way, the meeting organizer agrees his ID with DC. The only difference is in the first step. In the text ID field, he should include a URL that will be sent to users.

Figure 2 presents a diagram of the second stage of operation of the protocol we are proposing. At this stage, the user checks whether the links sent to any event are correct, and users verify themselves against each other.

Figure 2. Scheme of the protocol verification part

$$\begin{aligned}
 \alpha_1 \quad A \rightarrow AC &: \{\#hash(\{UID_A, i(A)\})_{K_A^+}, \\
 & T_{DC}^A, i(B)\}_{K_{AC}^+} \\
 \alpha_2 \quad AC \rightarrow A &: \{\{\#hash(\{UID_B, i(B)\})_{K_A^+}, T_{AC}^B\}_{K_A^+}, \\
 & \{\#hash(\{UID_A, i(A)\})_{K_B^+}, T_{AC}^A\}_{K_B^+}\}_{K_A^+} \\
 \alpha_3 \quad A \rightarrow B &: \{\#hash(\{UID_A, i(A)\})_{K_B^+}, T_{AC}^A\}_{K_B^+} \\
 \alpha_4 \quad B \rightarrow A &: \{T_{DC}^A, T_{DC}^B, K_{AB}\}_{K_A^+}
 \end{aligned}$$

Source: self-elaboration

In the first step of this part, the user sends a message to the AC. This message consists of his hashed unique identifier, the timestamp generated by DC and the event organizer (marked as B) text identifier. The identifier for B is the URL. The prepared message A encrypts with AC's public key.

After decrypting the message, AC checks its database if there is a user with the identifier  $I_B$ . If so, it prepares a message for A, encrypted with his public key. This message will contain two nested ciphertexts. The first is a message containing the hashed unique identifier B and timestamp generated by DC for B. AC encrypts this message with A's public key. The second element is A's unique identifier and the timestamp generated for it by DC. AC encrypts the message with B's public key. After receiving this message, A can only read the content of its first part. The second part is addressed to user B. At this point, user A is aware that the URL of the event is valid. Accordingly, it sends in the third step to B the message from step two which is addressed to him. After reading the ciphertext, B learns about the identifier A. Then he generates a symmetric session key that will be shared between him and user A. This key is sent to A along with the timestamps that DC generated for them. B encrypts this message with A's public key. B confirms its identity to A. After decrypting the message and verifying the received markers, A may start communication with B using the session key.

If the user with the identifier  $i(B)$  did not exist in the database AC, then the message from the second step would consist of two identical elements. After receiving this message, A will be able to decrypt both the sent elements. Thus, A will know that the event organizer does not exist and that the link sent is false. Therefore, he will not continue to communicate.

In this article, we introduced a new security protocol. It can be used to validate URLs and secure the authentication process. Also, the protocol allows protecting against data loss by clicking a false link. The article deals with ethical issues related to impersonating computer network users.

In further work, we will focus on developing a URL verification method. As part of this method, we plan to build a method, which will indicate whether a given URL is false or good. DC will use this method. Ultimately, we plan to prepare a tool that will use the protocol and related methods to protect users from making a false link.

**KEYWORDS:** security protocols, false URL detection, cybersecurity, verification.

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## **BETWEEN SCYLLA AND CHARYBDIS: THE "NEW NORMAL" CYBER RESILIENCE POSTURE OF CIVIL SOCIETY ORGANISATIONS**

**Mamello Thinyane, Christy Un, Debora Christine**

United Nations University institute in Macau (Macau)

mamello@unu.edu; unchristy@unu.edu; debora@unu.edu

### **EXTENDED ABSTRACT**

The COVID-19 pandemic has disrupted the normal trajectory of societal functioning across different sectors and has forced the world to contend with the cascading impacts of what started as a localised disease outbreak now turned multisectoral global crisis. The pandemic has highlighted the complex dependencies between different sectors and levels in society and foregrounded the value of societal resilience – the whole-of-society capability for positive adaptation during significant adverse incidents. From individuals and communities to cities and countries, all levels of society have been scrambling for solutions to enable continued functioning and restoration of normalcy. During these times, civil society organisations (CSOs) have borne the brunt of the pandemic and have also taken up a growing burden to provide essential services to citizens - especially to vulnerable and marginalised populations.

The role of digital technologies to support continuity and restoration of functioning during the pandemic has been critical: schools have provided lessons online, businesses and organisations have shifted to virtual operations, and governments have digitised their services (Taddeo, 2020). For CSOs, the pandemic has catalysed new forms of civic mobilisation, which has seen organisations shifting to digital organising and increasing their collaboration with various stakeholders in emergency relief and informal activism (Brechenmacher, Carothers, & Youngs, 2020). However, for most entities, including CSOs, digital technology has been a double-edged sword in that while it has supported resilience during the pandemic, it has also been the source of cyber threats, including cyberattacks and socio-technical threats, which have exacerbated the negative impacts of the crisis (Weil & Murugesan, 2020).

This paper centres on CSOs and highlights the tensions and dilemmas surrounding their practice during the COVID-19 pandemic. First, the tensions inherent in the very notion of resilience in general and cyber resilience specifically are explicated. These tensions are then explored and elaborated through a case study of local CSOs. The paper posits and illustrates how the cyber resilience posture of CSOs has become more precarious and vulnerable during and, likely, post the COVID-19 pandemic - the new normal.

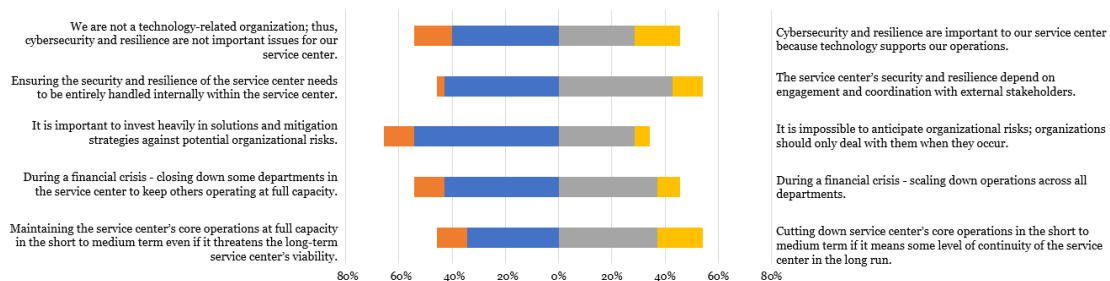
"Resilience", which has its roots in the Latin word "resilire", means "to jump back, recoil". Therefore, implicit in the notion of resilience is the capability to bounce back and restore normal functioning after disturbances – hence the definition of resilience as the probability of persistence (Holling, 1973). Resilience has been formulated from different domains, including psychology, engineering, ecological studies, and disaster studies (Bourbeau, 2013). Socio-ecological resilience extends the framing of resilience to emphasise the achievement of an improved position after the disturbance, thereby introducing the notion of "bouncing forward" (Chandler, 2019). For organisations, resilience is traditionally formulated from the engineering and organisational psychology perspectives, but more recently conceptualised as complex system survival towards the goal of maintaining critical system functions and processes, as opposed to returning to equilibrium or achieving system efficiency (Mamouni Limnios, Mazzarol, Ghadouani, & Schilizzi, 2014).

Across different domains, resilience calls for diverse stakeholders' participation – due to its systemic nature and for engagement with key tensions and contentions associated with resilience practice. For example, it calls for engagement with the politics of delineating system boundaries, such as who is included and excluded; the complexity of formulating persistence and adaptation criteria; the value-laden acknowledgement of the non-normativity of resilience as well as the emancipatory catastrophism effects of crises (Beck, 2015; Mamouni Limnios et al., 2014).

This research engaged 35 CSOs, through a survey and semi-structured interview instruments, to investigate their cyber resilience posture along the following lines of inquiry: how digital technologies have supported their resilience during the pandemic, their organisational cybersecurity situation and posture, and their cybersecurity threat exposure and experiences.

Most (n = 29) of the engaged CSOs provide social services and have the largest cohort of service clients as the elderly population. For most organisations, the ability to continue providing services to their clients is one of the critical goals of resilience, followed by the ability to minimise the impact of adverse incidents. However, there remains several contentions and dilemmas regarding the outworking of these resilience goals. Illustratively, when presented with orthogonal organisational adaptation choices, the pathways towards the same persistence goal remain varied. For example, 51% of the CSOs would opt for maintaining operations at full capacity in the short-term (i.e., at the expense of long-term survivability) versus 48% that would opt to cut down operations to ensure long-term continuity; 54% of CSOs would opt to close some departments to keep others running at full capacity during a financial crisis versus 46% who would opt to scale down operations across all departments for the same crisis scenario (Figure 1).

Figure 1. Attitude towards cybersecurity and resilience



These organisations depend on ICT for their daily operations at varying levels, with 11% and 60% indicating being "very reliant" and "reliant" respectively (Figure 2). For some organisations, ICT played a critical role during the pandemic to deal with the lockdown measures. Reflecting on how digital technology had enabled continued social interaction with service clients' families, despite the lockdown, one of the directors noted that "Because now we have the Covid-19, they were not allowed to enter inside. So, our social workers, they [sic] use these different methods that they may talk with video calls and talk to the family."

Ironically, despite this increased reliance on ICT during the pandemic for providing critical social services, CSOs remain under-resourced, under-funded, and in a weak cyber resilience position (Figure 3) which subsequently increases their vulnerability and hampers their organisational resilience (Franz, Hayes, & Hannah, 2020; Jagalur et al., 2019).

Figure 2. CSOs reliance on ICT

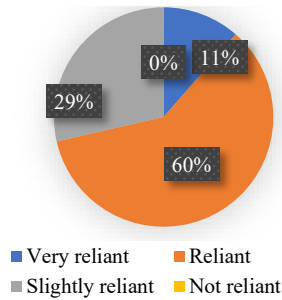
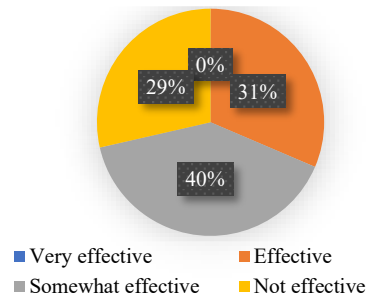
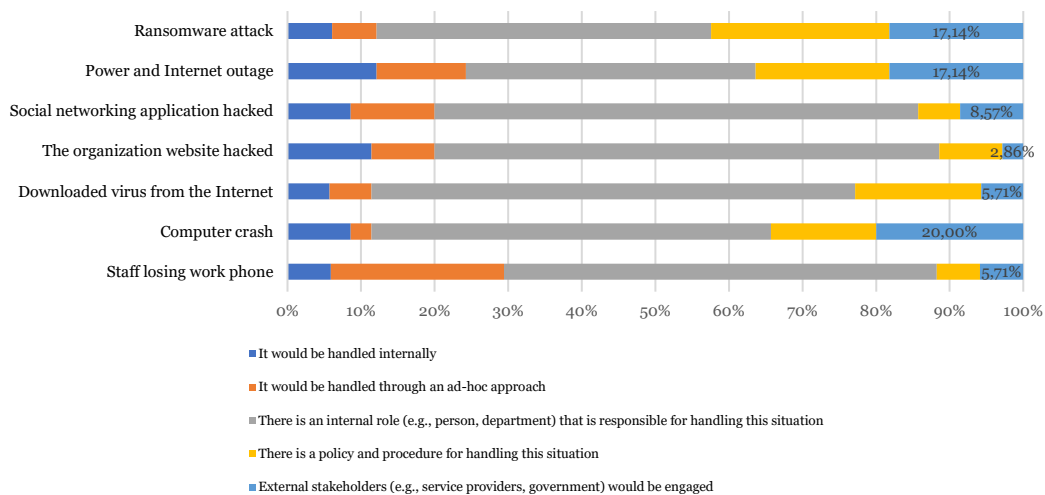


Figure 3. Effectiveness of CSOs cybersecurity policies



Given the importance of cyber resilience for CSOs' functioning, the neglect of CSOs in threat reporting has led to an understatement of the impact of adverse cyber events on civil society, thus exposing CSOs to more vulnerabilities and threats in cyberspace (Maschmeyer, Deibert, & Lindsay, 2020). This neglect of CSOs, within the cybersecurity ecosystem, further extends to the dearth of CSIRTs who provide incident handling support for CSOs. This situation leaves CSOs in a precarious and vulnerable position where they are forced to internally effect their cybersecurity solutions and handle cybersecurity incidents on an ad-hoc basis (Figure 4).

Figure 4. CSO's handling of cybersecurity incidents



The "new normal" is that CSOs remain in a precarious cybersecurity situation, where despite their services being more critical, their increased reliance on digital technologies, and their increased cyber threat exposure, they are still characterised by lack of financial resources which is associated with lack of prioritization of cybersecurity in CSOs funding instruments, skilled support, technical capacity, awareness of compliance risks and ability to engage in long-term strategic and contingency planning (Brooks, 2020; Crete-Nishihata et al., 2014; Franz et al., 2020; Jagalur et al., 2019).

CSOs have to resort to employing frugal, creative, and collaborative solutions to their cyber resilience challenges (Huang & Pearlson, 2019). Notwithstanding the need for cyber resilience practices and cybersecurity solutions to be framed across the physical, logical, and social layers of cyberspace, it is

imperative to consider CSOs not only as the most vulnerable dimension of the cyber ecosystem but also an active contributor to the coproduction of cyber resilience (Gioe, Goodman, & Wanless, 2019).

**KEYWORDS:** Resilience, Cyber Resilience, Civil Society Organizations, Cybersecurity.

**ACKNOWLEDGEMENTS:** This work is supported by the Science and Technology Development Fund of Macau (FDCT) under Grant No. 0016/2019/A.

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## CYBERSECURITY TRAINING IN THE ERA OF COVID-19

**Shalini Kesar**

Southern Utah University (USA)

Kesar@suu.edu

### EXTENDED ABSTRACT

The motivation for this paper comes from two main source: 1) Author's lesson learned from her cybersecurity projects during COVID-19; 2) A remark stated in March 2020: "COVID-19 will change our lives forever with new work styles, new cybersecurity issues, new proposed policies, personal hygiene and so on. The fight against COVID-19 is not just for the organisation, employee or customer but a joint effort from everyone. It is also apparent that Post COVID-19, organizations will need to rethink their cyber risk management measures' (Deloitte, 2020). This paper discusses how COVID-19 has impacted the cybersecurity field. It also makes some recommendations on best cybersecurity management practices for employees working in remotely. In this paper, the author suggests use of the theory of reasoned action (Ajzen & Fishbein, 1980) as a model to incorporate a shared responsibility component when developing employee training for best cybersecurity management practices. The Theory of Reasoned Action uses subjective norms and attitudes to predict behavioural outcomes (Ajzen & Fishbein, 1980, 2004). Theory of Reasoned Action (TRA) was introduced in 1980, which originally used in social psychology. This model has been used in various disciplines in predicting behavioral outcomes based on the study of attitude, subjective norm, and behavioral intent (Fishbein & Ajzen, 1980, 2004). Both Ajzena and Fishbein's model remain a simple yet impactful model even after many decades.

The COVID-19 pandemic has resulted organizations rethink cybersecurity best practices that need to embrace new practices such remote working. In addition, they are reconsidering ways to ensure that their organizations are implementing new tool to minimize, manage and mitigate cyber breaches. Reports reflect alarming figures of increasing cyber breaches. From March 2020, there has been a spike in phishing attacks, Malware, Video Conference, and DDos attacks. Many report Microsoft reported cyber attackers took advantage Covid-19 fear to develop fraudulent scams using Excel spreadsheets that are equipped with 4.0 macros, allowing them to gain unauthorized remote access to computers. Many other reports highlight the alarming figures of cyberbreaches of 2020 alone. For example, 1) Healthcare cybersecurity breaches cost the most of any other industry at \$7.13 million (IBM, 2020); 2) Local government domain administrator accesses are sold for an average of \$3,217 in 2020. (Digital Shadows); 3) Ransomware groups targeted aid organizations, medical billing companies, manufacturing, transport, educational software, and government institutions in April, 2020. (Microsoft, 2020); 4) 52% of compliance leaders say the most-increased third-party risk for their organization is cybersecurity. (Gartner, 2020). On June 8, May 2020, automobile manufacturer Honda experienced a company wide network outage. An engine plant covering 3.6 million square foot in Ohio, USA was impacted. All servers were impacted with a power outage due to EKAN" malware, designed to target Honda's industrial control systems (Fisher, 2020). Around the same, city of Minneapolis police's website was compromised along with several other key city websites. A Distributed Denial of Service (DDoS) attack resulted from machines sent requests to the websites to the point where the servers were unable to handle the numerous requests (Ropek, 2020). Cyber breach and COVID-19 linked discussion can be completed without discussing video conference tool, Zoom. The FBI reports over hundreds of complaints linked with zoom bombing sessions (Setera, 2020; Winter et al, 2020).

Against the backdrop, “Remote working has been hastily adopted by suppliers to keep their business running, so it’s unlikely every organization or employee is following best practices,” said Vidhya Balasubramanian, managing vice president in the Gartner Legal and Compliance practice. (Gartner, 2020). Another concern that should not be overlooked, Attackers are using COVID-19 as bait to impersonate brands, consequently misleading employees and customers. Subsequently, more businesses are being targeted where end-users download COVID-19 related applications that involves downloading ransomware disguised as legitimate applications. There is no doubt that is an increased cybersecurity risk from remote working, which in turn, potentially delays in cyberbreaches detection and response (Kumar, 2020). The unprecedented reliance on remote working during the pandemic has further emboldened hackers. Increased use organization devices at home can create high risks and vulnerabilities to be comprised. While rethinking of best management practices, this paper argues that all employees should include a cybersecurity component. This component needs to be in a “language” that employees from both technology and non-technology fields understand the rapid increase of breaches, their shared responsibility in minimizing, mitigating and managing cybersecurity breaches. Examples of both remote workplace and education platforms could benefit the employees to understand the impact as well the serious of the rapid changes in cybersecurity field. Statistics also indicate the schools and universities are increasingly targeted by criminals who are drawn to sensitive data held by school districts and their historically weak online. Examples that employees that can relate to their workplace but also their personal environment with add value to the training.

The TRA model is used to identify the key components in an effective best management cybersecurity practices to promote a shared responsibility among employees. The power of an employee’s intention in a behavior comes from two factors: a) the attitude toward a behaviour (in this case shared responsibility), b) subjective norms which stem from social influence (understanding the reasoning, importance of training, and abide by the best practices). These factors are mainly affected by an individual’s beliefs. In other words, the belief about the result of a behavior and the evaluation of the result shapes the attitude (Ajzen and Fishbein, 1980, 2010). The argument presented in this paper is that if an employee’s beliefs are positive about shared responsibility will help in creating a “safe” working environment, then the employees will be more motivated to comply with the best cybersecurity management practices in the training. This in turn will impact a more “safer” working environment, especially for remote employees. This paper reflects on how various factors of the TRA model can contribute in developing a pragmatic training to elevate employees’ understanding about best management cybersecurity practices with a shared responsibility component. Further, real examples of cyberbreaches during COVID-19, especially on remote working impact employee’s intentions and behaviors towards training, its importance and their role in keeping the organization safe.

**KEYWORDS:** Cybersecurity, COVID-19, Theory of Reasoned Action, training, remote working.

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## **GEOECONOMICS AND TECHNOLOGY AT THE CORE OF THE EMERGING COMMERCIAL TECHNO-WARS**

**Nehme Khawly, Mario Arias-Oliva, Jorge De Andres**

Universitat Rovira i Virgili (Spain), Complutense University of Madrid (Spain),  
Universitat Rovira i Virgili (Spain)

nehme.alkhawly@estudiants.urv.cat; mario.arias@ucm.es; jorge.deandres@urv.cat

### **EXTENDED ABSTRACT**

Environmental analysis is a key area of strategic Marketing. The new global environment is changing their nature during the last decades, emerging new concepts such as the digital revolution and the geoeconomics' challenges. The nature of international conflicts is changing, shifting from the diplomatic and military arena to the technological and economic one. Nowadays, telecommunications warfare is standing up strong as the protagonist of the current scenario. Superpowers are competing on who will be playing that role on the international scene. The fifth generation of telecommunications (5G) is pushing China and USA in a geoeconomic conflict. Both countries are fighting to set up their best strategies of propagating their geoeconomic influence and attaining their strategic goals, preserving their digital sovereignty from any kind of abuse and violation.

This paper focuses on the geoeconomic characteristics of the 5G warfare, sheds lights on its manifestations in the recent emerging events on the international scene, explains the way in which China and USA are dealing with it through displaying methods of cyber diplomacy implemented by these powers to achieve their aims, and illustrates the prerequisites of that techno-war at the politico-economic level, and most importantly at the level of individuals' health and their immune system.

### **Introduction**

A non-armed war is occurring nowadays all over the planet: which country will be the leader of the 5G innovation in the internet and telecommunication technology? A Napoleonic remark uttered more than 200 years ago stated: "Let China Sleep, for when she wakes, she will shake up the world", and it seems that 5G has waken China up, and the world started to shake.

The first generation of mobile telecommunications allowed us to make wireless phone calls; 2G was the tech that enabled texting options; 3G brought web browsing; and 4G made the video-streaming come true, and insured a constant connection with GPS satellites, which has permitted the rise of many companies like Uber (Bremmer, 2019).

The current phase we are living in, is the transitional one, and here comes the chaos. USA is against the Chinese integration in their infrastructures and network through – the largest provider of telecom equipment in the world – Huawei's equipment and hardware. Main arguments are:

- For fear of China's spying the American companies' database because they will be streamed through their own hardware;
- Using Huawei equipment could leave the US susceptible to China's infrastructure attack, if they ever went into war (Bremmer, 2019).

Thus, the American administration applied political and economic tension between its European allies, to limit Huawei's participation in building 5G networks, and to remove all its equipment from their markets.

Does this 5G constitute a real threat to the cyber sovereignty of the USA? Is that the main goal behind this emerging war between China and USA? Breaching each other's cyber sovereignty? In the 2020 Annual Report to Congress *of the* U.S. – China ESRC, it was clearly stated, that China is consistently working on a new model and standards for the global order: "The Chinese Communist Party (CCP) seeks to revise the international order to be more amenable to its own interests and authoritarian governance system. It desires for other countries not only to acquiesce to its prerogatives, but also to acknowledge what it perceives as China's rightful place at the top of a new hierarchical world order" (U.S. – China ESRC, 2020, p. 80).

Furthermore "The Chinese government views technical standards as a policy tool to advance its economic and geopolitical interests" (U.S. – China ESRC, 2020, p. 81).

After all, it seems that 5G is the new bait, to attract and catch the global market, and Huawei is the most competitor bait-maker.

#### Data and methods

This paper addresses the 5G from two main perspectives: the politico-economic and the technological. Qualitative approaches fit research in political science (McNabb, 2015). In-depth interviews are an accepted method to research in emerging topics of the political area. This method allows to gain a deep understanding of key ideas (Rathbun, 2008). Based on the narrative and analytical methodologies, as such, it can deeply treat the subject. The data chosen are two types of core value statements: Interviews, in addition to readings of accredited publications from global and valuable think tanks.

#### Results and discussion

Ex-President of the United States, Donald Trump has expressed many times his worries towards the escalating economic capabilities of China... And herein, Biden came to thoughts... But as Michael Mcloughlin (2020) stated: "Biden's victory doesn't look like it will mean much change on the US side". But the world's attention is now focused on the way in which Joe Biden will manage this "revolution".

As far as tech industry is concerned, Google has finished its relationship with Huawei after Trump's veto and so this has left Huawei's devices without the mobile services and apps customized by Google. However, due to the huge difference in costs of other brands devices compared to Huawei's ones, market sales have suffered, and phone shipment orders have globally decreased around 24% (Mcloughlin, 2020). That is why dealers are obliged to neglect the decision of banning Huawei's devices in their countries, for their own benefit, and that of the customers.

In addition: "Now, according to Financial Times, tough U.S. sanctions this year against Huawei could be less threatening to its overall business than previously thought. And according to analysts, the company's important smartphone arm might have a chance to recover. Less threatening to Huawei means more threatening to Google and its lock on the worldwide Android ecosystem" (Doffman, 2020).

In terms of healthcare, recent observations have raised concerns regarding the 5G effect on the human health, especially after the mystery of Covid-19. Many debates are arguing on either it is really

dangerous, or does not have any negative repercussion on human health. This study does not settle the debate but represents a comparison between the pros and cons of 5G evolution on the healthcare system, in this period.

Thus, 5G has succeeded in creating a vision to turning out healthcare system to SMART one. And according to an article shared by Oxford Academic, one month before the first Chinese infection of Covid-19 had been identified: “5G will reconstruct the healthcare system by intelligently improving the quality of medical service, balancing the distribution of medical resources between urban and rural areas, and reducing the burden of healthcare costs” (Li, 2019).

## Conclusion

This paper shows that the gradual rise of 5G and its innovations coincided with slowing down productivity and the Gross Domestic Product growth in developed countries. Indeed, one analysis mentions that “the US economy loses \$ 1tn each year due to too much information and interruption” (Konzept, 2019, p. 7). So guess its losses during the 5G phase!

Technologically speaking, 5G is considered as a revolution of a new kind: “this new technology will be the backbone that enables advances such as smart cities, driverless cars, remote controlled operating theatres, automated farms and more besides” (Cooper, 2018).

In terms of healthcare, this study agrees that “there is no concrete evidence of health damage due to 5G electromagnetic waves, although it is not scientific and illogical to prove the non-existence of negative effects” as Prof Dr. Alexander Lerchl told Euronews (Beswick, 2019).

But this study realizes that, the fear of 5G network, is more linked to politico-economic balances between nations than to health-Notice that USA has taken a banning decision against Huawei, but never against its main alternatives Nokia or Ericsson. “The risk is not the same with European manufacturers as with non-European ones” said Macron's team (Mcloughlin, 2020).

However, and regardless of superpowers interests, it is better for every individual to be cautious from their blind race for influence.

**KEYWORDS:** 5G, Cyber Diplomacy, Digital Sovereignty, Geoeconomics, Techno-war.

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## **SECURITY UPDATES FOR ENHANCEMENT ON TRUST AND CONFIDENCE IN E-LEARNING SYSTEMS**

**Nuno S. Silva, Isabel Alvarez**

Universidade Lusíada de Lisboa (Portugal), COMEGI / ISTEAC (Portugal)

nsas@lis.ulusiada.pt;alvarez@edu.ulusiada.pt

### **EXTENDED ABSTRACT**

E-learning promotes the existence of a strategic response to a novel educational context, which is emphasised by the COVID-19 pandemic (Almaiah, Al-Khasawneh, and Althunibat, 2020). Governments and educational institutions intend to use this vision. However, to presume that technology by itself entails education is unrealistic and condemns any e-learning paradigm, because novel technologies impose substantial security issues related to education, as for example in instructional quality, privacy, and mobility. This environment is noticeable at main three levels: micro (e.g. the relationship between lecturers and students); meso (e.g. the existing electronic universities' projects); and macro (worldwide governmental actions). Moreover, e-learning, as the utilisation of ICT, causes universities to think globally (competitiveness) and internationally (collaboration).

The intention of this work is to plan a risk mitigation regarding e-learning security implementation; it is suggested that four levels are explored: Technological Infrastructures and Services, Knowledge/Content Management, Computer Mediated Communication, and Value-added. Also for Bandara, Ioras and Maher (2014), building digital trust is related to terms of usability, security and protection of their personal information.

As for technological infrastructure and services, the e-learning implementation at university settings is a complex task, which starts with a strategy for developing the basic technical infrastructure. According to Blinco, Mason, McLean, and Wilson (2004, p. 2), this "infrastructure often describes a bottom layer of an architectural description or diagram, indicating network hardware components, communication processes, services and protocols". First of all, it needs a comprehensive functional and technical analysis to determine how technology should be applied, and what security levels are to be implemented (e.g. firewalls).

In what concerns knowledge/content management, e-learning also includes content over technology, or, following Hartley (2014) educational content is more important than technologies. This assumption leads us to explore content related issues in e-learning implementation, and thereby the need for a new conception of security understanding.

In computer-mediated communication, the interactivity is a key characteristic of e-learning within the communication processes to be analysed. Computer Mediated Communication (CMC) should be explored in regard to one additional layer to understand the e-learning implementation. According to Zhang (2004), CMC transforms classrooms to make learning a more interactive, diverse and enjoyable experience. This can be through online interactive classrooms, interactive group discussions and tutor/student sessions, or empowering students/teachers' interactions by designing more flexible and intuitive interfaces. In this educational paradigm, learning "with" interactive technologies establishes a certain intellectual affiliation between students and technologies. Instead of using technologies to guide students through prearranged interactions, students may use technologies that function as "the mindful engagement of students". We need to implement a balanced approach to avoid ignoring

technology tools or fixating too much on technology for e-learning. The videoconferencing as the CMC tool that is the closest to face-to-face communication, enables high levels of interaction and facilitates personal feelings (e.g. social presence and perceived privacy), while security breaches are usually out of risk analysis.

Value added emerged as an important approach to e-learning (for instance related to time investment costs, content valuable functionality, and use of streaming media services). So, in this scenario, it is possible to understand that e-learning adds value to the learning experience, but it is not clear what issues mean “value of e-learning” (financial notion on the measure of benefit), or “e-learning values” (ethically and culturally sensitive to meanings that may vary according to context). Therefore, it is important to explore if it justifies a “top layer” to understand the e-learning implementation. Interestingly, it can be merged with high compromise of top management in security strategies which made part of ISO/IEC 31000 and ISO/IEC 27005 risk assessment standards.

To plan a risk mitigation regarding e-learning security implementation, there are several issues to be considered: Internet bandwidth must be recognised as fundamental, alongside issues like speed, accessibility, cost and reliability; wireless networks and mobile computing for students is a key benefit because it avoids the need for physical presence; videoconference implementation enabling online-only teaching (e.g. Microsoft Teams, Zoom or Google Meet); and the cyberthreats of online learning platforms, as for example Moodle e-learning environment added value related to access, privacy and security, since lecturers can make content available only for students who must take the inherent access rights for course units.

It is typical to report problems for instance in SSO (Single-Sign-On) synchronization, content synchronisation, trust of passwords (PKI and external security) (Miguel, Caballé, and Xhafa, 2017), and the unexpected software updates; also a self-service integrated system allows printing, photocopying and scanning of content, where security is based on password request (security breaches in networked printing systems). Another aspect of security is the existing backup policy. Moreover, it is important to mitigate the risk rating of all external assets, such as web applications, IP addresses, and marketing sites. For example, a Moodle penetration testing when performed can reveal important issues for risk monitorization. This study intends to merge a new security sensitivity metric for such variables.

Finally, cloud computing increasing interest has implications for security, privacy, and trust. Compliance with European GDPR requirements is a critical requirement. COVID-19 caused the criticality of technology to increase the use of platforms such as VPN, video conferencing tools, and home computer equipment. This implies that the SLAs associated with these environments must be improved. Even so, governance of emerging technologies is critical to undertake advanced measures to protect the most security-sensitive information stored (Rawtani, 2012). The confidence in the availability, and non-repudiation, should be combined with the aim of reaching information security requirements for e-learning systems as a precondition for enhanced user acceptance (Moneo, et al. 2016; Weippl, 2005). In addition, the diversity of mobile devices and their security protection measures are varied in accordance with the operating system (May, Iksal, and Usener, 2017), and biometric web authentication can be useful for proper identification of learners (Goyal, and Krishnamurthi, 2019).

Given such a reality, it is important to refer to two levels of arguments concerning e-Learning security updates:

- as a strategy - organisational change addressing security issues;
- as a tool - socio-technical dimension of security breaches (password security level and data protection).

Therefore, in order to minimise potential failures, it is crucial to involve all stakeholders to have security awareness and security sensitivity as a prerequisite for trust and confidence in national and international successful e-learning implementation.

**KEYWORDS:** e-Learning, COVID-19, Security, Trust, Confidence.

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Uncertainty is reaching new heights in our current Society. The digital transformation is accelerating even more due to the pandemic, penetrating into the “digital DNA” of individuals and organisations. For example, using AI to predict the pandemic, tracking systems to manage the spread of the virus, the use of eCommerce to avoid risky personal contacts, videoconferencing to keep family and friend relationships, eLearning to ensure safety when teaching and learning at all levels, teleworking from home, and the key role of digital technologies in the emerging Green New Deal. All of these digital technologies are operating at the core of societal challenges nowadays. A key question is whether ICT ethical concerns are at the forefront of the transformational agenda of the new normal? At ETHICOMP 2021, we discuss with scholarship and professionals that addresses technological ethical concerns that should be included in the transformational agenda of Society, Organisations and Governments.

