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DESIGN EDUCATION | AFRIKA | 4TH INDUSTRIAL REVOLUTION

## Digital design ethics

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### Abstract

*As a socio-technical field, design has always been intertwined with the industrial revolutions. During the continuous growth of the fourth industrial revolution (4IR) in South Africa, it is prevalent for design education to reevaluate what is taught to young designers.*

*Through the spread of COVID-19, South Africa has experienced an increased use of digital technology within education, work, and leisure time. The access to platforms such as Facebook, Google, YouTube, and Netflix has grown. While the spread of access to information technologies should be encouraged, this paper reveals the problematic designs of digital platforms such as these. The ways in which these digital designs exploit human biases and behaviours are exposed. These designs have caused an increase in the 'time spent on device', social anxiety and addiction to technology that benefits these conglomerates.*

*Design ethics frames designers as responsible for the products they create. Designers are viewed as agents for social change, as advocates of product users and as mediators between customer, manufacturer, user, and environment. Design can be viewed as a field of agency for improving digital spaces within the rapidly changing environment of 4IR.*

*This paper explores how digital platforms have exploited human behaviour and advocates for the inclusion of digital design ethics within the South African design curriculum as a method of encouraging the design of digital platforms that serve human needs.*

**Keywords:** 4IR, design education, digital design, ethics, South Africa

### Introduction

“Humans were always far better at inventing tools than using them wisely” (Harari, 2019, p. 16). As the fourth industrial revolution has taken a global hold and new technologies are invented, the importance of designing tools that take humans and their need into account is prevalent.

This paper aims to exemplify the need for digital design ethics to be included within South African design education as we move further into the fourth industrial revolution. This need is illustrated through examples of poor digital design that are viewed through a behavioural design lens.

Although there are multiple facets to the ethical issues that surround digital spaces (Borenstein & Howard, 2020), this paper hones in on those that exploit human nature. By exploring human behaviour in comparison to designs that have manipulated these, this paper

argues for the inclusion of digital design ethics in South African design education as a method of guiding the creation of a digital world that serves humans, rather than exploiting them.

After going into the changes that the field of design has experienced throughout the Industrial Revolutions, this paper hones in on the South African context and explores how the ongoing COVID-19 pandemic has accelerated the fourth industrial revolution within the country. After pinpointing the need for ethical consideration within growing digital spaces, the paper explores human behaviour. Richard Thaler and Cass Sunsteins' (2008) *Nudge*, Alain de Button's (2014) *Status anxiety* and Natasha Schull's (2012) *Addiction by design* are used as behavioural theories. These theories are placed in comparison to Tristan Harris' (2016) blog *How technology is hijacking your mind – from a magician and Google Design Ethicist*, in which he criticises the design of digital platforms.

The term design is used broadly and with no reference to a specific design field, as it is predicted for the fourth industrial revolution to impact all disciplines (Harari, 2019). It can therefore be assumed that designing for digital spaces will become a reality in all design fields. As the topic of ethics falls within theoretical discourse, it can be applied to all design education fields.

## COVID-19: Accelerating 4IR in South Africa

Design is defined as a socio-technical field, which is inseparable from human development, making the evolution of design inseparable from the industrial revolutions (Ferrari, 2017). The First (mid-eighteenth century) and Second (late nineteenth century) industrial revolutions harnessed the capacities of steam and electricity to mechanise and accelerate production (Schwab, 2017). This transformed societies from being primarily agrarian to becoming industrial and capitalist (Schwab, 2017; Ferrari, 2017). The role of design during these two revolutions was predominantly to understand materials and manufacturing processes to enable mass-production and consumption (Ferrari, 2017). The nature of design, however, shifted during the second half of the twentieth century through the emergence of electronic and information technologies (Schwab, 2017; Ferrari, 2017). The third industrial revolution evoked a post-industrial repositioning of society, which meant the role of design moved from being production-centred to including the role of service (Ferrari, 2017). The fourth industrial revolution, which has been building onto the third since we entered the third millennium, is described as the amalgamation of digital, biological, and physical fields (Schwab, 2017). While the effects of the current revolution take an international hold, it is relevant to debate how the role of design will evolve and the impact this change should have on design education.

Although South Africa, as a country in the global south, does not have the widespread access to the internet visible in the global north (Kemp, 2021), the South African government has taken the global rise of 4IR into account. Intentional advances in policies and government objectives, such as the Presidential Commission on 4IR (Government of South Africa, 2020), have been made to better prepare South Africa for the changes that are expected to take place within the job market (Adelabu & Campbell, 2020). Taking the changes of South African policies into account, it would be relevant to look at how the field of design will be impacted by 4IR and in turn how design education within South Africa should be adjusted accordingly.

While only around 65% of the South African population has access to the internet (Kemp, 2021), the spread of the ongoing pandemic COVID-19 has arguably accelerated the accessibility to digital information throughout the country. In March 2020, South Africa experienced its first lockdown, during which non-essential businesses, schools and universities were shut down (Government of South Africa, 2021). Although the majority of South African

schools are not equipped with 4IR learning tools, the government partnered with various national sectors that allowed virtual learning to become a reality (Mhlanga & Moloi, 2020, p. 5). A collection of television and radio stations were dedicated to education of primary and secondary school (Mhlanga & Moloi, 2020, p. 5). Various network providers offered zero-rated applications and websites that were used within university education (Mhlanga & Moloi, 2020, p. 6). Some tertiary education sectors made use of free social media platforms in order to communicate class content (Mhlanga & Moloi, 2020, p. 7). Even after the lockdown restrictions were eased, many schools and universities continued making use of online learning. Applications such as Microsoft Teams, Skype, WhatsApp groups, and Zoom have become an integrated norm in South African education (Mhlanga & Moloi, 2020, p. 8). Apart from much of traditional education having moved online, there is also a strong emergence of distance learning, as well as Massive Open Online Courses (MOOCs) (Gallagher & Palmer, 2020).

Apart from an increase in the use of digital platforms for business and educational purposes, there has been a national increase in the use of social media within the last year (Kemp, 2021). Due to the reduction of social events and the restrictions on human movement caused by the ongoing pandemic, there has been a drastic increase in leisure time spent on screens (Zhao & Zhou, 2021). COVID-19 has acted as an accelerator of 4IR, integrating digital technologies into the social norm.

The radical transformation leaves much uncertainty around how technological advances will impact the future. Many jobs that exist today will become redundant, jobs that do not exist yet will come into being, and even the prospect of a life-long career in the same field is speculated to become unconventional (Harari, 2019). This begs the question; how should education systems adapt to this ever-changing landscape? It is evident that South Africa will not be left behind by the changes brought with 4IR. The socio-technical field of design will likewise evolve with this industrial revolution. It is therefore prevalent for South African design education to evaluate what is taught to the new designers who will shape the digital world.

## Design ethics

While the technological world rapidly progresses, the law lags behind (Tricoles, 2019), causing the decisions made within the digital evolution to be widely unregulated. As a way of guiding design outcomes in uncharted territory, ethics can be used as a means for making digital design decisions. “Ethics are the set of moral principles that guide a person's behaviour. These morals are shaped by social norms, cultural practices, and religious influences” (Lumen Learning, 2021) which means they are contextual and therefore fluid.

The idea of designers being held accountable for the impact their products have is a relatively new concept. In 1971, Victor Papanek begins his book *Design for the Real World* with, “there are professions more harmful than industrial design, but only a very few of them” (1971, p. ix) – a then novel idea. He argues that the evolution of mass-production gave the profession of design the power to shape products and environments that mould society. Consequently, the wide-reaching negative impact of design (such as unsafe-cars that have killed millions and the pollution created by mass-production) warranted the urgent need for ethics to be included in the design curriculum (Papanek, 1971). Papanek asserts that designers carry a strong social and moral responsibility and that the skills to become a designer need to be carefully taught (Papanek, 1971, p. ix). He urges design to be viewed as a cross-disciplinary field that includes research in order truly to serve human needs (Papanek, 1971, p. x). As a designer, “you are responsible for what you put into the world. And you are responsible for the effects those things have upon the world” (Montiero, 2019).

Since then, this opinion has been more widely adopted within the field of design. This is exemplified through developments such as Hippocratic oaths for designers that create an ethical standard designers can hold themselves by (Montiero, 2019, pp. 19-24; Borenstein & Howard, 2020, p. 63). Furthermore, David Berman's book, *Do Good Design*, frames design as a social responsibility (2009) and similarly, Kane discusses the need for morality in design, as a field that influences sustainability, society, and culture (2010).

Rooted in Papanek's *Design for the Real World*, UX designer Mike Montiero, critically looks at how problematic designs have spilled over into digital spaces and speculates on the ethical responsibility designers should hold over their digital products (Montiero, 2012; Montiero, 2019). Being a designer does not only include the activity of creating, but should include the skill of gathering information (Montiero, 2012, p. 8). To be a designer, it is necessary to understand who one designs for, what their needs are and how one's designs will be used (Montiero, 2012, p. 8). Furthermore, Montiero illustrates designers as gatekeepers with agency and choice over what they create, even when it is being created for a client (Montiero, 2012, p. 9). It is a designer's responsibility to advocate for the people that use or are affected by the products or services they develop (Montiero, 2012, p. 9).

As we move through the fourth industrial revolution, it becomes increasingly important for the field of design to be regarded as a field of agency within the transformation of society. Designers arguably function as mediators between client, manufacturer, society, and the environment. It is therefore important for design education to guide the ethical decision making of young designers. In order to illustrate the need for the inclusion of digital design ethics within the design curriculum, the following section exemplifies the ways in which digital design currently exploits human behaviour. To mitigate this in the future, design education should equip students with the ability to gather information on how humans interact with technology, what they need from it and how one can, through design, create a world in which humans are served by a digital space, rather than exploited by it.

## Digital disasters

People like to think of themselves as always making logically decisions. This, however, is mostly not the case, since to be human means predictions and decision making can often be flawed and biased (Thaler & Sunstein, 2008, p. 7). Much of this is due to the two thinking systems of our brain function: automatic system and reflective system (Norman, 2013, p. 49; Thaler & Sunstein, 2008, p. 21; Dare, et al., 2018). While our reflective system is deliberate and self-conscious, our automatic system is instinctive and subconscious (Norman, 2013; Thaler & Sunstein, 2008, p. 21; Dare, et al., 2018). Decisions are often made on an emotional and subconscious level, influenced by feelings that trigger and motivate behaviour (Dare, et al., 2018). This means that the actions we perform are often not deliberate and we therefore do not always think and choose well. This also means that our behaviour can be influenced by design and are therefore "nudgable" (Thaler & Sunstein, 2008). The ability for automatic thinking to be impacted by design, has been the basis for the type of data collected on human interaction with digital technology. User profiling lends itself to the exploitation of the human subconscious (Bilal, et al., 2019), making ethics within digital design a necessity for creating digital technology that serves human needs.

## Sticking to the status quo

According to Thaler and Sunstein, human behaviour is influenced by what is coined the *status quo bias* (Thaler & Sunstein, 2008, p. 37). This means that humans are most likely to stick to their current circumstances even when illogical, whether it is always sitting in the same chair within a classroom or continuing to subscribe to a magazine they don't read (Thaler & Sunstein, 2008, p. 37). This tendency results from both subconscious choosing, as well as the fear of losing what we already have or are accustomed to (Thaler & Sunstein, 2008, p. 38). Having to focus on changing what we are used to, requires conscious effort, which takes time and energy (Csikszentmihalyi, 2002, p. 30). This behaviour means that, "default options [...] act as powerful nudges" (Thaler & Sunstein, 2008, p. 38). Similarly, the phenomenon of *anchoring* acts as a strong guide to the choices people make (Thaler & Sunstein, 2008, p. 25). *Anchoring* refers to the method of presenting someone with an option or a default and knowing that even if they diverge from that option, the choice they make will be closer to the default than if they had chosen without influence (Thaler & Sunstein, 2008, p. 25).

Technology ethicist, Tristan Harris, takes a closer look at how the design of digital platforms influence our behaviour and exploit our psychological vulnerabilities. After leaving his position as a design ethicist at Google in, Harris co-founded the *Center for Humane Technology* (Human eTech, 2021). In his influential blog, he explores the phenomenon, "if you control the menu, you control the choices" (Harris, 2016). The choices presented to us, guide our actions and we often fail to question why we are presented with certain choices, what other options exist and what the providers' intentions are (Harris, 2016). We tend to feel empowered by the quantity of choices, but neglect to question what other menus exist (Harris, 2016). The choices we are presented with can distract us from our original need (Harris, 2016). The menus in digital spaces have influenced human behaviour. Responding to emails has turned into selecting automatic replies instead of finding more effective ways of communicating. Looking for someone to date has become swiping through a wide selection of faces on Tinder instead of attending local events.

It is important to distinguish user needs from the provider's intentions. Harris compares the design of digital platforms to the layout of grocery stores (2016). Although milk is the most commonly purchased item, it is almost always placed at the back of a grocery store, making all shoppers walk past other items on the way to their intended purchase (Harris, 2016). Using the same method, one cannot make a Twitter post without having to see the news feed. If one is looking for an Event on Facebook, one has to view the homepage filled with new posts first. Likewise, it is often made more difficult to choose an option that is misaligned with a platform's intention, such as unsubscribing – often an inconspicuous button in a smaller font at the bottom of a spam email or hidden in a maze of option tabs within an unwanted app. These options are purposefully designed to be less visible and difficult to follow.

## FOMO

A further strong influence on our behaviour is our need to fit in. Philosopher, Alain de Botton explains in his book *Status Anxiety* that we worry "that we are in danger of failing to conform to the ideals of success laid down by our society" (2014, p. 4). This anxiety is provoked when we compare ourselves to others, fearing that we are unable to persuade society of our value (de Botton, 2014, p. 5). This phenomenon has been coined the term FOMO (fear of missing out) and is commonly provoked through digital design (Cambridge Dictionary, 2021).

Social media is often designed to exploit this vulnerability of social anxiety (Harris, 2016). People increasingly judge social approval based on how people interact with one on social

media (Harris, 2016). Platforms like Facebook and Instagram encourage this through the creation of likes, tags and comments. Snapchat lists the number of images you have sent as a gauge of popularity. The platform also includes streaks which list how many uninterrupted days one has sent images to another person. These platforms have been designed with these metrics, which have become a method of measuring social value.

To further increase our FOMO, many of our devices are designed to convey a feeling of urgency (Harris, 2016). App notifications are instant and often set with default sounds, vibrations, home screen light-ups. These notifications range from a phone call to a change in weather. Notifications are immediate and constant, providing one with the feeling that one is constantly missing out on something (Harris, 2016). A further design that creates FOMO is the ability to see if someone has read your message. Not only does this cause social anxiety when one is ignored ('blue-ticked'), but it places further pressure on instantly responding to messages. Harris describes these designs as disrupting (2016). These designs disregard respect for attention and fill one's days with unnecessary interruptions that reduce attention span (Harris, 2016).

## Addiction by design

Natasha Schull explores the interface between humans and machines in her book *Addiction by Design*. She focuses on the design of slot machines, which create compulsive interaction that gamblers call 'the zone' (Schull, 2012). "Time, space, and social identity are suspended in the mechanical rhythm of a repeating process" (Schull, 2012, p. 13). It is explained that this compulsive behaviour is not driven by the prospect of 'winning' but rather the escape it provides from the "capricious, discontinuous, and insecure" (Schull, 2012, p. 13) nature of the real world. Slot machines purposefully harness this human inclination through multiple design decisions. The 'game' does not end, but instead multiple patterns that indicate various types of 'wins' appear randomly and intermittently (Schull, 2012). These unpredictable 'wins' are known as variable rewards (Harris, 2016) and their unpredictability makes them highly addictive (Schull, 2012). Philosopher Don Ihde explains that in this state one cannot distinguish oneself from a technological product and experiences it as an extension of one's mental and physical abilities (Ihde, 1975).

This merger with technology is being experienced globally, as most people now carry a compact 'slot machine' in their pockets – the cellphone (Harris, 2016). To exemplify the resulting addiction, people check their phones 150 times a day on average (Harris, 2016). When analysing the design of phones, many similarities to slot machines can be observed. Most applications are designed with 'variable rewards' (Harris, 2016). We refresh our email to see if we've received a new message, refresh our Instagram pages to see what new photos have been uploaded, swipe through faces on Tinder to see if we've gotten a new match. These all have unpredictable outcomes, causing us to engage continuously with them, in case the results have changed.

A further alignment with slot machines is that many digital platforms have been designed to appear infinite, enabling endless scrolling on social media platforms. Many of these platforms such as Netflix, YouTube, and Facebook also have the feature of auto-playing the next video, removing the need for one to consciously choose to continue using their platforms. These design decisions increase our 'time spent on device' that aligns with the intention of most platforms (Harris, 2016) at the detriment of the user.

The *Center for Humane Technology* is a strong example of an organisation with the intention of investigating fundamental problems with digital design and challenging these with

suggested design changes (Human eTech, 2021). The organisation offers a host of ongoing research, courses, toolkits, participatory forums that reveal problematic digital spaces and offer solutions. This centre is focused on respecting human nature and developing value centred design (Human eTech, 2021). While digital spaces are internationally accessible, values and ethics are personal and circumstantial (Devon & van de Poel, 2004). This creates room for contextualised, empathic investigation into digital interaction in order to guide the creation of digital design ethics that would be relevant to the South African context.

## Conclusion

The aim of this paper was to illustrate the need for the inclusion of digital design ethics within design education as the fourth industrial revolution takes hold in South Africa. As a socio-technical field, design has been intertwined with the industrial revolutions and its role will evolve with 4IR as well. COVID-19 has acted as an accelerant of the spread of 4IR technologies within South Africa and the government's policy and strategy alignment with this change, proves that the country will not be left behind during the current industrial revolution.

As a way of navigating the new, unregulated, and evolving digital world, design ethics is proposed as a guide for making design decision. Design ethics place the responsibility of a product outcome on the designer. It includes the theory that being a designer involves understanding how a product one creates will be used and what effects it will in turn have. While design ethics hold designers accountable for problematic outcomes, it also frames design as a field of agency with the power to make an impact on societies.

The need for the inclusion of digital design ethics in South Africa is exemplified through the analysis of problematic digital platforms that are viewed through a behavioural design lens. It is established that many digital platforms have exploited the human bias to stick to the status quo. It is furthermore demonstrated that multiple technology companies exploit human anxiety around social status. Lastly, it is illustrated that technology companies have applied design methods used in slot machines to develop addictive platforms that people on which to spend an excessive amount of time.

While these examples clearly illustrate the need for digital design ethics to be included as a guide for future designers, there is room for further investigation into design strategies that have been used to mitigate human exploitation. Further research into digital design that serves people, stand as a useful exploration that could be included alongside the information within this paper.

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