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ABSTRACT

Destructive Digital Entrepreneurship

This paper provides a selective overview of destructive digital entrepreneurship. The concept is defined and elaborated in the context of the digital revolution post World War II. It is pointed out that the digital revolution was captured by the corporate sector: the incentives for unproductive and destructive entrepreneurship to subvert the digital revolution, was just too strong. Ten subsequent digital dystopias - adverse outcomes resulting from destructive digital entrepreneurship - are discussed. These are digital platform capitalism, tech exceptionalism, the surveillance state, the digital poorhouse, digital divides, the loss of sense-making, digital addiction, digital depression, cybercrime, and awful AI. The paper concludes by exploring how institutional and regulatory frameworks can best reduce the risks from destructive digital entrepreneurship.

JEL Classification: L26, L21, L53, O40

Keywords: digital entrepreneurship, digitalization, dystopia, institutions, surveillance state, digital platforms

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1 Introduction

This paper is about the digital economy presenting new possibilities and modalities for destructive and unproductive entrepreneurship. Baumol (1990) argued that there is a distinction to be made between productive, unproductive, and destructive entrepreneurship. While there is a large and growing body of research that explores the relationship between poor institutions, institutional voids, and institutional entrepreneurship (e.g. Acemoglu et al. (2005); Acs et al. (2008); Amorós et al. (2017); Dieleman et al. (2022); Henrekson (2007); Licht and Peters (2014)) there is lack of research on institutional responsiveness and adaptation in the light of rapid and disruptive technological changes. Over the past half a century, the most rapid and disruptive technological advances were in the digital sphere - a digital revolution marked by ubiquitous computing, the Internet, connectivity, business models based on big data and smart algorithms, and the emergence of artificial intelligence (AI).

The digital revolution and the rise of digital entrepreneurship require institutional responsiveness (Sussan and Acs, 2017; Nambisan et al., 2019). Without it, digital entrepreneurship can be very destructive, and indeed the potential for predation, conflict, and crime in the digital economy has been flagged (Crockett, 2017). Examples include concerns over data harvesting (Wu and Taneja, 2019); over unfair competition and defensive innovation that creates “kill zones” for start-ups (Akcigit and Ates, 2019; Kamepalli et al., 2020); concerns over the manipulation of on-platform competition between digital entrepreneurs by platform owners (Dzieza, 2018); and of course, concerns about cybercrime and cyberattacks which imposes costs on the global economy exceeding that from natural disasters or the profits of the global drugs trade (Morgan, 2020). These costs could, however, pale in comparison to the damages from digital-based advanced weapons, including autonomous lethal weapons, surveillance systems, and arms races for artificial general intelligence (Naudé and Dimitri, 2020). It has even been claimed that AI poses an existential risk to humanity (Yudkowsky, 2023).

The above are but a few selected examples where new digital technologies can lead to the allocation of entrepreneurial talent to destructive purposes in the absence of appropriate regulations, institutions, ethics, and technological design. Just as in the case of entrepreneurship and violent conflict in the non-digital sphere, the rise of conflict in cyberspace and through digital means can result in the destruction and deterioration of digital infrastructure, the dehumanising of others, expenditures diverted to security and policing, insecure property

rights, falling consumer demand, destructive feuds, and an increase in transaction costs, amongst others (Crockett, 2017; Tirole, 2021).

In this light, the present paper introduces the topic of destructive digital entrepreneurship. It must be emphasised at the outset that destructive digital entrepreneurship is a novel topic at the time of writing. As mentioned, there is a lack of research on institutional responsiveness and adaptation considering rapid and disruptive technological changes. Recent surveys and overviews of digital entrepreneurship, e.g., by Steininger et al. (2022) and Liebrechts et al. (2023), while recognising the complexity and potential downsides of digital entrepreneurship, omit analysis of destructive digital entrepreneurship. As such, this paper aims to fill a gap in the literature and provide an exploratory study. A comprehensive or unified theory of destructive digital entrepreneurship and detailed policy recommendations are left as topics for future research.

The rest of the paper proceeds as follows. Section 2 sets the context of the digital revolution unfolding since the Second World War. Section 3 defines and describes digital entrepreneurship within this context, identifying the digital technologies and business plans that characterise opportunity identification and pursuit in the digital economy. Section 4, the heart of the paper, discusses ten digital dystopias - adverse outcomes which could result from destructive digital entrepreneurship. The contribution of this section, and hence the paper, is to link destructive digital entrepreneurship explicitly with the concept of digital dystopias. Section 5 asks how the institutional and regulatory frameworks can best reduce the risks from destructive digital entrepreneurship. Without going into detailed policy recommendations (which falls outside the present scope), some of the pertinent broader considerations for regulation of digital entrepreneurship (which itself is a neglected topic) are discussed - such as the need for internal and external regulation and the need to regulate the uses and outcomes of digital technologies, rather than the technology itself. The typology of destructive, unproductive, and productive entrepreneurship provides a valuable lens through which to consider such an approach. Section 6 concludes.

2 The Digital Revolution

After World War II, information, and communication technology (ICT) progressively shaped the world economy and the nature of social reality. It has, justifiably, been labelled a digital revolution, as it has seen digital technologies permeate every aspect of human lives. As a

result, even entrepreneurs who are not digital will still be using modern digital technologies, such as computers, mobile phones, and electronic cash registers. As Naudé et al. (2023, p.282) argue, “almost all entrepreneurship now is digital or data-driven to the extent that it involves in one way or another computing and a computer.” They refer to Varian (2010, p.2) who noted that “Sometimes the computer takes the form of a smart cash register, sometimes it is part of a sophisticated point of sale system, and sometimes it is a Web site.”

The digital revolution has been at least 75 years in the making, with key breakthroughs made during war times: during the Allies’ efforts during World War II and the Cold War. Two developments amongst several stand out in these times. The first was the breaking of the Enigma code of the Nazi forces by Alan Turing and colleagues. To do this, they arguably built one of the world’s first computers, the *Bombe*.¹ The second was the creation in the 1960s and 1970s of ARPANET,² the precursor of the Internet³ and in 1989, the world wide web (WWW) by the USA’s Department of Defense. The Internet started life as an initiative to protect US information systems in the case of a nuclear attack (Navarria, 2016).

Even before the building of the *Bombe* that deciphered the Enigma code, Alan Turing published a paper - in 1936 - wherein he laid the foundations for modern computing science, conceptualised as a “Universal Computing Machine”, also known as the *Turing Machine* (Turing, 1936). This paper of Turing’s has been described as⁴ “undoubtedly the most famous theoretical paper in the history of computing.”

Turing would later also contribute towards the emerging field of artificial intelligence (AI), steering the direction of more than half a century’s R&D in AI.⁵ In 1950, Turing (1950) foresaw AI’s most promising applications in tasks like playing Chess and natural language processing. The most notable successes in AI in recent years were in playing Chess, natural language processing-based tools such as Alexis and Siri, and large language models (LLM) such as Chat GPT-4. Turing (1950, p.460) wrote

“We may hope that machines will eventually compete with men in all purely intellectual fields. But which are the best ones to start with? Many people think that a very abstract activity, like the playing of Chess, would be best. It can also be maintained that it is best to provide the machine with the best sense organs

¹See, e.g., Davies (1999) for a description of the Bombe and how it was developed.

²ARPANET is an acronym for Advanced Research Projects Agency Network.

³In 1974, a milestone was reached: the first pizza was ordered online (Finley, 2015).

⁴By Jeremy Norman’s History of Information, at: <https://www.historyofinformation.com/detail.php?id=619>

⁵The term Artificial Intelligence (AI) was coined in 1956 at a workshop in Dartmouth in the USA.

that money can buy and teach it to understand and speak English. I think both approaches should be tried.”

Turing (1936, 1950) was complemented by another one of the most influential theoretical papers in the history of computing, by Claude Shannon. Shannon (1948) provided a “mathematical theory of communication” in which he laid the foundations for modern information theory. Herein Shannon (1948) introduced, amongst others, the concept of a “bit” as a unit of information⁶ with “bit” being derived from the term binary digit.

With the development and diffusion of the personal computer in the 1980s and the establishment of the WWW in 1989, the early 1990s saw the digital revolution go mainstream. It was a very optimistic time, coinciding with the fall of the Berlin Wall, the unification of Germany and the collapse of the Soviet Union. Fukuyama (1992) proclaimed the “End of History.”

Many saw the digital revolution heralding and supporting a new era of freedom and empowerment. Rushkoff (2022, p.5-6) refers to it as the cyberpunk era and describes the “digital renaissance” that was expected, which was “about the unbridled potential of the collective human imagination”. In 1994 Don Tapscott coined the term “digital economy” (Tapscott, 1994), and in 1996, John Barlow issued⁷ the “Declaration of Independence of Cyberspace” stating that “We are creating a world where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity.”

Unfortunately, with the benefit of hindsight, it would not turn out this way. As Rushkoff (2022) documents, whereas in the early 1990s, the fear was that governments would strangle the Internet and the freedoms it offered, it turned out their fear was misplaced, and they did not anticipate the extent to which corporations would hijack the digital revolution. The incentives for unproductive and destructive entrepreneurship to subvert the digital revolution were too strong (as this paper will explain in sections 4 and 5).

The 2000s saw two further developments that would mark the digital revolution’s evolution. The first was the rise of big data and progress in AI, and the second was the rapid scaling up of digital connectivity. Both developments saw breakthroughs around 2006 - 2007. In 2006 Hinton et al. (2006) and Hinton and Salakhutdinov (2006) published papers which facilitated the adoption and diffusion of Deep Learning as the predominant paradigm to AI - a method

⁶A bit is either a 0 or a 1. Eight bits equal one Byte. Modern data storage is measured in bytes. A CD-ROM for example, stores 5 Gigabytes (GB).

⁷See <https://www.eff.org/cyberspace-independence>

based on the big data generated by the Internet and growing digital connectivity.

Furthermore, in 2007 several events coincided to accelerate digital connectivity and the subsequent development of AI and business models based on connectivity and AI. Thomas Friedman described the confluence of these trends in 2007 and asked, “What the Hell Happened in 2007?” (Friedman, 2016). What happened around 2006-2008 was, amongst others the following⁸ :

- Apple re-invented the mobile phone in January 2007
- VMware went public: making multiple operating systems possible
- Hadoop was launched, stimulating access to big data
- GitHub, an open-source platform for software, was started
- Facebook began to spread internationally
- Twitter was spun-off
- Google launched Android and took over YouTube
- Bitcoin was proposed by Satoshi Nakamoto in 2008 with the publication of the influential paper “Bitcoin: A Peer-to-Peer Electronic Cash System” (see Nakamoto (2008)).
- Amazon commenced with its Amazon Web Services (AWS)

The digital revolution was in full swing by 2020 when the COVID-19 pandemic struck. It has seen the costs of digital technologies plummet, the diffusion of digital technologies continues apace, the power of computers increases exponentially following Moore’s Law, and an AI boom seen in publications, patents, and venture capital funding of AI firms. Ubiquitous computing⁹ established a level of connectivity compared to a planetary brain and generated ever-growing volumes of big data necessary for further AI advances. Moreover, the 4th Industrial Revolution and Industry 4.0 were proclaimed, and natural resource (oil) and financial firms were dethroned as the world’s most valuable firms by digital platform firms. E-commerce retail sales were valued at around US\$4 trillion worldwide by 2020. The

⁸See also the blog: “2007: the year we invented everything” at <https://thenewstack.io/world-changed-2007/>

⁹Ubiquitous computing refers to the fact that people today are almost constantly connected to computers through interfacing with the Internet, using mobile devices, accessing cloud computing services, and being recognised and tracked by sensors.

COVID-19 pandemic would dramatically accelerate digital connectivity and online retail sales, swelling the fortunes of the most prominent digital platform firms even more.

By 2022, as the world emerged from the COVID-19 pandemic, the optimism of the early 1990s was gone. Instead of the End of History and unbridled freedom and opportunity, the world has ended up, as some claim, in a polycrisis.¹⁰ As Naudé (2022) discusses, instead of the hoped-for “entrepreneurial economy” that digitisation would help facilitate, as described by Audretsch and Thurik (2004), the digital revolution has coincided with an “ossified economy.” Instead of a digital renaissance, the world faces a digital dystopia.

Section 4 below describes the nature and dimensions of digital dystopia as the outcome of destructive and unproductive digital entrepreneurship. Nevertheless, for this to make sense, it is necessary to define and describe digital entrepreneurship and explain how it differs from conventional entrepreneurship.

3 Digital Entrepreneurship

Digital entrepreneurship can be defined as “the pursuit of opportunities based on the use of digital media and other information and communication technologies” (Davidson and Vaast, 2010, p.2). Naudé et al. (2023, p.283) explain that “digital entrepreneurship is distinct from traditional entrepreneurship in that the digital nature of the opportunity influences the process of entrepreneurship.”

The digital nature of opportunities is determined by the features of digital artefacts, which are “man-made purposeful objects embodied in information and communication technology components of software and hardware” (Briel et al., 2018, p.292). Digital artefacts are created when physical products or services are digitised; for example, when a contract, which traditionally was written with pen or typewriter on paper, is rendered via computer code through a word processor digitally and stored digitally, say as a .docx or .pdf file (as this book you are reading was produced). Software code, pixelated photos stored on a computer or in the cloud (e.g., as a .jpeg or .png file), and music and video files (stored in physical form on vinyl or tape) are examples of digital artefacts.

An important property of digital artefacts for digital entrepreneurship is their malleability,

¹⁰Read more about the so-called “polycrisis” anno 2023 here: <https://www.weforum.org/agenda/2023/03/polycrisis-adam-tooze-historian-explains/>

which allows for combinatorial innovation. Recker and Briel (2019, p.4) state that “through the infusion of digital technologies into entrepreneurship, entrepreneurial processes become more fluid and porous ... and entrepreneurial outcomes become increasingly malleable, extendable, and modifiable.” Becker et al. (2021) explain how software development depends, Lego-block-like, on programs built on top of pre-existing programs. Digital entrepreneurs, therefore, create digital ventures, or digital start-ups, and bring to the market “a new set of products and services by recombining existing digital artefacts [...] in a novel manner or by introducing it in a new context” (Naudé et al., 2023, p.283). In doing so, digital entrepreneurs promote digitalisation, the process of using digitised objects in society (Sussan and Acs, 2017).

While ICT hardware and infrastructure are not digital artefacts, they are crucial preconditions for digital artefacts to exist and, therefore, of critical importance for digital entrepreneurship. They are an essential component of digital entrepreneurial ecosystems (DEEs). Like traditional entrepreneurial ecosystems, digital entrepreneurial ecosystems combine digital infrastructure and digital governance provision in a specific geographical (or cyber-geographical) space.

Formally, a DEE aims to facilitate “the matching of digital customers (users and agents) on platforms in digital space through the creative use of digital ecosystem governance and business ecosystem management to create matchmaker value and social utility by reducing transactions cost” (Sussan and Acs, 2017, p.63).

Here the concept of a digital platform comes to the fore. Understanding digital platforms are essential to understand digital entrepreneurship, including destructive digital entrepreneurship. Much (but not all) of the digital dystopias and outcomes of, amongst others, destructive digital entrepreneurship discussed in section 4 are due to the nature of digital platform business models and the challenge to regulate these platforms. Moreover, from a digital entrepreneurship perspective, digital platforms are central because they enable digital platform capitalism (Narayan, 2022; Srnicek, 2017).

Digital platform capitalism implies that digital entrepreneurship will increasingly take mainly two forms: competition between digital platforms (e.g., between Amazon and Google for advertising revenue) or competition on a specific platform between platform-based digital entrepreneurs (e.g., between app developers on the Apple iStore).

There is no single or straightforward definition of a digital platform. Huttunen et al. (2019, p.5) define digital platforms as “information technology frameworks upon which different

actors -i.e., users, service providers and other stakeholders across organisational boundaries - can carry out value-adding activities in a multi-sided market environment governed by agreed boundary resources and objects.”

Like all platforms, which include traditional platforms such as town square markets, newspapers, or auctions, a digital platform aims to match buyers with sellers or producers with users, but via digital means, using digital infrastructure and digital artefacts. Digital platforms are intermediaries in the digital economy (Jullien and Sand-Zantman, 2020). As discussed by Ruggieri et al. (2018), the movement of platforms into the digital economy has removed the need for businesses to own physical infrastructure to do business.

Precisely how digital platforms match users with producers, who benefits and when, and how this impact on broader society depends on the nature of the DEE that characterises the digital platform. It is also determined by the nature of the digital economy more generally, and especially the “economics of free” (Goldfarb and Tucker, 2019) and network economics (Rysman, 2009). Hence, the governance and regulation of the digital platform are as essential as digital infrastructure and artefacts for understanding outcomes (Steininger et al., 2022).

It is helpful to define and describe a digital platform and the role of digital entrepreneurship between and on such platforms with examples. Figure 1 depicts a simple two-sided platform (a two-sided market).

Figure 1: A Simple Two-Sided Platform



Data sources: Author’s compilation

Figure 1 depicts Amazon Web Services (AWS), one of the world’s largest retail platforms, as a two-sided digital platform. It is two-sided, as AWS mediate between seller and buyers of retail goods. Formally, “a two-sided market is one in which 1) two sets of agents interact through an intermediary platform, and 2) the decisions of each set of agents affects the outcomes of the other agents, typically through an externality” (Rysman, 2009, p.125). From this definition, one of the key features of digital platform emergence: externalities. The externalities in question refer to network externalities or indirect network effects. A network externality or indirect network effect exists if “demand for the good depends on the provision of a complementary good, which in turn depends on the demand for the

original good” (Rysman, 2009, p.127). In other words, sellers will only sell on AWS if there are sufficient buyers of their goods, and buyers will only search on AWS if they expect significant sellers of what they are looking for. For digital entrepreneurs wanting to create a digital platform business, a key challenge is solving this potential chicken-or-egg problem, i.e., attracting participants to both sides of the platform.

Indirect network effects give rise to demand economies of scale, unlike most traditional business models, which typically try to achieve supply economies of scale. i.e., produce at scale to achieve per-unit cost reductions (Parker et al., 2016, 2017). Again, an example will be instructive. Uber, a so-called ride-hailing platform, intermediates between people wanting a taxi service and drivers of taxi vehicles. The more taxi drivers Uber can sign up, the more attractive it will be for people using taxi services to sign up for the Uber app.

Furthermore, if more people use the app, the more attractive it will be for taxi drivers to join Uber. This creates a virtuous cycle: with more taxi drivers, customers obtain a better service, having to wait less and paying lower fares. This attracts even more customers, which in turn attracts more taxi drivers. Hence, the number of users of a digital platform can, through these demand economies of scale, rapidly scale up (Van Alstyne et al., 2016).

In this example, Uber does not own any taxis, and neither are the taxi drivers Uber employees. Uber creates value and grows its business by increasing the number of participants on the platform and locking them in (Huttunen et al., 2019). It is an example of “scaling without mass” (Brynjolfsson et al., 2006) and the management of “not-even-mine” (Van Alstyne et al., 2016). This often leads incumbent platform firms, often the first movers in an industry, to achieve monopoly power (Van Alstyne et al., 2016). As described by Van Alstyne et al. (2016):

“Greater scale generates more value, which attracts more participants, which creates a value-another virtuous feedback loop that produces monopolies. Network effects gave us Alibaba, which accounts for over 75% of Chinese e-commerce transactions; Google, which accounts for 82% of mobile operating systems and 94% of mobile search; and Facebook, the world’s dominant social platform.”

At the time of writing, at least half of the world’s top 10 most valued companies (based on market capitalisation) were digital platform firms.¹¹ Whereas 20 years ago, oil, financial and industrial companies dominated the list, the digital platform model has proven very

¹¹By July 2023, the following digital platform firms were amongst the top 10 most valuable firms in the

competitive and disruptive and has given rise to a vast and growing digital start-up ecosystem consisting of venture capitalists (VCs), accelerator and incubator programs (such as *T-combinator*) and of course, millions of entrepreneurs aspiring to create the world's next digital unicorn start-up. Alas, whether this has seen a proliferation of productive entrepreneurship is increasingly being questioned.

Productive digital entrepreneurship may be an elusive ambition, and concerns have been accumulating about the potential of digital entrepreneurship to contribute to a digital dystopia. To the extent that digital entrepreneurs are complicit in such, it would amount to destructive entrepreneurship.

The following section discusses various dimensions of what could be termed a digital dystopia and its relation to digital entrepreneurship.

4 Digital Dystopia

According to the Cambridge Dictionary,¹² “dystopia” is “a very bad or unfair society in which there is much suffering, especially in an imaginary society in the future.” The fear of a digital dystopia is not new. In 1998 Granville Williams evoked the term as the title of an article in which he expressed concern over the influence of 24-hour television on a society where the content was driven by commercial motives, warning that “the dominance of corporate, rather than public service values, and the avoidance of clashes of corporate interest, will lead to bland, uncontroversial programming, a form of silent commercial censorship (Williams, 1998, p.191). More recently, in 2021, Jean Tirole likewise evoked the term as the title of a scientific paper in American Economic Review, wherein he warned that digital technologies and the rise of social scoring systems now allow autocratic governments to assert even more robust control and compliance (Tirole, 2021).

For present purposes, it can be noted that the three keywords in the definition of a dystopia are unfairness, suffering and an expectation of (further) future harm. In what follows, the destructiveness of digital entrepreneurship (“the pursuit of opportunities based on the use of digital media and other information and communication technologies”) will be deduced from

world, based on market capitalisation (ranking in top 10 in brackets): Apple (1), Microsoft (2), Alphabet (Google) (4), Amazon (5), Meta Platforms (5). Source: Forbes, at <https://www.forbesindia.com/article/explainers/top-10-largest-companies-world-market-cap/86341/1>.

¹²See <https://dictionary.cambridge.org/dictionary/english/dystopia>

the extent to which it is associated with unfairness, suffering and diminished expectations of the future.

At least eleven interrelated categories of digital dystopias can be distinguished in the literature. These will be discussed in the follow sub-sections.

4.1 Digital Platform Capitalism

As defined and discussed in section 3, Digital Platform Capitalism is not inherently dystopic. However, when unregulated and misdirected, it can result in dystopian outcomes, including being implicated to some degree in many of the subsequent digital dystopias.

This section discusses how digital platform firms drive digital platform capitalism can produce unfair outcomes, cause suffering, and contribute to diminished future expectations.

First, there is the issue of unfair competition on a digital platform. Consider the example of digital entrepreneurs - retailers and app developers on the Apple Store, Amazon's Market Place and Meta's (Facebook) Marketplace. These entrepreneurs are not only dependent on the digital ecosystem and its infrastructure but also subject to the rules and regulations and their adjudication by the digital platforms, which may not necessarily be fair, not be applied in an unbiased or fair manner.

Naudé (2023) discusses the case studies presented by Dzieza (2018) on the unfair competition that digital entrepreneurs encounter on Amazon. The nature of the rules set by Amazon for participation in its Market Place makes digital entrepreneurs on this platform subject to potentially violent acts of digital sabotage from other digital (or traditional) entrepreneurs, as is reflected in the terms put on these acts, such as “the five-star bombs,” “hijackings,” “defacement,” or “phoney fires.” For example, Amazon prohibits, understandably, selling goods on its platform that can, through malfunctioning, cause harm to buyers. However, given the nature of the digital environment, it is easy for an entrepreneur with bad intentions to post a digital photo or video of a product of one of its competitors that is on fire, claiming say on the review and ratings pages that they were a buyer who bought a product only to see the product explode or go up in flames. This is the “phoney fire” sabotage. “Five-star bombs” similarly misuse the review and ratings facility of digital marketplaces to write false five-star reviews of a competitor's products and make it look suspicious so that Amazon cracks down, thinking that the business was inflating its reviews fraudulently (Dzieza, 2018).

Amazon’s reactions when faced with these types of sabotage may include - unfairly - suspending the account of a digital entrepreneur. These small businesses often lack the resources to take on the digital giant. Moreover, as part of its terms of usage, entrepreneurs on the Amazon Market Place are bound to an arbitration procedure in case of conflict - as they are also on other platforms. However, they may often find this procedure biased in favour of the digital giant “by discouraging sellers who lack the money, time and energy to take on the company” (Soper, 2021).

Another unfair competition that digital entrepreneurs may face on large digital platforms is that the digital platform considers them to be competition to one of its own businesses or products (Weise, 2019). In the case again of Amazon, it has been claimed that the platform may be biased in its treatment of the entrepreneur and in adjudicating any conflict and may even be tempted to steal the business of the competing retailer or app developer by copying it (Addady, 2016).

Small firms owned and managed by digital entrepreneurs on large platforms often thrive. However, many do find themselves in a digital dystopia where they may feel like serfs labouring on the estate of a (techno) feudal overlord - one reason for Varoufakis (2023) labelling the digital platform capitalism model “techno-feudalism.” It is perhaps no surprise that there are more and more “digital subsistence entrepreneurs” on these platforms (Delacroix et al., 2019).

Second, there are the adverse consequences of digital platforms misusing their dominant - often monopolistic position. The discussion in section 3 was at pains to stress the nature of digital platforms as business models benefiting from demand economies of scale (indirect network externalities) which leads to superstar firms and monopolies. There are various ways in which digital platforms have been found to misuse their dominant positions.

One is in the old-fashioned way that monopolies have always misused their positions by setting unfavourable terms to suppliers, undermining competitors, restricting markets, and colluding. As these types of unproductive and even destructive entrepreneurial behaviour are spelt out as unlawful in existing competition legislation, lawmakers have acted to punish these digital giants - but mostly not very effectively, which has resulted in a discussion on whether and how to regulate digital platform monopolies best, as it has become clear that traditional anti-trust approaches are insufficient.

One of the first cases was the anti-trust suit of the United States versus Microsoft. In essence, the US government considered the bundling of Microsoft’s Internet Explorer (IE) software

with Microsoft’s operating system as an anti-trust practice, as it was furthering the market dominance of the company. It led, for instance, to the demise of Netscape as a search engine (Galloway, 2018). This case started in 1990 - and by 2000, the Court ordered that Microsoft should be broken up to end its monopoly. This decision was overturned in 2001 when Microsoft appealed. The subsequent settlement between Microsoft and the US Department of Justice has been described as “insufficient to keep it from abusing its monopolistic power and does too little to prevent it from dominating the software and operating system industry today” (Jenkins and Bing, 2007, p.11).

Elsewhere, in the European Union for instance, many big digital platforms have been repeatedly prosecuted for anti-trust behaviour and other anti-competitive practices. For example, Amazon has been fined over 700 million euro by the EU in 2021 for violating its General Data Protection Regulation (GDPR).¹³ And in May 2023 the European Data Protection Board (EDPB) fined Meta (Facebook) 1.2 billion euros.¹⁴ There is an entire Wikipedia page devoted to the antitrust cases of the EU against Google.¹⁵

Other ways digital monopolies have been misusing their positions of dominance have been novel and more subtle, thus making it difficult to apply traditional anti-trust legislation. So, for instance, dominant digital platforms have been creating what has been called “kill zones” around their businesses - buying up potentially rival firms and depressing start-upstart-up rates (Foroohar, 2019; Kamepalli et al., 2020) - also referred to as the “infanticide of promising upstarts” (Galloway, 2018). Google¹⁶ and Meta Platforms (formerly) Facebook¹⁷ have indeed been on a spree of M&A’s - most notably Meta’s buying up of *Snapchat*, *Instagram*, and *WhatsApp* (Naudé, 2023). While this is often to get rid of potential competitors, it is also to be able to collect more diverse data (data is the new oil, after all), which allows the digital platform to improve its algorithms and hence customer service and attract more customers, which in turn gives it access to even more data, further entrenching its dominance (Li et al., 2019).

In addition to creating kill zones, digital platforms can also misuse their positions of dominance in one sector to obtain unfair advantages in gaining dominance or influence in a

¹³See the GDPR Enforcement Tracker, at <https://www.enforcementtracker.com>

¹⁴See <https://www.nytimes.com/2023/05/22/business/meta-facebook-eu-privacy-fine.html>

¹⁵At: https://en.wikipedia.org/wiki/Antitrust_cases_against_Google_by_the_European_Union

¹⁶There is a dedicated Wikipedia page to Google’s acquisitions, which amounted to 256 firms bought up at the time of writing. See: https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Alphabet

¹⁷Wikipedia lists 100 firms acquired by Meta (Facebook), see https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Meta_Platforms

different sector. Galloway (2018) claims there is an “Amazon effect,” with which he refers to the ability of the digital giant to potentially “wreak havoc in an industry before it has actually entered that industry. Just by announcing that it is going to expand into a sector, it is able to immediately reduce the stock price of a potential competitor.”

The expansion of digital platforms into industries other than the industry in which it was founded has been described as *shapeshifting* (Teng and Jacobides, 2021). For example, Apple, a producer of mobile phones (iPhone) who has created a digital platform business by hosting app developers on its iPhones, sold more watches in 2019 than the Swiss watch industry (Mawston, 2020). This move wrong-footed the Swiss watch industry: they were expecting competition from other watch industries, not the mobile phone industry. Similarly, Google, which started as an online search engine, has decimated the newspaper industry by attracting advertising revenue away from the mainstream news media (Graham, 2017). The shapeshifting by digital platforms not only wrong-foot industries not expecting their jumping of the industry but also makes regulation by competition authorities difficult - is Google an advertising agency or a search engine? (see (Graham, 2017)).

Ultimately the shapeshifting of dominant digital platforms suggests to some a dystopic society where everything is mediated through platforms - from education to health to entertainment and security. The COVID-19 pandemic has indeed seen an acceleration in the extent to which various sectors moved onto platforms. For Davies (2020), the fear is that the “logic of digital platforms extends far into the public, in which the administrative and financial side of businesses is run by monopoly data crunchers (such as Uber and Amazon), while the front end – the customer-facing side of the operation – looks similar to how urban life looked in the past.” The dystopic elements of this could include a confluence of tech exceptionalism and surveillance capitalism with the surveillance state, growing digital divides, and a loss of sensemaking, as will be discussed in the following sub-sections.

4.2 Tech Exceptionalism

The digital revolution has been dominated by Silicon Valley and related USA ICT-based firms, led by firms such as Apple, Google (Alphabet), Facebook (Meta), Amazon, Microsoft, Netflix, and the large ecosystem of digital economy-based firms. This cyber-ecosystem dominates the lists of the world’s most valuable firms as measured by market capitalisation, unicorn start-up successes, and being amongst the companies that young graduates most desire to work for.

Not surprisingly, this has made these companies and their ecosystem consider themselves special. Tech exceptionalism is the word that has been used to describe the notion that the billionaire digital entrepreneurs leading these firms and their sycophants are uniquely gifted and the saviours of humanity - which also makes them morally exceptional. This is reflected in the mission statements and communication strategies of many Silicon Valley businesses, from Google striving to “making the world a better place” to Mark Zuckerberg of Meta claiming, “we don’t build services to make money; we make money to build better service” (Cox, 2012).

The Economist (2014) described tech exceptionalism as follows:

“The barons of high-tech like to think of themselves as very different creatures from the barons of Wall Street. They create cool devices that let us carry the world in our pockets. They wear hoodies, not suits. And they owe their success to their native genius rather than to social connections—they are ‘the crazy ones, the misfits, the rebels, the troublemakers, the round pegs in square holes’, in Steve Jobs’s famous formulation.”

Relatedly (because they are so special), tech exceptionalism has also been used to refer to¹⁸ “the idea that the dominant technology companies exist in their own unique environment, free from the regulatory and operational constraints that are faced by more traditional sectors, allowing them to establish dominant and almost unchallengeable positions.”

In recent years though, slow but steady backlash has been building up against the idea of tech exceptionalism. Already in 2012, Cox (2012) warned that “Though Silicon Valley’s newest billionaires may anoint themselves the saints of American capitalism, they’re beginning to resemble something else entirely: robber barons. Behind the hoodies and flip-flops lurk business people as rapacious as the black-suited and top-hatted industrialists of the late 19th century.”

Rushkoff (2022) describes how tech exceptionalism has resulted in a class of tech billionaires who consider themselves so much more important than the rest of humanity that they are actively planning their escape from modern society and what they see as its inevitable collapse. He describes this (p. 10) as the “Silicon Valley Mindset”, which is partly based on a view that “most humans are essentially worthless and unthinkingly self-destructive. Let’s

¹⁸See <https://www.verdict.co.uk/tech-sector-layoffs/>

either change them or get away from them.” Hence, tech billionaires are building doomsday bunkers, planning to migrate into outer space or construct a virtual metaverse.

They have even sponsored the elaboration of an extensive philosophy to try and provide moral support for their views - the movement called “Longtermism.” Longtermism has been claimed to be “a disturbing secular religion that looks like it addresses humanity’s deepest problems but actually justifies pursuing the social preferences of elites” (Torres, 2021).

Thus, just like the robber barons of the 19th century, the giants dominating the tech industry have built up “dominant and unchallengeable positions” (see also the discussion in section 4.1), which has caused many economically and socially destructive outcomes - as the rest of this section will elaborate. The digital dystopias that the world increasingly confronts are at least partly the consequences of inadequately regulated business models used by digital platforms. Their self-perceived exceptionalism has been a smokescreen to justify this. In the meantime, as the limits and damages of their business practices becomes more apparent, and humanity seeming failing to mount a successful collective action response to the climate crisis, the Silicon Valley Elite seems to be planning their complete separation from the rest of the world, while still trying to expand its control over it through the surveillance state.

4.3 The Surveillance State

How do governments best get their citizens to “toe the line”? And how can autocratic governments best crackdown on dissent? The digital revolution has delivered tools that more and more governments, autocratic and democratic,¹⁹ are availing themselves of. Moreover, digital tools, such as harvesting larger and larger volumes of data about the behaviour of citizens through mobile devices and sensors, and the advances in facial recognition algorithms, have considerably broadened the scope for governments to resort to putting social pressure on people to conform to the government’s wishes (Guriev and Treisman, 2019; Tirole, 2021). The digital revolution has facilitated the rise of the surveillance state, accelerated by the COVID-19 pandemic, which “ushered in a global rise in state surveillance” (Eck and Hatz, 2020, p.603).

The surveillance state can be described as a state that engages in “preventive mass surveillance on [an] everyday basis” and “relates to potentially coercive use of control against

¹⁹Königs (2022) discusses the rise of surveillance by democratic governments and puts forward several reasons why this is a cause of concern that surveillance may increasingly resort to “enforce laws whose legitimacy is in doubt.”

specific people or groups on a political or other basis” (Westerlund et al., 2021, p.32). The surveillance state enables “Informational Autocrats”²⁰ (Guriev and Treisman, 2019). Surveillance states and informational autocrats call forth fears of dystopia, as described by George Orwell in his novel *1984*, or Aldous Huxley in *Brave New World*.

The surveillance state itself is, per definition, not an entrepreneur. Its association with unproductive and destructive entrepreneurship arises because it often depends on the technologies developed and peddled by entrepreneurs. Like arms dealing, which reflects a particular form of destructive entrepreneurship, the entrepreneurs who invest and disseminate technologies that can be applied to state surveillance for malicious purposes are engaging in activities that are ultimately damaging to society - the social costs may be argued to exceed the private gains.

In this regard, the surveillance state is distinct but related to surveillance capitalism, and they can reinforce each other. Zuboff (2015, p.75) defines surveillance capitalism as a “form of information capitalism [that] aims to predict and modify human behaviour as a means to produce revenue and market control.”

Surveillance capitalism is based on the collection and commodification of data, primarily by large digital platform businesses. Often personal data is collected - through a practice known as data harvesting - by smartphone apps, often free apps. The entrepreneurs who peddle these free apps “sell, use or analyse the data to cater to advertisers, retail outlets and even hedge funds seeking insights into consumer behaviour” (de Vries et al., 2018). By 2018 this market in the USA alone was already worth US \$21 billion (de Vries et al., 2018).

One of the most notorious misuses of data harvesting was the 2018 *Cambridge Analytica* scandal, when Facebook (now Meta) shared data of around 87 million users on its platform, collected without the users’ consent with data harvesting third-party apps, with political consulting firm *Cambridge Analytica*. *Cambridge Analytica* used the data for a political campaign targeting Donald Trump in the 2016 USA presidential elections (McCallum, 2022).

Reinforcing the surveillance state by surveillance capitalism can result in significant harm, unfair (political) outcomes and diminished social and political prospects in a country. Whereas stifling dissent and inhibiting free enterprise and well-functioning markets (which depends on

²⁰Informational autocrats manipulate information using digital technologies and business models. Hence, in the current era, “rather than terrorising or indoctrinating the population, rulers survive by leading citizens to believe-rationally but incorrectly -that they are competent and public-spirited. Having won popularity, dictators score points both at home and abroad by mimicking democracy”(Guriev and Treisman, 2019, p.101).

the freedom of expression) is an apparent destructive outcome of such digital entrepreneurship, there is also a more subtle way in which state surveillance can damage markets and undermine good institutions, and this is through rupturing the social fabric. Tirole (2021) refers to the example of the secret police in East Germany during the Cold War, where spying on citizens reduced social trust. One mechanism, for instance, is that people will avoid interacting with other people to avoid being possibly found guilty by association. As described by Tirole (2021, p.2010):

“A government can use social graphs by allowing relationships with someone on a blacklist to taint the reputation of those who otherwise would not be on the black list. Such tainting can induce yet another social pressure (ostracism) on citizens to toe the line.”

Digital entrepreneurship will not necessarily automatically promote the surveillance state and its social rupturing effects. The surveillance technologies that digital entrepreneurs develop, and market can also have productive outcomes - in fact may be, on balance, good. Examples include online reputation and review systems (Tirole, 2021) and digital surveillance technologies to support research, news reporting, and apprehension of criminals. Digital and surveillance technologies have also been used to improve government social security provisions - but also here, things can go wrong, as the following subsection will explain.

4.4 The Digital Poorhouse

Digital technologies can, in principle, at least, make government services more efficient and effective. E-Government, or digital government initiatives, proliferate in every government across the globe. Regarding the provision of social services, including welfare payments, the adoption of digital technologies has led some countries to what has been termed a digital welfare state. The question that is increasingly being raised is, is this always good for people experiencing poverty? Does the search for greater government efficiency perhaps undermine social outcomes?

Pilkington (2019) summarised the results of a Guardian investigative report (“automating poverty”) into the digital welfare state, finding that:

“Unemployment benefits, child support, housing and food subsidies and much more are being scrambled online. Vast sums are being spent by governments

across the industrialised and developing worlds on automating poverty and in the process, turning the needs of vulnerable citizens into numbers, replacing the judgment of human caseworkers with the cold, bloodless decision-making of machines. At its most forbidding, Guardian reporters paint a picture of a 21st-century Dickensian dystopia that is taking shape with breakneck speed. The American political scientist Virginia Eubanks has a phrase for it: 'The digital poorhouse'."

In the Netherlands, this 21-st century Dickensian dystopia caused the fall of its government in January 2021 - probably the first time a government fell because of AI. This was the outcome of a political and widespread backlash when it transpired that the Dutch tax authority had used, for years, an AI algorithm to screen for fraud in the pay-out of childcare benefits to households; however, the algorithm was biased, leading to the government falsely accusing many households of fraud and demanding they pay back their grants, pushing many into further penury (Rao, 2022). It was the case that, as described by Rao (2022) that "Many of the victims had lower incomes, and a disproportionate number had ethnic minority or immigrant backgrounds. The model saw not being a Dutch citizen as a risk factor."

Digital entrepreneurs are often complicit in adopting, rolling out and expanding the digital poorhouse. Alston and van Veen (2019) describe how shadowy tech consultants have taken over the UK's welfare state. They point to the problem that the UK government has partially outsourced the digital welfare state to technologists and big consulting firms and that this practice has not been very transparent, including the oversight on the role of these digital entrepreneurs given that they are typically not covered by the UK's Freedom of Information Act.

Similar problems have been noted elsewhere, for instance, in Denmark, where the government has "used a loophole in Europe's new digital data rules to allow public authorities to use data gathered under one pretext for entirely different purposes" (Mchangama and Liu, 2018). Mchangama and Liu (2018) argue that outsourcing the digital welfare state has the danger of creating "a parallel form of governing alongside more familiar tools of legislation and policy-setting. And the opacity of the algorithms' power means that it isn't easy to determine when algorithmic governance stops serving the common good and instead becomes the servant of the powers that be." They warn that "this will inevitably take a toll on privacy, family life, and free speech, as individuals will be unsure when their personal actions may come under the radar of the government."

It is not just biased algorithms and shadowy digital entrepreneurs driving digital government systems in nontransparent manner that threatens the digital welfare state to be both more efficient and effective – and fair – in tackling poverty and assisting the most vulnerable – there are also the problems that many of the poorest households do not have access to ICT infrastructure, and/or are digital illiterate, meaning that they may fall outside the net of a digitised benefits system (Alston and van Veen, 2019). This highlights another problematic or dystopian feature of the digital revolution: digital divides.

4.5 Digital Divides

Naudé and Vinuesa (2021) outline and discuss the extent and nature of digital divides²¹ which are related to data deprivations and data gaps - features of the digital revolution that are partly the outcome of the choices of digital entrepreneurs / digital platforms within the broader institutional environment (or DEE).

Access to the digital economy and appropriate digital entrepreneurial ecosystems (DEEs) are necessary conditions for entrepreneurship to flourish in an increasingly digital economy. Such access is, however, not equal nor distributed fairly. Like the traditional economy, the digital economy is unequal and divided: between the digital haves and the digital have-nots. This digital divide (digital inequality) exists most prominently between countries and within countries - even advanced economies. For example, by 2022, only around 25% - 26% of the total population in Central and East Africa had internet access, compared to 98% in Northern Europe. In 2017, Sub-Saharan Africa's share of collaborative coding in the global digital economy and of domain registrations were respectively only 0,5% and 0,7% of the total, compared, for instance, to Europe's shares of respectively 39% and 40% (Graham et al., 2017). Not only do digital divides exist between countries, but also even within advanced economies. Naudé and Vinuesa (2021) noted that around 10% of UK households, and 42 million people in the USA, lacked access to the Internet in 2020.

Digital divides result from “unequal control over the infrastructures that generate, shape, process, store, transfer, and use data” (Fisher et al., 2022, p.829). The ownership of these infrastructures bestows power. According to Fisher et al. (2022, p.831) the power to decide what data to collect and when - the power to datafy - is the result of digital divides, but also entrenches and widens, such divides (see also (Graham, 2019)). The entrepreneurs who dominate the digital economy - and increasingly the traditional economy as the value of

²¹This section draws on Naudé and Vinuesa (2021).

intangible capital in all economic production continues to rise, are exercising firm control over the power to datafy. There is, therefore, not surprisingly, a substantial overlap between the concentration of digital entrepreneurs globally, the ownership of data centres, and the location of undersea internet cable networks.

Digital divides manifest in data deprivations and data gaps. Data deprivations refers to a situation in which a country has insufficient quantity and quality of data to inform its policymaking properly (Serajuddin et al., 2015). While this problem tends to be worse in developing countries, it is by no means absent from advanced economies. Data deprivation includes so-called data gaps, which refer to “data for particular elements or social groups that are knowingly or unknowingly missing when the policy is made based on large datasets” (Giest and Samuels, 2020, p.2).

Where data gaps exist, whatever data is available may reflect societal biases, inequalities, and prejudices (Barocas and Selbst, 2016). Typically, marginal groups are excluded from data - they are not counted. This has many dystopian consequences, such as that existing socio-economic equalities are entrenched in, and widened in, the digital economy. It could lead to the spread of “fake news” and stereotyping of marginal groups - including people with low incomes, migrants, and minority groups (Pelizza, 2020). Algorithmic bias or lack of algorithmic fairness can result in discriminatory practices such as gender disparities in hiring outcomes and racial profiling (Rambachan et al., 2020). For instance, facial recognition systems in the USA - based on AI algorithms trained on big data, have been reported to be “100 times more likely to misidentify an African American or Asian person than a white man” (Grother et al., 2019). And between 2014 and 2017, Amazon had a job screening algorithm that discriminated against women (Cowgill and Tucker, 2020).

4.6 The Loss of Sensemaking

In her 1951 book “*The Origins of Totalitarianism*,” Hannah Arendt pointed out that autocrats and unscrupulous politicians tend to propagandize that “is marked by its extreme contempt for facts as such, for in their opinion fact depends entirely on the power of the man who can fabricate it.”

Many would claim that a “contempt for facts” and the association of what is true and what is not with the political and economic status of whoever fabricates the facts characterises much of the public discourse in the contemporary world (Tubbs, 2019). Major political shocks, such

as the Brexit vote and the election of Donald Trump, have been associated with extensive mis-and-disinformation campaigns (Bufacchi, 2021; Conrad and Hálfdanarson, 2023), which also bedevilled public responses to the COVID-19 pandemic (Naudé and Vinuesa, 2021).

While politicians' contempt for facts, propaganda, fake news, and mis-and-disinformation is nothing new, as the quote above from Hannah Arendt suggests, what is new in recent decades is the extent to which the rise of the digital economy, and particularly of large digital platforms, have enabled the relativising of the truth - in the birth of what has been called the Post-Truth, alternative facts, and fake news society (Newman, 2023). According to Bufacchi (2021, p.350), "Post-truth is a deliberate strategy aimed at creating an environment where objective facts are less influential in shaping public opinion, where theoretical frameworks are undermined in order to make it impossible for someone to make sense of a certain event, phenomenon, or experience, and where scientific truth is delegitimised."

In a post-truth society, there is, therefore, a loss of sensemaking, which goes beyond the mere spreading of false information (lies) or "bullshit" (confidence trickery) (Bufacchi, 2021). Post-truth strategies threaten political outcomes, undermine trust in government, induce and deepen polarisation and weaken collective decision-making,²² and weaponise the Internet and its associated tools. It leaves social destruction in its wake, its only gains accruing to business or political entrepreneurs pursuing their own "profits or prestige." It is a prime example of destructive and unproductive entrepreneurship as introduced by Baumol (1990).

The basic mechanisms of how Post-truth strategies are woven into the fabric of the digital economy are by now well-known and extensively dissected in the literature see amongst others, e.g., Higgins (2016), Prior (2021), Visvizi and Lytras (2019) and Wheeler (2017). What underpins this mechanism is the erosion of the mainstream media - the traditional news (paper) industry as the dominant source of "objective" news - at least in democratic societies, where it performs gatekeeping and fact-checking, functions on what counts as news (Munger, 2020). Digital entrepreneurs, through developing platform business models, robbed the traditional news media of its foremost revenue source - advertising (Lewis, 2017). As a result, they have been adopting alternative financial models predominantly based on subscribers. This, however, implies catering to their subscribers' preferences and abandoning their gatekeeping role - which is increasingly passing to digital platforms (Madiega, 2020).

²²For example, on 6 November 2012, Donald Trump tweeted that "The concept of global warming was created by and for the Chinese in order to make US manufacturing non-competitive" (Bufacchi, 2021, p.349). It is a post-truth designed to enhance Trump's political status at the expense of undermining the collective effort required to combat climate change - which makes it an example of destructive entrepreneurship as defined by Baumol (1990).

At the same time, digital technologies that could capture unverified events as they happen at any place in the world turned almost everyone into a virtual journalist or low-cost news outlet by uploading images, videos, and opinions online, and “virilizing” these (Caled and Silva, 2022). The age of the influencer came into being. In short, “journalism is living an epistemic crisis strictly related to the technological advances in media manipulation” (Caled and Silva, 2022, p.132).

In what remains of this sub-section, four interrelated mechanisms will be outlined through which the erosion of the mainstream media weaves Post-trust strategies into the fabric of the digital economy.

One mechanism is the proliferation of echo chambers and filter bubbles (Pariser, 2011). These refer to the phenomenon that, in the online world, people gravitate to communities where they meet largely like-minded people, which provides rationalisation for and enforcement of their own views. Talamanca and Arfini (2022, p.2) describe this as the users becoming “bubbled,” because “they would consume content and interact with communities only when in accordance with their previous beliefs.” Echo chambers and filter bubbles are enabled and reinforced by the algorithms that curate and personalise the information that an individual will receive through their social media feeds and internet searches - which have, as noticed, become dominant channels through which people access news. The consequences are intellectual isolation, social fragmentation, and group polarisation (Pariser, 2011; Kitchens et al., 2020).

A second mechanism is clickbait. Digital platforms - such as Google or Meta (Facebook), for example- can sell advertisements - and the more users they attract, the more advertisement they can sell. Hence, many digital platforms’ business models are based on attracting attention from users. Clickbait is news headlines and content designed to attract maximum user attention and is part of such digital entrepreneurs’ aim to provide “addictive distractions” (Lischka and Garz, 2023). Such headlines and content will tend to sensationalism and may be entirely “fake” - what matters is not veracity but the attraction of attention. Clickbait “represents a linguistic strategy to articulate a message in a curiosity-arousing way that entices readers to click on the referring article” (Lischka and Garz, 2023, p.2073). Munger (2020), using Baumol et al. (1983)’s concept of contestable markets²³ argues that the contemporary news industry is an example of a contestable market, characterised by “hit-and-run” competition, wherein “the best model for media entrepreneurs is to start cheap

²³A contestable market is one where potential new entrants face little or no obstacles to entry, do not require to put up enormous sunk costs, and where there are no informational and technological asymmetries that can advantage incumbents (Munger, 2020; Baumol et al., 1983).

online websites that can be profitable for a short time, then exit the marketplace when costs get too high” (Munger, 2020, p.377). This is due to the accessible, low-cost entry that digital technologies enable. The result is that the media industry becomes characterised by a few large firms that struggle to make a profit - which explains why many of the traditional mainstream media outlets still exist. The result is that a few large digital social platforms - such as Facebook - can significantly threaten the mainstream media (Lischka and Garz, 2023). The outcome may seem reasonable from a competition point of view, as consumers pay lower prices and have more choices; however, the actual price is paid in terms of a loss of sensemaking. Therefore, hit-and-run digital media entrepreneurs may very well be seen as destructive digital entrepreneurs.

A third mechanism is the fast spread of fake news through circular reporting. It has been observed that fake news may spread faster than the facts on social media (Cinelli et al., 2021). Circular reporting is one way how this could happen. It is “information originated by a single source, appearing to come from multiple independent sources and channels with minor modifications” (Caled and Silva, 2022, p.127). Thus, someone could create a fake news item online, and once another person separately reports this, then refer to this latter report as a source of the original fake item. This provides it with the appearance of credibility, which leads to its further propagation. Circular reporting is sometimes used to “disguise the sponsors of a message,” a strategy known as *astroturfing* (Caled and Silva, 2022).

A fourth mechanism through which digital entrepreneurs propagate post-truth and fake news is through Deepfakes. A deepfake²⁴ “is content generated by artificial intelligence that is authentic in the eyes of a human being. The word deepfake is a combination of the words ‘deep learning’ and ‘fake,’ and primarily relates to content generated by an artificial neural network, a branch of machine learning” (Mirsky and Lee, 2021, p.1)). An example is the 2018 deepfake clip of Barack Obama²⁵ which were posted on BuzzFeed and widely disseminated - in the words of Cunliffe (2022) “You might have seen a viral clip of Barack Obama warning about a ‘fucked-up dystopia’ – an obvious fake.” Deepfakes are proliferating- and getting more sophisticated (Verdoliva, 2020). According to Kshetri (2023, p.89) “by early 2023, the number of deepfakes online was estimated to be in the millions.” Destructive entrepreneurs can weaponise deepfakes to cause significant damage to competitors’ businesses. Kshetri (2023, p.90) describes how this could happen:

²⁴The EPRS (2021, p.I) defines deepfakes as “manipulated or synthetic audio or visual media that seem authentic, and which feature people that appear to say or do something they have never said or done, produced using artificial intelligence techniques, including machine learning and deep learning.”

²⁵See e.g. <https://ars.electronica.art/center/en/obama-deep-fake/>

“A deepfake video of a CEO saying that their company will not meet targets could lead to a significant decline in share price. Using AI-generated profile photos and AI-written posts, a fake account could earn many followers. A large network of such accounts can be used to engage in actions that can damage a company’s reputation.”

Kshetri (2023) furthermore provides a typology of deepfakes and lays out the economics of deepfakes, illustrating that “there are substantial monetary incentives for engaging in cybercrimes using deepfakes” (p. 92). The rise of deepfakes and their potential use for destructive purposes illustrates that continued progress in digital technology may make destructive digital entrepreneurship increasingly lucrative without the appropriate institutional and technological rail guards.

The fundamental conclusion is that the loss of sensemaking, through the mechanisms broadly described here, will make it increasingly difficult to discern whether digital (and other) business models are productive, unproductive, or destructive until after significant economic and social damage.

4.7 Digital Addiction

Digital addiction can be defined as “digital products and services that result in both habit formation and self-control problems [...] habit formation means that today’s consumption increases tomorrow’s demand [...] self-control problems mean that people consume more today than they would have chosen for themselves in advance” (Allcott et al., 2022, p.2426). Online gaming, online shopping, digital pornography, smartphone use, and social media are digital products that have most been implicated and have been referred to as “electronic cocaine,” “digital heroin,” and “modern-day hypodermic needles” (Taylor, 2023).

Allcott et al. (2022) note that digital addiction is increasingly recognised as a problem, citing the increase in addiction as defined above. They mention that “Americans check their smartphones 50 to 80 times each day” (p. 2424) and that surveys have found that respondents identify smartphone and social media use as two of the top five activities they consider spending too much time on daily. It seems this is not necessarily or only due to the “consumer surplus” from these digital technologies but due to their becoming addictive (Taylor, 2023; Rahman, 2021). They further provide experimental evidence that a lack of self-control “magnified by habit formation” induces up to 31 per cent of social media use in

their sample (Allcott et al., 2022, p.2458).

Digital entrepreneurship will be destructive if it creates and spreads digital products and services that are expressly designed to further digital addiction or profit from the perpetuation thereof. Yet, this may seem to be the purpose underlying many digital business models. Tristan Harris, who has called his iPhone a “slot machine in my pocket”, has referred to digital platforms’ competition for users’ attention and engagement as a “race to the bottom of the brain stem” (Bosker, 2016). The race to the bottom of the brain stem refers to the practice of these platforms to design their websites and apps to maximise user engagement and grab as much attention as possible through stimulation of dopamine release in the brain (Alter, 2017b,a).

Not everyone considers these design features of digital platforms as generating medical addiction or that digital addiction is as pervasive as is often suggested. The main criticism is that with the idea of digital addiction, one may confuse socially undesirable outcomes (such as reduced productivity due to digital tools) with personal pathology (Taylor, 2023). Thus, according to Taylor (2023, p.14), “Whether these design features facilitate what we understand as ‘addictions’ remains a contentious issue.” And as Alter (2017a) has pointed out, “some experiences are designed to be addictive for the sake of ensnaring hapless consumers, but others happen to be addictive though they are primarily designed to be fun or engaging. The line that separates these is very thin; to a large extent the difference rests on the intention of the designer.” Hence, the potential role of entrepreneurship as being destructive through the design features of digital platform business models depends not only on technological design, separating personal pathologies for social impacts, but also on considering the digital entrepreneur’s ethical or moral compass - the intention. It is a topic that needs more research.

4.8 Digital Depression

Although the digital revolution has been described as a connectivity revolution, paradoxically, it has left many people feeling less connected to others. Isolation and loneliness, and resulting psychological depression, can be caused by several of the mechanisms already discussed in this section - filter bubble and echo-chambers results in social fragmentation and polarisation; the surveillance state and digital poorhouse in growing distrust of government and breaking-up social relations; digital addictions may lead to many shunning society and personal human interaction, in favour of screen time. As Haidt and Allen has remarked,

“Social media does not act just on those who consume it. It has radically transformed the nature of peer relationships, family relationships and daily activities” (Haidt and Allen, 2020, p.226).

Instant and text messaging - via the smartphone - have become a central means by which young people primarily conduct friendships and socially engage (Turkle, 2011). In this regard, Olds (2011) noted that “When children and teenagers communicate via the typed word as they learn about human interactions and friendships, they don’t develop the skills of friendship or the sound social judgment that they would if they had face-to-face contact the way they did in the past.”

Indeed, rates of depression, anxiety and self-harm among young people seem to rise. Haidt and Allen (2020, p.226) reported, “Rates of teenage depression began to rise around 2012 when adolescent use of social media became common.” Moreover, the rates of increase in teenage depression are faster for girls than boys. They also report that experimental evidence seems to suggest that the causality runs from the use of digital media to depression - as it was found that people often experience a relief in symptoms when reducing the use of social media (Haidt and Allen, 2020).

It is not only teenagers that suffer from digital depression. It may even be argued that the “crisis of meaning”²⁶ that many in the West are said to be experiencing is reflected in increasing rates of depression, suicide, anxiety disorders and despair (see, e.g. Martinez-Ales et al. (2020); Yip et al. (2022), is made worse by the informational overload (“there’s a sense of drowning in this old ocean of bullshit” as John Vervaeke²⁷ puts it) and growing isolation and polarisation produced by digital technologies. Vervaeke (2022) points out that “isolating people so that they are forced to attempt to autodidactically cobble together the practices of wisdom and connection by themselves or in their social media echo chamber only tends to make matters worse.”

Mental health and the crisis of meaning are topics where the application of digital technologies clearly illustrates the allocation-incentive nexus crucial to whether the impact of digital entrepreneurship is destructive, unproductive, or productive. Digital technologies can cause depression, anxiety and induce self-harm. It can accentuate the loss of meaning that many people experience. However, digital technologies can also play an essential role in

²⁶Persons experiencing a crisis of meaning will typically “judge their lives as frustratingly empty and pointless”, experiencing “depression, and suicidal ideations [...] heightened anxiety, negative affect, and pessimism, on the one hand, and decreased resilience, motivation, life satisfaction, hope, self-regulation, and self-efficacy, on the other hand” (Vötter, 2019, p.15).

²⁷See: <https://vervaekefoundation.org/what-is-the-meaning-crisis/>

improving mental health - in diagnosis, treatment and finding meaning - and in facilitating speedy interventions to reduce the risk of suicides (Allen et al., 2019; Haidt and Allen, 2020). The challenge is the design of appropriate reward structures for the digital society, wherein digital business models that increase the risks of depression are discouraged, and those that promote mental health and encouraged.

4.9 Cybercrime

Crime and warfare are closely intertwined with destructive entrepreneurship - entrepreneurs who gain from predation rather than creation, reaping personal gains at a massive cost to society. This is also the case in the digital economy, where new opportunities arise for anyone to seek “power, profit and prestige.” The fast-changing nature of digital technologies and the business plans through which they are employed for various purposes creates institutional voids wherein the incentives to engage in destructive entrepreneurship may be overwhelming - a cybercrime or cyberattack takes seconds. In contrast, regulations and standards take years to evolve (WEF, 2023). Accordingly, it is no surprise that the extent of cybercrime is growing.

The FBI’s Internet Crime Complaint Center’s (IC3) 2022 Internet Crime Report²⁸ documented 800,944 reported cybercrime complaints, which resulted 2022 in financial losses of more than US\$10.3 billion in the USA - up by more than 40% over the previous year. One estimate puts the total global losses because of cybercrime in 2023 at US\$ 8 trillion (only the economies of the USA and China are larger) and estimates that this will grow to US\$ 10,5 trillion by 2025 (Morgan, 2022). There are myriads of evolving ways through which cybercrimes are perpetuated. A discussion of these fall outside the present scope. The reader is referred to Anderson et al. (2021) for a discussion of the main types of cybercrimes, such as *denial-of-service attacks*, *business email compromise*, *telecoms fraud*, *credit card fraud*, *phishing*, *ransomware*, *ewhoring*, *high-yield investment programs*, *West African advance fee fraud* and *romance scams*, *SIM swapping*, and the use of forensic-resistant phones.

Cybercrime can encompass cyberwarfare, a crime with the further malicious intent to cause general violent harm to people, organisations, and infrastructure through digital tools. The potential harm that can be caused in this way can go way beyond the economic losses quoted above - and even be catastrophic. For instance, a cyberattack on a nuclear weapon,

²⁸See <https://www.fbi.gov/contact-us/field-offices/springfield/news/internet-crime-complaint-center-releases-2022-statistics>

its delivery systems, or nuclear command and control systems pose an existential threat - the ultimate dystopia (Stoutland and Pitts-Kiefer, 2018).

The relationship of cybercrime with destructive entrepreneurship is clear from Baumol's perspective of contextual incentives influencing the allocation of entrepreneurship between destructive, unproductive, and productive uses. Despite this, as Anderson et al. (2021) argued, the entrepreneurial perspective on cybercrime is largely still missing. They point out (p.2) that

“Many of those involved in cybercrime are entrepreneurs, looking to do something different: whether to invent a new scam, to take a legacy crime online, to improve an existing cybercrime, or at least to perform an illegal activity that they believe to be profitable in the hands of others. It is these entrepreneurs who turn ideas into businesses – who take social and technical vulnerabilities in human systems and manage to create stable formations of practice around them in ways which mirror 'disruptive' innovation in other sectors.”

Therefore, tackling cybercrime will benefit from utilising insights into the economics of entrepreneurship. Anderson et al. (2021) provides a conceptual model to guide this and complement the current main approaches towards combatting cybercrime, such as technological and criminology approaches, which try to find technical and sociological designs to deter cybercrime.

4.10 Awful AI

Section 2 described the rise of Artificial Intelligence (AI) as one of the dominant digital tools in the digital economy. AI is a convergent and exponential technology, meaning that its development and evolution are because of the convergence of innovations in computing, connectivity, data collection, storage and access and data science; and that improvements in these often accelerate at exponential growth rates (for instance Moore's Law).

AI systems and methods have become ubiquitous in the digital economy. Naudé and Dimitri (2021, p.1) list the main applications as being in “online search engines, chatbots and virtual assistants, recommender systems, reputation systems, news curation and aggregation, hyper-personalisation of marketing, translation, credit scoring, predictive policing, spam filters,

autonomous vehicles, and medical diagnostic tools.” Large Language Models (LLMs), based on the breakthrough in 2017 in so-called Transformer architecture (see Vaswani et al. (2017), such as GPT-4 which drives the chatbot Chat-GPT-4, are generative AIs used to generate new text and images, increasingly used in online search, translation, entertainment, art, design, teaching and publication.

AI has thus clearly created much economic value and is central to the business models of many of the most dominant global digital platforms. Furthermore, even more, is expected of AI. It has been described as a general-purpose technology (Trajtenberg, 2018). Its most significant impacts may result from AI as an Innovation in the Method of Innovation (IMI), driving scientific progress. Goldman Sachs predicts²⁹ that generative AI alone could increase global GDP by 7% over ten years.

AI, however, also poses risks. How the technology is applied could have short and long-run harmful effects. Some of these may result in dystopic outcomes and have already been described in this section, such as helping digital platforms to scale and creating winner-take-all effects, intrusive surveillance and erosion of privacy, higher inequality and digital divides, and discrimination and biased policy making, and being used in cybercrime and cyberattacks. The use of AI in lethal autonomous weapons is particularly concerning in the latter case. The GitHub site.³⁰ Awful AI contains a repository of some of the negative consequences of AI. The site is based on the recognition that “Artificial intelligence in its current state is unfair, easily susceptible to attacks and notoriously difficult to control. AI systems and predictions often amplify existing systematic biases even when the data is balanced.”

Related to many of these awful AI outcomes, there are fears that AI would lead to significant job losses and that routine tasks are increasingly automated (Frey and Osborne, 2017). Others fear that AI progress is going too fast and that a point will be reached when the current narrow AI will be able to self-improve, after which its capabilities will rapidly improve, turn into a general intelligence (an AGI) exceeding that of humans, and eventually a super-intelligence (Bostrom, 2014). It is feared that if this happens because the alignment problem (the problem of aligning the purpose of a superintelligence with that of humans) has not been solved, it will be the end of humanity - an AI catastrophe (Yudkowsky, 2023). This belief has attracted the label of “AI Doomerism” (Wong, 2023). Turchin and Denkenberger (2020) discuss over two dozen ways a super-intelligent AI may create the ultimate dystopia by wiping out humanity or at least curtailing the potential of human civilisation

²⁹See <https://www.goldmansachs.com>

³⁰See: <https://github.com/daviddao/awful-ai>

permanently.

A discussion of whether fears of massive job losses or even an AI apocalypse are justified or not falls outside the present scope. As many have argued, it is more likely that the creation of hysteria about AI is a decoy. Promoting fear of AI as an existential risk is distracting from the real challenges posed by AI and has been described as an attempt by the dominant firms in AI to “built a moat” around their business by out-regulating potential future competition (Fix, 2023). In other words, destructive entrepreneurship may not only be complicit in the awful uses of AI but also in creating fear and influencing the regulation of AI to protect their dominance - and exact further digital abuses.

5 Institutional Challenges

Over the past half a century, the most rapid and disruptive technological advances were in the digital sphere - labelled as a digital revolution and characterised by the ubiquity of computing, the rise of the Internet and connectivity, the growing dominance of business models based on big data and smart algorithms, and the emerge of artificial intelligence (AI). These were discussed in section 2.

The digital revolution and the rise of digital entrepreneurship and digital business models, as was discussed in section 3, require institutional responsiveness. Without it, digital entrepreneurship could be very destructive - ten potential digital dystopias were described in section 4.

From the perspective of the allocation problem of entrepreneurship into destructive, unproductive, and productive uses, the question is how to shape institutions so that digital entrepreneurs face the appropriate incentives to minimise destructive outcomes. As Steininger et al. (2022, p.4) have pointed out, regulating digital entrepreneurship is “a very important, yet underdeveloped, aspect of digital entrepreneurship.” From the discussion in section 4, one may conclude that this is a serious neglect. Given the importance and magnitude of the challenge of regulating digital entrepreneurship, given the multifaceted, shifting nature of the dystopias that it may give rise to, an exhaustive treatment of this falls outside the present scope. However, some guidelines for further research that immediately follow the previous sections will be provided in the remainder of this section.

Specifically, in the rest of this section, the need for internal and external regulation is dis-

cussed, after which a general principle for approaching the design of such regulations is discussed, namely that the use and outcomes of technology should be regulated, not the technology itself. This may be a point that is missed in the current debate on avoiding digital dystopias.

5.1 The Need for Both Internal and External Regulation

External regulation refers to the *de jure* (formal legal) regulations that authorities impose. Entrepreneurship in the West faces a significant burden of regulation, mainly aimed at protecting consumers, workers and investors, property rights and their transfer, and ensuring that the state can extract taxes. Many have argued that the burden of regulation discourages entrepreneurship (e.g., Hopenhayn and Rogerson (1993); Fonseca et al. (2001); Klapper et al. (2006). Davis (2015, p.1,3), for instance, compared the extent of regulations facing entrepreneurs in the USA to the King James Bible:

“There were about 4,400 changes to the tax code from 2000 to 2010, 579 changes in 2010 alone [...] the Code of Federal Regulations (CFR) [...] grew nearly eight-fold over the past 55 years, reflecting tremendous growth in the scale and complexity of federal regulations. At 175,000 pages, the CFR contains as many words as 130 copies of the King James Bible.”

While regulations on entrepreneurship may indeed discourage new entry and may lead to evasive entrepreneurship - forms of entrepreneurship that try to avoid regulations Coyne and Leeson (2004) as well as destructive entrepreneurship³¹ (Djankov et al., 2002) - regulations may not only protect consumers but enhance entrepreneurship, by for instance enhancing the quality of the pool of entrepreneurs. Regulations, especially on entrepreneurial entry, can help to “weed out” low-quality entrepreneurs (Parker 2007:703). Low-quality entrepreneurs may not only offer poor services and products to consumers and run unproductive firms, but they may also impose a negative externality on high-quality entrepreneurs, which may, for instance, find it more difficult to obtain finance because banks would reduce the supply of finance due to the uncertainty (and a symmetric information) they face in evaluating the quality of an entrepreneur (Meza and Webb, 1987; De Meza and Webb, 1999).

³¹Djankov et al. (2002) report that entrepreneurship regulations tend to be associated with more corruption.

In light of the discussion in section 4, it may be argued that these arguments in favour of regulation - especially entry regulation - may also apply in the case of digital entrepreneurship. It may even be more applicable to digital entrepreneurship, where technology has made entry much more accessible than traditional entry. For instance, it was pointed out that in the digital media sector, digital entrepreneurship has assumed the form of “hit-and-run” entrepreneurship (rapid entry and exit), undermining the quality of news generation and dissemination.

From the distinction between destructive and productive entrepreneurship, the reward structure of society matters for the allocation of entrepreneurship (Baumol, 1990). Often, the reward structure of society fails to address moral hazards that arise from new technology. The global financial crisis of 2008-2009 is a case in point. The crisis was essentially the outcome of a confluence of three trends: in financial technology innovation (such as Collateralised Debt Obligations), two, the deregulation of financial markets, and three, the global dominance of relatively few financial firms, which resulted in many banks becoming too big to fail. This created a massive moral hazard for bankers who continued to sell mortgages to households who could not afford them (so-called Ninja bonds) because they realised that they would not face severe consequences if the housing market collapsed. This incentivised very high risk-taking by the financial institutions, eventually leading to the housing market collapsing. And indeed, to enormous bailouts for the financial firms that were too large to fail (Johnson and Kwak, 2010).

Generally, the global financial crisis’ lesson is that moral hazards (and greed) plus cheap money result in financial crisis and rising inequality. Hence the need for appropriate and globally coordinated regulation of the financial sector. Similarly, moral hazards (and greed) plus natural resource abundance has resulted in much natural resource destruction and pollution. This again has driven home the point that appropriate and globally coordinated regulation of the environment is needed to avoid the tragedy of the commons type of outcomes.

Therefore, the need for appropriate and globally coordinated regulation of digital entrepreneurship is clear if the digital dystopias described in section 4 are to be avoided. However, as the lessons from the global financial crisis and the plunder of natural resources have shown, innovations in new technologies which create moral hazards often outpace regulators and policymakers, who can only respond with a lag to new technologies and their uses and outcomes. In the digital economy, this is a fundamental challenge.

The case of digital regulation in the EU provides an example of many of the challenges alluded to in the previous paragraphs. The EU has a comprehensive digital transformation strategy, which is one of the EU's priorities. It has designed a legislative framework to apply across all the EU member states and, in many cases, to external parties dealing with organisations and individuals in the EU. Although much of the ground-laying technological breakthroughs in the digital economy took place decades ago - for instance, the revolution in connectivity largely came about around 2007/2008 (see the discussion in section 2) - most of the EU's legislation to deal with its implications, followed with a lag of roughly around a decade.

For example, the connectivity revolution of 2007/2008 resulted in the rise of big data, which rapidly underpinned the dominant business models of digital entrepreneurs. The EU's first and most significant efforts at regulating the digital economy were therefore aimed at data. Its General Digital Protection Regulation (GDPR) came into effect in 2018. Its most recent data legislation is ongoing: it is, at the time of writing (2023), working on a General Data Act. These acts are broadly in response to the obstacles that entrepreneurs, including small firms, have faced in accessing and sharing data for commercial and innovation purposes.

Similarly, in 2015, many scientists, entrepreneurs and scholars published an open letter calling for and setting out "Research Priorities for Robust and Beneficial Artificial Intelligence" (Russel et al., 2015). The letter recognised, "There is now a broad consensus that AI research is progressing steadily and that its impact on society is likely to increase" (Russel et al., 2015, p.106). It took eight years after this warning was sounded about the potential dangers (and benefits) of AI for the EU to finally propose its AI Act, which the EU Parliament voted on in June 2023, and was being finalised at the time of writing. The EU AI Act has been described as "the world's first comprehensive AI law."

An essential effort within the EU's digital transformation strategy is to try and appropriately regulate digital platform firms, of which more than 10,000 operate in the EU. The large dominant digital platforms - Amazon, Google, Meta, and Alibaba are mainly from outside the EU (the EU has lost the race for digital platform dominance to the USA and China). The key legislation in this regard consists of the GDPR, the Digital Services Act (DSA) and the Digital Marketing Act (DMA), both applicable since 2022.

It must be recognised that the EU is taking the first steps in many of these, hence pioneering new approaches. Monitoring, feedback, and adjustment will, of necessity, must be part of ongoing legislative evolution. It must also be recognised that legislation will positively

and negatively impact digital entrepreneurship and will not affect all digital entrepreneurs similarly. The GDPR is a case in point: as Steininger et al. (2022, p.5) note, the GDPR “prevented several types of data-driven business models in Europe; however, these restrictions also created new opportunities for start-ups targeting privacy-sensitive customers.”

How the formal regulations mentioned in the previous paragraphs will keep destructive digital entrepreneurship in the EU at bay remains to be seen.

Therefore, while external, *de jure* regulations are necessary, they may not be sufficient to reduce moral hazards and, therefore, destructive digital entrepreneurial outcomes. This makes a case for a role for internal regulations - such as moral codes and ethical guidelines to reduce the likelihood that entrepreneurs would act on moral hazards. Therefore, proper governance of digital entrepreneurship entails internal and external regulations.

In the digital economy, the search for internal regulations to guide behaviour in the case of AI is an example of such internal regulations. Given the general-purpose nature of AI, it is central to the digital revolution, and as such internal regulations on the use of AI are, to a large degree, internal regulations of digital entrepreneurship. Adherence to such regulations could help diminish the prevalence of destructive digital entrepreneurship. The notions of Ethical AI and Responsible AI have been put forward to provide internal AI regulations. Ethical AI is “concerned with ensuring that the behaviour of machines toward human users, and perhaps other machines as well, is ethically acceptable” (Anderson and Anderson, 2007, p.15). Responsible AI requires AI systems to “have an acceptably low risk of harming their users or society and, ideally, to increase their likelihood of being socially beneficial” (Askill et al., 2019, p.2). AI systems that attempt to be ethical and responsible have been referred to as human-centred AI (HCAI) (Shneiderman, 2020).

How can digital entrepreneurs ensure that their use of AI is ethical and responsible? To provide such guardrails, various principles have been drawn up. These include, as discussed by Naudé and Dimitri (2021), the Asilomar AI Principles of the Institute of the Future of Life (2017), the European Union’s April 2019 Ethics Guidelines for Trustworthy AI, the OECD’s May 2019 Principles on Artificial Intelligence (OECD, 2019), the G-20’s June 2019 Human-Centered AI Principles (G-20, 2019) and the Institute of Electrical and Electronics Engineers’ Ethically Aligned Design Principles.

In 2021 the UN member states adopted the UNESCO Recommendation on Ethics in AI. UNESCO refers to this as “the first-ever global standard on AI ethics.” The ten principles that underpin this Recommendation are (i) proportionality and do no harm, (ii) safety and secu-

rity, (iii) fairness and non-discrimination, (iv) sustainability, (v) right to privacy, and data protection, (vi) human oversight and determination, (vii) transparency and explainability (viii) responsibility and accountability, (ix) awareness and literacy and (x) multi-stakeholder and adaptive governance and collaboration (UNESCO, 2022).

Given the discussion in section 4, these principles seem relevant to all the digital dystopias that may arise due to destructive digital entrepreneurship. The shortcoming of such internal regulations is, of course, that they lack solid incentives for digital entrepreneurs and software developers to adhere to - see, for instance, the discussion in Askill et al. (2019); Calo (2017); Hagendorff (2020). Naudé and Dimitri (2021) discuss public policy initiatives - such as public procurement, that may be used to incentivise adherence to such recommendations for ethical AI. The role of public policy in this regard is, however, a topic still in its infancy and a topic for future research and discussion.

5.2 Regulate Uses and Outcomes, not Technology

Spector et al. (2022, p.231) recommend that *de jure* regulations of digital technology should “regulate uses, not technology.” This is a crucial recommendation to highlight in the context of the present paper. Based on the analysis in section 4, it may be concluded that to use of technology should also be added the outcomes of such use - such as winner-takes-all effects and monopolistic or oligopolistic markets. The regulation of the uses of digital technologies, and its outcomes, therefore, should constitute the critical objectives of policies towards digital entrepreneurship.

So far in this section, the regulation of the use of digital technologies, such as AI, through formal external and internal means (Ethical Principles) was discussed - with reference to recent international and EU-level initiatives. This discussion so far mainly focused on the regulation of the uses of digital technology. To reiterate, UNESCO’s Recommendations for Ethical AI is technology neutral, any digital (AI) technology may be used, as long as its uses do not violate any of the ten principles recommended. Similarly, the GDPR and AI Acts stipulate what uses of data and AI are subject to what forms of intervention - the AI Act, for instance, do not prohibit any specific technology but prohibits its use to violate human rights.

The discussion has so far given less attention to the regulation of the outcomes of digital entrepreneurship - such as the rise of dominant, superstar-firm digital platforms with monopoly

or oligopoly as an outcome. The EU’s DSA and DMA were mentioned as two pieces of legislation regulating digital platforms. The key issues and challenges at stake here are how to minimise the negative consequences of digital platform capitalism and promote the positive outcomes it may have. In section 4, it was explained how the nature of the digital platform business model, being driven by demand economies of scale (indirect network effects), can, especially in the present of high fixed cost, result in one or two firms dominating the industry. This is called “tipping”: as Rysman (2009, p.137) explains, digital platforms “typically have network effects, and as such are likely to tip towards a single dominant platform.” Hence, in the case of search engines, the market has tipped towards Google; in the social media market, it has tipped towards Facebook (Meta); in online retail sales, it has tipped towards Amazon (in the USA) and Alibaba (China).

For regulators, the question is what to do with large dominant, monopolistic digital platforms? Before the digital revolution, monopolies were frequently broken up. This remedy, in terms of standard anti-trust, competition regulatory approaches, was based on the harm monopolies can cause consumers. These harms typically, in the case of traditional monopolies, include higher prices, collusion, which can reduce the supply of a product, and reduced innovation by the incumbents (Pollock, 2010). However, in the case of digital platforms that tip to become dominant in an industry, the problem is that the standard anti-trust approach does not directly or straightforwardly apply. This is because industry concentration tends to be efficient when demand economies of scale apply. Breaking up such a monopoly would leave consumers worse off - for instance, the value of Meta is in its large user base. It allows users to connect with more people than a smaller social network.

Therefore, in the case of digital platform monopolies, where demand economies of scale tend to tip them into dominance, regulators have shifted the regulatory goalposts away from attempts at breaking these monopolies or near-monopolies up towards trying to (i) preserve dynamic competition, i.e., keep markets contestable; (ii) be alert towards misuse and abuse of a dominant position; and (iii) address violations of data privacy (Pollock, 2010). As discussed in the previous sub-section, the EU approach largely follows this three-pronged approach.

Jullien and Sand-Zantman (2020) analyse how dynamic competition in a market dominated by a digital platform can best be preserved. This leads them to consider several features of digital platform competition that policymakers may want to try and enhance. One is to encourage differentiation amongst digital platforms - for instance, a platform may target a subset of users of another platform, e.g., TikTok would target younger users on Facebook.

A second would be to ensure that multi-homing³² is as far as possible allowed and regulated for. A third would be for regulators to promote data portability and interoperability between platforms - to prevent users from becoming locked in (Jullien and Sand-Zantman, 2020).

Finally, given the increasing role digital platforms are playing as gatekeepers of news - and their influence on sensemaking and the surveillance state, as discussed in section 4 - the bigger picture of regulating digital platforms would require “monitoring platforms’ foray into political coverage unless platform regulation is performed by one or several entirely independent agencies” (Tirole, 2021, p.2039-2040).

5.3 The Art of Good Entrepreneurial Policy Making

In conclusion, the institutional challenge that the spectre of destructive digital entrepreneurship raises has created many new concerns for policymakers. As section 4 made clear, these concerns are new because of novel technologies and novel business plans that they enable. Underneath these novelties, however, many of the same challenges that beset the regulation and support of traditional entrepreneurship remain.

The extensive literature on this topic has generated a few lessons that may be generalised and worth stating here in the concluding sections of the paper.

The first lesson from the literature on regulating and supporting traditional entrepreneurship is that there is no one-size-fits-all policy for all countries and periods. Just like traditional entrepreneurship is very heterogeneous, digital entrepreneurship is characterised by substantial heterogeneity in the entrepreneurs’ nature of business, their firms’ characteristics, location, and business model. Just as this raised the importance of empirical research and impact studies to understand what entrepreneurship policies work and which do not, further research into what policies work in the case of digital entrepreneurship will be necessary. This is one of the recommendations from Steininger et al. (2022)’s survey of digital entrepreneurship, which concludes that

“We lack micro-econometric evidence about the impact of policy measures on stimulating the creation and growth of digital ventures. While venture capital

³²Multi-homing refers to “the situation in which developers publish applications in two or more ecosystems” - i.e., two or more digital platforms, for instance, the availability of a particular app in both Apples iOS ecosystem and Google’s Android ecosystem would indicate multi-homing is possible for consumers of the app (Hyrynsalmi et al., 2016, p.120).

firms, business angels, digital start-ups and other digital ecosystem stakeholders constantly lobby for direct and indirect government support through subsidies and infrastructure investments, it remains unclear what concrete programs and policy measures produce the greatest effects. Some of them may be a waste of taxpayer's money and crowd-out private investments and initiatives" (p.11).

The second lesson, which has been amply emphasised in this paper is that the institutional context wherein entrepreneurs operate is essential. Minniti et al. (2023) explain how the institutional context, as elaborated by the New Institutional Economics, consists of four levels of institutions (following Williamson (1998)). Levels 1 and 2 consist of respective norms, values, and religion (level 1) and formal rules such as property rights (level 2). Level 3 institutions include the bureaucracies involved in the implementation and policing of these rules, and level 4 the day-to-day market dynamics wherein agents interact. The stress is that changes in level 1 and 2 institutions take very long - from between a decade to more than a century. Given the speed and consequences of destructive digital entrepreneurship, this suggests that a better understanding of level 3 and 4 institutions and their consequences for entrepreneurship in the digital economy is a prerequisite for appropriate policy intervention.

The third lesson for policy and regulation of entrepreneurship from the traditional entrepreneurship literature is that entrepreneurship is more than just the activities of firms aiming to profit. Entrepreneurship typically includes so-called social entrepreneurs, public entrepreneurs, institutional entrepreneurs and even what has been called non-state sovereign entrepreneurs.

Similarly, digital entrepreneurs cover a broad spectrum of purposes that are not profit-oriented. Indeed, the sharing economy, collaborative and open innovation, and social media - all these models in the digital economy signify a plurality of market spaces and organisational forms. The art of good entrepreneurial policy consists in allowing these to flourish in the digital economy.

6 Concluding Remarks

Over the past half a century, the most rapid and disruptive technological advances were in the digital sphere - a digital revolution - that saw the coming into being of ubiquitous computing, the Internet, mobile connectivity, the dominance of business models based on big

data and smart algorithms, and the emergence of artificial intelligence (AI). This digital revolution, and with it, the rise of digital entrepreneurship and digital business models, requires institutional responsiveness. Without it, digital entrepreneurship may be very destructive.

Just as in the case of entrepreneurship and violent conflict in the non-digital sphere, the rise of conflict in cyberspace and through digital means can result in the destruction and deterioration of digital infrastructure, the dehumanising of others, expenditures diverted to security and policing, insecure property rights, falling consumer demand, destructive feuds, and an increase in transaction costs, amongst others.

In this light, this paper introduced the topic of destructive digital entrepreneurship and provided a selective overview of topics that have arisen in this respect in recent years. Research on destructive digital entrepreneurship is in its infancy. Recent surveys and overviews of digital entrepreneurship, e.g., by Steininger et al. (2022) and Liebrechts et al. (2023), while recognising the complexity and potential downsides of digital entrepreneurship, omit analysis of destructive digital entrepreneurship. As such, this paper aimed to fill a gap in the literature.

It first described the digital revolution unfolding since the Second World War. The digital revolution was hoped to herald a new era of freedoms and empowerment - a “digital renaissance,” reflected in John Barlow’s 1996 “Declaration of Independence of Cyberspace.” It was not to be. The digital revolution was captured by corporate entrepreneurial interest. The incentives for unproductive and destructive entrepreneurship to subvert the digital revolution were too strong.

With this context sketched, the paper then defined digital entrepreneurship as “the pursuit of opportunities based on the use of digital media and other information and communication technologies” (Davidson and Vaast, 2010, p.2) and described digital entrepreneurship and the digital technologies and business plans that characterises it. In the latter regard, digital platforms have come to dominate. From a digital entrepreneurship perspective, digital platforms are central because they enable digital platform capitalism. Digital platform capitalism implies that digital entrepreneurship will increasingly take two forms: competition between digital platforms, or competition on a specific platform between platform-based digital entrepreneurs.

The core of this paper discussed ten digital dystopias - adverse outcomes which could result from destructive digital entrepreneurship. Much (but not all) of the digital dystopias are due to the nature of digital platform business models and the challenge of regulating these

platforms. As such, digital platform capitalism gone wrong was discussed as the first digital dystopia. The other digital dystopias discussed were *Tech Exceptionalism*, *The Surveillance State*, *The Digital Poorhouse*, *Digital Divides*, *The Loss of Sensemaking*, *Digital Addiction*, *Digital Depression*, *Cybercrime*, and *Awful AI*.

Finally, the paper explored how the institutional and regulatory frameworks can best reduce the risks of destructive digital entrepreneurship. Without going into detailed policy recommendations (which falls outside the present scope), some of the pertinent broader considerations for regulation of digital entrepreneurship (which itself is a neglected topic) were discussed - such as the need for internal and external regulation and the need to regulate the uses and outcomes of digital technologies, rather than the technology itself.

In conclusion, the institutional challenge that the spectre of destructive digital entrepreneurship raises has created many new concerns for policymakers. These concerns are new because of the novel technologies and business plans they enable. Underneath these novelties, however, many of the same challenges that beset the regulation and support of traditional entrepreneurship remain. The extensive literature on this topic has generated three lessons that may be generalised. The first is that there is no one-size-fits-all policy for all countries and periods; the second lesson is that the institutional context wherein entrepreneurs operate is crucial, and the third is that entrepreneurship is more than just the activities of firms aiming to profit. Entrepreneurship typically includes so-called social entrepreneurs, public entrepreneurs, institutional entrepreneurs and even what has been called non-state sovereign entrepreneurs.

Similarly, digital entrepreneurs cover a broad spectrum of purposes that are not profit-oriented. Indeed, the sharing economy, collaborative and open innovation, and social media - all these models in the digital economy signify a plurality of market spaces and organisational forms. The art of good entrepreneurial policy consists in allowing these to flourish in the digital economy.

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