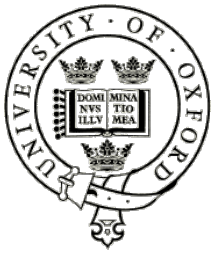
THE POST-MORTAL CONDITION

BEING WITH THE DEAD IN THE AGE OF DIGITAL MEDIA

Document submitted for partial fulfilment of the requirements for the degree of DPhil in Information, Communication and the Social Sciences

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ABSTRACT

The dead are increasingly present on the web. Within the next three decades alone, an estimated 2.2 billion people will die, many leaving behind a considerable volume of data, commonly referred to as *digital remains*. Despite the societal significance of this development, existing literature has mainly focused on lived experience, leaving macro-level concerns largely unexplored and under-theorised. As a first step in addressing this lacuna, the present thesis sets out to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. This objective is pursued in five distinct studies. The first two propose a critical framework to understand the ethically undesirable consequences of commercial and ideological interests in the management of digital remains. The following two studies use statistical modelling to project the accumulation of digital remains throughout the 21st century, and then identify a number of ethical risks associated with their curation. The last study provides an in-depth interrogation of the concept of *presence* as it relates to past individuals and digital technology, and unpacks some of the ethical implications. The integration of these five studies, I argue, illustrates the emergence of a new mode of being with the dead — referred to as the *post-mortal condition* — whereby the deceased are no longer separated from, but maintain a personal presence *within,* the domains of the living. I argue that this presence is more than merely a private matter for the bereaved. It is ultimately a concern for all of society — future, past, and present. Consequently, the challenge before us is to develop technological, regulatory, and economic systems that place the good of *all humanity,* rather than merely the share currently alive, at its centre.

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ABBREVIATIONS

AI: Artificial Intelligence

API: Application Programming Interface

DAI: Digital Afterlife Industry

GDPR: General Data Protection Regulation

HCI: Human Computer Interaction

IE: Information Ethics

ICT: Information and Communication Technology

ICOM: International Council of Museums

LoA: Level of Abstraction

LMO: Local Moment of Observation

LSO: Local Space of Observation

RSO: Remote Space of Observation

RMO: Remote Moment of Observation

SIFI: Systemically Important Financial Institution

SITI: Systemically Important Technological Institution

TSD: Thanatosensitive design

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PROLOGUE: THE NEW NATUFIANS

The present story begins in deep time, long before the rise of modern information technology. Back then being human meant leaving things behind. Because of our nomadic way of life, anything that could not be carried on the back of a human had to be abandoned — including people. Those who died along the way, either from old age, disease or violence, were thus inevitably left in the sand where their bodies had broken down. Lacking any external means to preserve their memory, we may therefore assume that any kind of lasting social relationship with these individuals would have been difficult after their bodies were deserted.

Around 15,000 years ago, however, some started to abandon the nomadic lifestyle to build permanent settlements. Among the first known people to make this transition were the Natufians, a small group of people living approximately where Israel, Jordan, and Syria are today. As one may expect, the Natufians were gatherers of wild grains, used stone tools, and built small houses out of clay. But archaeological evidence also tells us about the emergence of a strange mortuary ritual which would later become commonplace among Neolithic cultures. Instead of merely leaving the dead to rest in the sand like before, the Natufians started burying them underneath the very houses in which they dwelt. And not only that — before the burial of the body, the head of the deceased would first be removed and decorated. Instead of flesh, plaster would be added as a face; instead of eyes, seashells were placed in the eye sockets. Even more surprising, is that these decorated skulls were then placed *within* the dwellings of the living. As such, the Natufians were literally sharing their daily living spaces with the plaster faces of generations of deceased ancestors staring back at them from the walls.

We cannot know for certain what caused these new rituals to emerge, nor how exactly they differed from those of nomadic cultures. Yet, it is plausible that the new and immediate proximity to the ancestors, brought about by permanent settlement, set in motion a radical transformation of how human communities relate to their past members. It did — so it is said — reinforce the idea that the dead remained involved in the affairs of the living. Indeed, even millennia after people ceased to bury bodies underneath their dwellings, houses would continue to be interpreted as places of cohabitation between the living and the dead, platforms where two worlds, one beneath and one above ground, came to interpret each other.

Today, the dead are once again entering into our dwellings, only now we increasingly dwell in digital platforms rather than clay houses. Instead of heads on walls, the faces of the dead stare back at us from the social media profiles they leave behind, from the photo libraries we keep in our smart phones. By means of various forms of automation, some of them keep sending us emails, birthday reminders, and sometimes even keep tweeting long after their biological presence fades. Moreover, in difference to a body, a grave, or a physical photo album, such digital remains are accessible from any place, anytime, with an unprecedented level of granularity. As such, our generation is the first in a very long time whose remains stay immediately present in the domains of the living. We are, in this sense, the new Natufians.

CHAPTER 1: A NEW PRESENCE OF THE DEAD

As homo sapiens we are born out of our biological parents.
As humans we are born of the dead.

Robert Pogue Harrison

1.1 INTRODUCTION

In February 2020, a clip from the Korean documentary "Meeting you" spread across the internet. The clip featured a woman named Jang Ji-sung, and her young daughter Nayeon, in an emotional embrace inside what appeared to be a virtual reality (VR) environment in the shape of a beautiful park. They exchange a few sentences, and then Nayeon is transformed into a butterfly and peacefully leaves her mother's embrace. The reason for the media sensation around the clip was that Nayeon in fact has been dead since 2016. What Jang Ji-sung interacted with in the circulated video was merely a highly realistic avatar created by a team of computer programmers and engineers. Using videos, photos, and other data left by Nayeon before she passed, the team had been able to replicate not only her physical appearance and voice, but also to create an interactive experience in a way that allowed her mother to say a "final farewell".

Nayeon's virtual "resurrection" illustrates how digital technology disrupts the very conditions by which the dead remain present among the living. We used to leave behind little more than a decaying body, an estate (if we were lucky) and some fading memories among those who knew us. Today, as we live our lives increasingly online, even the smallest actions leave some kind of trace behind: Our behavioural and social patterns are recorded by the social media platforms we use to communicate, our taste in music and film is saved by the streaming services we use for entertainment, even our search data is recorded and stored on a server somewhere. Although few people become posthumous avatars, these data traces, often referred to as "digital remains" (Lingel, 2013), will persist after the death of one's biological body, often visible and accessible through the very platforms where they were originally produced.

As documented by numerous researchers (Bell, Bailey & Kennedy, 2015; Kasket, 2012a), and as many of us know from personal experience, dealing with the digital remains of a loved one can be a difficult process for the bereaved. Not only can it be practically challenging, but the presence of a deceased person's digital remains also infuses questions of a more ethical nature: Should the online presence of a person be deleted upon death? Or, on the contrary, is it imperative to preserve it? Who has the authority to decide? Does a dead person still have a right to privacy? And what about the companies that own and control their data, what is their responsibility? In short, the mere presence of a persons' digital remains inevitably induces the ethical question of what we *should* do with them.

The key message of the present thesis is that we are facing these questions not only as individuals responding to the death of a loved one, but also *collectively*, as a society responding to the lingering presence of past generations. Indeed, according to UN population projections (United Nations, Department of Economic and Social Affairs, 2017), around 2.2 billion people are expected to pass away within the next three decades alone (see Figure 1), and considering the rapid rise in internet penetration (see Internetworldstats.com, 2020), many will leave behind a considerable volume of data online. This reconfiguration of the internet's population is likely to raise serious challenges, both on technical and socio-economic levels. To begin dealing with these challenges, however, we must first understand their exact nature, and the present thesis should be read as a contribution to this end.

I shall argue that the challenges raised by digital remains are to be interpreted as the emergence of what I call a *post-mortal condition*. By this, I am by no means referring to the end of biological mortality. Nor am I speculating about the kind of "digital immortality" promised by futuristic tech start-ups. The post-mortal condition rather denotes *a new mode of being with the dead* by which they maintain a personal presence within the domains previously reserved for the living. Unlike most pre-digital societies, where the spaces of the living have been separated from those of the dead, the digital sphere has collapsed the barriers in the sense that we all now exist in and through the archives.

As the studies comprised in this thesis will illustrate, this new condition has difficult and urgent implications in terms of what the living generation owes to both previous and to future ones, and

challenges us to adjust our economic and technological systems and institutions according to the interests of each.

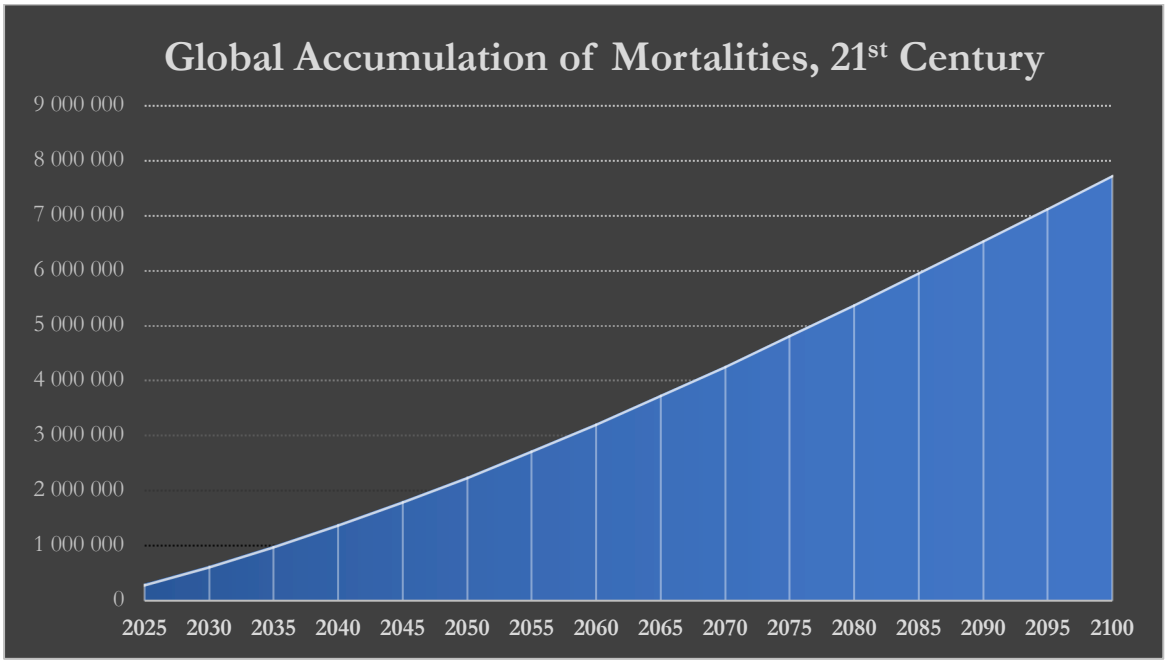


Figure 1. Global Accumulation of Mortalities (thousands), 21st Century, Illustration based on (UN, 2017).

1.2 AUDIENCE AND PROBLEM STATEMENT

The intended audience of this thesis is the growing field known as Online Death Studies (Gotved, 2014). Since death relates to almost every aspect of life, this body of literature draws from a wide range of disciplines. Scholars of law and related areas are investigating new dilemmas arising from the inheritance of digital estates (Banta, 2015; Craig, Michael, Martin, Nansen & Kohn, 2013) and issues of posthumous data privacy (Harbinja, 2013). Sociologists and anthropologists increasingly turn their gaze towards the new types of "para-social" relationships (Sherlock, 2013), and the "continuing bonds" (Bell et al., 2015) that we shape with the online dead. In philosophy, there has been a rising interest for the ontological (Steinhart, 2007; Stokes, 2012; Swan & Howard, 2012) and ethical (Stokes, 2015) status of digital remains. In short, online death has rapidly become a booming and diverse research area.

Despite the disciplinary breadth of the field, the current understanding of death online suffers from some critical limitations. The first is the absence of *critical* perspectives on the topic, especially with regards to the economic landscape in which it operates. Despite the fact that almost every

interaction with the dead online takes place on a for-profit platform, the role of commercial interests in shaping the phenomenon has been almost completely overlooked. This is problematic for several reasons. For instance, it is widely accepted that the architecture of online platforms has a large influence on the interactions that take place there (Lessig, 2006; Nissenbaum, 2001), and that it is normally designed to serve the economic interests of its creators. This is always potentially problematic, but due to the sensitivity of grief and bereavement, commodification of interaction with the online dead is particularly troubling. We are especially vulnerable in times of grief (Gentry, et al., 1995), and hence we should be concerned about any venture seeking to exploit that vulnerability. The commercialisation of death online is also troubling because the dead, unlike the living, lack authority over their identities and are thus uniquely disenfranchised . As they cannot leave if displeased with how the service uses their data, the dead are inevitably left to the good will of the firm who holds their digital remains (Harbinja, 2013). Finally, because the data left by the dead online is essentially part of the future raw material of history (Rosenzweig, 2003), we need to be careful in considering how, by whom, and by what principles, it is curated.

This latter point leads us to the second limitation of the current literature, namely the absence of macro-level analyses. Although the lived experience of the phenomenon is well-documented (see Kasket, 2012a; Bell et al., 2015), its structural and societal dimensions remain sparsely explored. Judging from the development illustrated in Figure 1, we may expect that the proliferation of the online dead will significantly reconfigure the composition of the internet's "population", and thereby transform also the relationship between the living and the dead in society at large. Moreover, since everyone's data cannot, and perhaps should not, remain present online, difficult ethical question emerge in terms of selecting whose data is worth saving. At what cost? What responsibilities does society have to preserve the memory of its past members? And who is to control the process by which our digital footprints become historical records? Such questions are inherently macro-level ethical concerns that cannot be reduced to the lived experience of the individuals who encounter it. In other words, the study of online death is in urgent need of macro-level analysis.

As I elaborate in 1.5 below, the absence of macro-level analysis can possibly be explained by the current methodological imbalance in the field. Rigorous scientific study of social phenomena requires a dialogue between individualistic and holistic approaches. Only in the interaction between these two modes of knowledge can a deep understanding of a phenomenon arise. Yet, Online

Death Studies has so far placed the vast majority of its focus on the former (see, for instance, overviews by Christensen & Gotved, 2015; Gotved, 2014). As a consequence, students of online death tend to miss the forest for the trees. Or, more concretely, they are researching a topic whose impact on the individual is well-known, but whose spread and future development remain largely unknown. Without an adequate holistic empirical foundation, a proper macro-ethics of online death cannot take shape.

1.3 OBJECTIVE AND RESEARCH QUESTIONS

Given the above limitations — the lack of critical analyses and the absence of holistic approaches — current research is unfit to deal with the large-scale challenges that arise from the accumulation of digital remains. In fact, it even lacks the means to properly define them, let alone critically interrogate them. The objective of the present thesis, therefore, is to provide both the empirical and the theoretical knowledge to do so; to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. In so doing, it seeks to answer the following questions:

> RQ1: *What are the macro-ethical challenges that arise from the accumulation of digital remains?*
> RQ2: *What ethical principles should guide our collective response to these challenges?*

There are two sides to these questions. On the one hand, they can be interpreted empirically, as a request for information about the consequences for various stakeholders. On the other hand, they can be read as questions about how we should understand and conceptualise the challenges, i.e. as a matter of *conceptual design* (Floridi, 2013a). As such, they cannot be answered by a single large-scale investigation. There is no one method or approach to fully resolve them. Instead, they can only be properly pursued by a series of focused and diversified investigations.

This is why I have chosen an integrated model for this thesis. This choice is also motivated by the fast development of the field (Gotved, 2014). What was an urgent lacuna two years ago, may today already be a frequently debated topic, and hence it has been imperative to publish my findings immediately upon completion. Indeed, over the course of the three years during which I have worked on this project, several researchers have already developed and expanded upon my findings (see, for instance, Kania-Lundholm, 2019; Kohn, Gibbs, Nansen, & Ryn, 2019; Sas, Schreiter,

Büscher, Gamba, & Coman, 2019). In this sense, the research lacuna identified in this thesis has already begun to fill up.

The literature citing the publications comprised in this thesis does in turn give some indication of the constitution of its actual audience. As intended, a majority of the audience belongs to the field of Online Death Studies (see for instance Bollmer & Guinness, 2018; Galvão, et al. 2019; Kohn, et al., 2019). However, my work has also been read more broadly by economists (Fedotova, 2018), philosophers (Almendros & Echeverría, 2019), theologians (Chaudhary, 2019), and sociologists (Trace & Zhang, 2019) as a general contribution to the ethics and sociology of information. In addition, the readership of the articles indicates that the thesis may be of interest for non-academic audiences. Several of the articles have attracted considerable public attention, one of which has already reached over to 43,000 downloads and an Altmetric score of more than 1200 (Öhman & Watson, 2019).

Before I describe the individual studies in greater detail, I shall first briefly address some theoretical concepts that will reoccur throughout the thesis, and provide some commentary on methodological considerations.

1.4 KEY THEORETICAL CONCEPTS

The objective of this thesis is to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. As such, it can be broken down into three conceptual components: *Digital remains* or *the presence of the dead; information* and *critique*. Since I shall refer to each of these concepts repeatedly throughout the thesis, it is important to get the definitions straight from the very start. While there is not enough room in this introduction to fully articulate how they relate to one another — indeed, doing so will require the better part of this thesis — the following section provides a brief but sufficient introduction.

1.4.1 The Presence of the Dead

The definition of a deceased person does not need much theoretical explanation, at least not in the biological sense. What it means for deceased persons to be "present", on the other hand, is more complex. In Chapter 7, I explore these complexities in depth. As of now though, let us merely state that a person's (dead or alive) *presence* entails the ability to be successfully observed by a hypothetical epistemic agent.

Unlike a majority of research on death online, this thesis focuses on the collective level, viewing the dead not merely as a collection of deceased individuals, but rather as a *social group* in society with certain shared ethical and political interests, which are explored in this thesis. Following scholars like Harrison (2010), Laqueur (2018) and Burke (1790/2018), it is held that this group has a fundamental role in society. As expressed by Harrison (2010: xi)

> As homo sapiens we are born out of our biological parents. As human beings we are born of the dead—of the regional ground the occupy, of the languages they inhabited, of the worlds they brought into being, of the many institutional, legal, cultural, and psychological legacies that, through us, connect them to the unborn.

In other words, the dead "make civilization" (Laqueur, 2018, p. 81) by enabling cultural persistence. Although it is possible, and sometimes fruitful, to view even language and cultural heritage as forms of posthumous presence, I shall limit the current investigation to the *identifiable* dead. When I henceforth speak of "the dead", I refer to a collective presence which consists of, but cannot be reduced to, identifiable individuals.

More specifically, in accordance with the wider literature on the topic (Gotved, 2014), I shall use the term *online death* or *death online* (interchangeably) to denote the larger phenomenon, including events relating not exclusively to the dead but also to death as an event. Following Lingel (2013) and Stokes (2015), I shall use the phrase *digital remains* to denote any electronically stored data left behind by a deceased person. As I elaborate in Chapter 3, I conceive of such data as analogous to biological human remains. Finally, the term *digital afterlife* is used to denote the fate of these remains, i.e. what happens to one's data after death. To add further rigour to this terminology, however, the concepts of information and data also need to be properly defined.

1.4.2 Information

The concept of information reoccurs more or less in each chapter. As such, it requires a robust theoretical framing. No framework is better fit for this purpose than Luciano Floridi's (2011; 2013) Philosophy and Ethics of Information. Almost every chapter of this thesis explicitly refers to at least some concept from this programme.

So what is information? Following the commonly adopted standard in various fields known as the General Definition of Information (GDI), Floridi (2010a, p. 20) defines information as "Data + Meaning". More specifically, he goes on to propose a tripartite formulation of GDI:

GDI) σ is an instance of information, understood as semantic content, if and only if:

GDI.1) σ consists of n data, for $n \geq 1$;

GDI.2) the data are well-formed;

GDI.3) the well-formed data are meaningful.

In other words, information is comprised of data (a concept will I will return to shortly), which are systematically structured by some form of syntax (broadly conceived as some kind of intentional order), which enables semantic interpretation (i.e. meaning). The last part may need some clarification. The fact that information is meaningful does not necessitate an interpreter to which it means something. Data can carry meaning even if no one understands it. Floridi (2010a, p. 22) uses hieroglyphics as an explanatory example:

> Before its discovery, Egyptian hieroglyphics were already regarded as information, even if their meaning was beyond the comprehension of any interpreter. The discovery of an interface between Greek and Egyptian did not affect the semantics of the hieroglyphics but only its accessibility. This is the reasonable sense in which one may speak of meaningful data being embedded in information-carriers independently of any informee.

As long as a set of data are hypothetically meaningful to an interpreter equipped with the adequate skills to decipher it, it counts as information. In regard to the hieroglyphics, we always knew such agents were possible, since they evidently once existed, and hence the content of the scripture was regarded as information before it was meaningful to us.

Let us now turn instead to the definition of data, the raw material of information. One datum has traditionally been defined as a of lack of uniformity, or simply as "a difference which makes a difference" (Bateson, 1972, p. 271), where the smallest possible unit is the difference between 0

and 1, i.e. between being and not being. Floridi (2010a, p. 23) provides a more formal definition, which he calls the diaphoric definition of data:

> Dd) datum = $_{\text{def.}}$ x being distinct from y, where x and y are two uninterpreted variables and the relation of 'being distinct', as well as the domain, are left open to further interpretation.

Data, and by implication also information, is thus measured as lack of uniformity, which means even the lack of signals can be informative, insofar as it is contrasted to the presence of signals. It is the difference between the presence and absence of x (such as 0 and 1 in a computer system, or the lack of uniformity in Shannon information [Shannon, 1948]) that is informative.

Based on these fundamental concepts, Floridi develops an entire ontological and ethical programme — the philosophy and ethics of information — which comprises a myriad of concepts, arguments and frameworks. Among these, there are several that are particularly central to the arguments I pose in this thesis: the informational interpretation of personal identity (Floridi, 2011) and the ontological defence of informational privacy (Floridi, 2005) (Chapter 3) (which are both premised on the notion of putting the *ethical patient* [Floridi, 2019) at centre of ethical discourse), the interpretation of presence as successful observation (Floridi, 2006) and notion of ontological friction (Floridi, 2005) (Chapter 7), and finally the notion of "onlife" (Floridi, 2015) — the idea that we now life *within* the internet, rather than on- or offline — in the conclusion (Chapter 8).

Floridi's Information Ethics, especially as applied and interpreted by Stokes (2012; 2015) (whom I will elaborate upon in the following two chapters) provides the ethical basis for this thesis. Yet in addition to this, I will highlight some ethical concepts from other traditions, such as fairness, flourishing and harm in some of the chapters. Each of these concepts will require analysis and contextualisation within the individual chapters. For now, however, only the key concept — information — requires a strict definition since this will not be defined further in the subsequent chapters.

1.4.3 Critique

Throughout this thesis I often refer to my approach as "critical", especially when analysing economic aspects. I am not using this term in its trivial sense, i.e. as considering a phenomenon

bad or having a negative impact. Rather, I am using it in the "German" sense, i.e. referring to an investigation of the categories that are necessary to make a phenomenon possible.

Kant's (1781/1997) *Critique of Pure Reason* is a good example of such a philosophical critique. Kant's project is not merely to show that pure reason is "bad" or wrong, but to identify the categories that constrain it, thereby enabling us to better understand what it is and how it works (or not works). This is, likewise, how Marx (1859/1999) uses the term in his contribution to the critique of political economy. Marx's project is not merely to show that capitalist political economy is bad, but to expose its inner mechanisms, and thereby to diagnose its negative consequences for society. Marx's critical method has a particular centrality to this thesis in that it provides the essential tools to unpack the conceptual categories of capitalist economics, the environment within which the digital afterlife phenomenon currently takes place. Particularly central will be the concepts of *capital*, *alienation* and what Marx refers to as the *inorganic body*, which I will elaborate on further in Chapter 3.

Although Marx's conceptual framework is necessary to conduct my analysis, this does not require an endorsement of the entire ideology of "Marxism" (i.e., historical materialism, etc). Whereas Marx's critical methodology has been interpreted and re-interpreted by numerous philosophers since his death, perhaps most notably by so called critical theorists (see Horkheimer & Adorno, 2019; Habermas, 1989), I set this tradition aside, to focus only on the original texts in order to minimise theoretical jargon.

In sum, the critical approach adopted in this thesis is not merely an attempt to point out the negative sides of the economics of digital remains, but an inquiry into what makes the phenomenon possible, how it works and how it does *not* work to generate ethical outcomes.

Having rectified the ambiguities regarding the central components of this thesis, we are now ready to review the methodological stance of this thesis.

1.5 METHODOLOGY

Due to the broad multidisciplinary scope of this thesis, there is no single method that can be employed to pursue its objective. Instead, each chapter has its own methodological considerations.

Chapter 3, for instance, uses qualitative coding. Chapters 4 and 5 instead use descriptive statistics as their empirical basis, and so on. In short, I leave it to each chapter to describe its methods.

Nevertheless, something can still be said here about my overall methodological stance. Unlike the majority of current research on online death, this thesis takes its point of departure in methodological holism. By methodological holism, I mean what Samuels (1972, p. 249) refers to as "the view which holds that social science knowledge is best or more appropriately derived from the study of organisations, forces, processes or problems". This methodological doctrine can largely be seen as a heritage from Durkheim (2014) (coincidently also a macro-level student of death) and is traditionally contrasted with the doctrine of methodological individualism, following Weber (2013), i.e. the view that "meaningful social science knowledge is best or most appropriately derived through the study of individuals" (Samuels, 1972, p. 249).

Although this thesis pivots to the former stance, this does not mean that I dismiss the study of individuals as a valuable source of scientific evidence. As such, I subscribe to what Zahle (2016) calls a "moderate methodological holism". That is, the stance that "both holist and individualist explanations are indispensable within the social sciences". As I shall explain in greater detail in the next chapter, the limitations of current research on online death largely stem from a methodological imbalance in the field. Although there is much of value to be said about the individual experience of online death, the current shift in the presence of the online dead cannot be explained solely by reference to its meaning to the individuals who experience it. As Durkheim explains in *Suicide* (1897/2013), death may have a very personal meaning to the individual, yet still be most properly understood in light of large scale societal processes.

In summary, since both the individual and the holistic perspective are needed, and since the former currently dominates the field, this thesis seeks to contribute to rebalancing the scales by focusing on the latter.

1.6 THESIS OUTLINE

This thesis integrates material from six peer review articles and two book chapters published over the course of the past three years. For four of the publications I have collaborated with other researchers, mainly my supervisor, Professor Luciano Floridi. As lead author for each, I have been responsible for conceiving the idea, designing the study, and executing most of the data collection

and analysis. To further explicate my role in these studies, I have attached a statement from each co-author (see Appendices 1-4) detailing our respective contributions.

Each text has, to varying degrees, been amended to better fit with the larger narrative and format of the thesis. Both Chapters 3, 5, and 7 are integrated versions of multiple texts, of which some are co-authored and some single author papers. For this reason I shall consistently use the first person pronoun throughout the thesis, except when describing elements where my personal contribution has been limited (such as in the complex statistical modelling of error estimates in Chapter 3, and large parts of the legal analysis in Chapter 6). In these cases I have chosen to simply drop the subject instead of changing between different pronouns. Below, I outline the contents of each chapter.

Following the introduction, the Chapter 2 surveys the literature relevant to the thesis. It consists of two parts. In the first part, some theories regarding the overall role of the dead in society are addressed, as well as the rich philosophical debate on posthumous harm, which stretches all the way back to Diogenes and Socrates. The review places special focus on arguments about modernity, commonly characterised as an era of "forbidden death" (Ariés, 1975) where the dead are separated from the domains of the living. In the second part, the chapter turns to the narrower subject of Online Death Studies. Here I make a broad overview of various angles on the phenomenon, ranging from legal scholarship (Harbinja, 2013; MacCallig, 2015), to sociology (Walter, 2015), philosophy (Stokes, 2015; Swan & Howard, 2012), human-computer interaction (Brubaker & Vertesi, 2010; Massimi & Charise, 2009; Moncur & Kirk, 2014) and media studies (Lagerkvist, 2015). I also review some of the theoretical and methodological paradigms of the field. The chapter concludes by identifying and adding greater definition to the lacunae addressed in subsequent chapters, i.e. the lack of macroscopic analyses and of critical perspectives on the phenomenon.

Chapter 3, entitled "The Political Economy of Death in the Age of Information" focuses on the politico-economic aspects of the online dead, more specifically on the industry which mediates them — the Digital Afterlife Industry (DAI). The chapter integrates material from two texts: Öhman & Floridi (2017) published in *Minds & Machines* and Öhman & Floridi (2018) published in *Nature Human Behaviour*. Its objective is to provide a critical framework to unpack the ethically undesirable consequences that may arise from the economic incentives of the industry. This goal

is pursued in three steps. First, I introduce the concept of the Digital Afterlife Industry (DAI), and define it as an object of study. Second, I identify the politico-economic interests of the DAI. For this purpose, I develop an analytical approach based on an informational interpretation of Marxian economics. Third, I illustrate the practical manifestations of the interests using real life cases. The findings expose the incentives of the DAI to manipulate what is referred to as the "informational bodies" of the dead, which in turn is to be seen as a violation of the principle of human dignity. To prevent such consequences, I argue that the ethical conventions that guide trade with biological human remains, especially as they apply to archaeological museums, may serve as a good model for future regulation of DAI.

In Chapter 4, "Does God Hear Bots Praying?", I turn to a specific sub-category of the DAI, namely what I refer to as *Islamic Prayer Apps*, i.e. services that allow users to continue posting religious (in this case Islamic) supplications to Twitter after their death. The chapter is an extended and repurposed version of a short article published in *Minds & Machines* (Öhman, et al. 2019), which analyses data collected from the app Du3a. These data suggest that Du3a alone is responsible for millions of tweets daily, which represents a considerable share of Arabic-language Twitter traffic. I argue that the fact that a phenomenon of these proportions has gone unnoticed by researchers reveals an opportunity to broaden the scope of the current research agenda on online automation. It also suggests that the interest for digital afterlife services goes beyond the merely practical and secular. The DAI has a spiritual dimension which engages millions of users daily, not only in the West, but around the world.

Chapter 5, "Are the Dead Taking Over Social Media?" is based on an article published in *Big Data & Society* (Öhman & Watson, 2019) and a book chapter published in the 2020 Yearbook of the Digital Ethics Lab (Öhman & Watson, 2020), in which we project the future accumulation of profiles belonging to deceased users on Facebook and Instagram respectively. The analysis suggests that, if the networks cease to attract new users completely, a minimum of 1.4 billion users on Facebook, and 774 million users on Instagram will have passed away before the end of this century. If the networks continue expanding at current rates, however, this number will exceed 4.9 billion for Facebook and 4.6 billion for Instagram. In each case, a majority of the profiles will belong to non-Western users. In discussing the findings, I relate them to the emerging scholarship on digital preservation and the historical concept of "macroscope" (Graham, Gibbs, & Aceti, 2016), to highlight the challenges arising from curating the profiles of the deceased. Based on the

analytical framework developed in Chapter 3, I argue that an exclusively commercial approach to data preservation poses important ethical and political risks that demand urgent consideration. I call for a scalable, sustainable, and dignified curation model that incorporates the interests of multiple stakeholders.

Chapter 6, "What if Facebook Goes Bust?", is based on a manuscript accepted for publication in the journal *Internet Policy Review* (Öhman & Aggarwal, n.d.), which I co-authored with Nikita Aggarwal. In this chapter, I address a specific topic that emerges from Chapter 5, namely: What would happen to Facebook's data should the company go bankrupt or suddenly close? Facebook has, in large parts of the world, become the de facto online platform for communication and social interaction. Yet, recent events relating to the misuse of user data, the growing regulatory pushback it is receiving in response, and changing social media trends, expose the relative fragility of this pre-eminent status, making the future closure of Facebook's main platform if not plausible, then at least less implausible. The chapter argues that such a scenario would give rise to several legal and ethical concerns, in particular relating to the treatment of deceased users' data, which are not adequately addressed by existing governance frameworks. For example, the GDPR, which regulates the auctioning of data in case of bankruptcy, explicitly leaves out dead users. The potentially hundreds of millions (or billions) of dead profiles hosted by Facebook at the time of its demise may thus be sold off to the highest bidder without any government oversight. The chapter ends with a series of recommendations for addressing these concerns, with a view to setting an agenda for further research and policymaking with respect to Big Tech closure more generally.

Chapter 7, "A Theory of Temporal Friction", is based on a study published in the journal *Time & Society* (Öhman, forthcoming), but also integrates material from (Öhman, 2019) published in *Ethics & Information Technology*. It provides an in-depth analysis of what it means for dead people to be "present". Scholars of digital memory often conceptualise the presence of the online past in terms of a "time collapse" (Brandtzaeg & Lüders, 2018; Hoskins, 2004, p. 113), a technologically driven indistinguishability of the present and the past. I argue that, despite its popularity and intuitive appeal, this concept leaves considerable room for conceptual ambiguity, which in turn hampers a deeper ethical analysis of the topic. In view of this ambiguity, I introduce the concept of *temporal friction*, denoting "informational resistance that makes moments of time perceivable as separate for an embodied epistemic agent". Metaphorically, the role of temporal friction can be understood by

analogy of walls that create separate rooms in a house, where the rooms represent separate moments in time. Since information and communication technologies (ICT) reduce informational resistance (in space and in time) we may interpret such technologies as "windows" in the walls of temporal friction, through which the past can be *directly* observed. As such, the concept allows us to conceive of digital remains not merely as representations of past individuals, but rather as a *reduced*, yet real, and ethically legitimate, presence of deceased individuals.

Chapter 8, "The Post-Mortal Condition", concludes the thesis by summarising the findings of the preceding studies and synthesising them into one unifying *thesis*. This *thesis* draws from some of the historically oriented arguments outlined in Chapter 2 to proclaim that the hiding of the dead that characterised modernity has been terminated by the advent of digital ICT. In its stead, I argue, a new mode of being with the dead is emerging, whereby they remain *present* within the domains that were previously reserved for the living. I refer to this new mode as a *post-mortal condition,* and argue that it calls for an ethics which goes beyond what is good merely for the living, and that consequently, the challenge before us is to collectively design the systems within which the dead remain present in a way that reflects the good of *all humanity,* not merely the share currently alive.

1.7 LIMITATIONS

Before concluding this introductory chapter, a few further clarifications are in place regarding the scope of this thesis. First, it is important to note that I do not intend to say anything new about *death* per se. My focus is exclusively on *the dead online* as a group in particular need of ethical and political attention. Although naturally connected, *death* and *the dead* are rather different objects of study. The former is an *event* full of its own philosophical complexities, often succeeded by equally complex social and cultural rituals. The latter, on the other hand, refers to a collective of humans which share a single trait — being dead. Since I only focus on the latter, the thesis is limited in the sense that it leaves aside the variety of ways in which people become members of this collective (not the biological causes of death but the different social rites of passage into the realm of the dead).

Second, coming from the doctrine of methodological holism, this thesis is not concerned with the lived experience of those who encounter and make sense of the phenomenon. As mentioned, plenty of research has already taken this angle (Kasket, 2012; Bell, 2015; Walter, Hourizi, Moncur, & Pitsillides, 2011), and I do not claim to have anything relevant to add to the knowledge they

have generated. This limits the thesis insofar as it prevents it from saying anything about the cultural response to the developments it identifies. Since the thesis takes a macro perspective, I can only speculate as to what the findings *mean* for the people on the ground. On the one hand this is a limitation, since it constrains my ability to interpret the findings. (This is especially true regarding Chapter 4, which is only interpreted using religious texts and some secondary anthropological sources). On the other hand, a "birds-eye view" of the phenomenon may give some indication as to where qualitative researchers should go next, since it may illuminate areas which have not yet received sufficient attention.

The third, and perhaps gravest, limitation is the Western-centric perspective of the thesis. For this I have no excuse other than my personal ignorance. Although some chapters (especially Chapters 4 and 5) are explicit attempts to widen the scope and illustrate the truly global reach of the online death phenomenon, the thesis does, overall, focus on the Western context. For instance, Chapters 2 and 3 take an explicitly Western focus, insofar as they draw almost exclusively on Western literature and use historical examples from (predominantly) Western contexts. In this regard, the thesis is guilty of the same myopia as most research in this area (as I shall stress in Chapters 2, 4, and 5, online death has almost exclusively been analysed as a Western phenomenon), while at the same time providing the means to open it up.

In addition to these three, I should also add the absence of a coherent overarching ethical theory as a limitation. The absence of such a theory is in part a product of the eclectic nature of the integrated format of this thesis. Because the research it contains is published in several different journals, the language is tailored to appeal to the different audiences of these journals. Hence, different chapters will put emphasis on different ethical aspects. For example, I sometimes evoke the language of "moral patients" and "human dignity" (following Floridi), elsewhere I speak of "harmful consequences". While these concepts may at times appear to be at tension with one another I do not see it that way. The problems dealt with in this thesis are complex and varied, and thus require diverse concepts. Towards the end of the thesis, I will however show how they form a broader unified conclusion.

1.8 ETHICAL CONSIDERATIONS

Ethical concerns in research are centred around the use of personal data, defined by the EU's General Data Protection Regulation (GDPR, 2018) as "any information which are related to an

identified or identifiable natural person". [1] Overall, this thesis does not deal with any data which fits this definition in any relevant sense. The datasets used in the empirical chapters (3, 4 and 5) do not involve any identifiable human subjects, but merely aggregate statistics on traffic and demographic breakdown of the sites in question. It is, in other words, focused on companies, rather than users, and thus the potential to cause harm is limited.

Nevertheless, as pointed out by Locatelli (2020, p. 54) data about companies are often related to the its users, which makes them ethically relevant. Following the recommendations of Locatelli (and by extension Ess & Hård af Segerstad, 2019, p. 177) the data collection for each chapter has thus been designed with ad hoc tools to minimise the amount of data retrieved to what is absolutely necessary to answer the specific research questions. For instance, in Chapter 4, which is concerned only with the traffic generated by the studied firm (i.e., not its users), the column with profile names was deleted from the dataset, thus effectively limiting it to the app's aggregated traffic. In other words, the data I work with in Chapter 4 entails even less information than what can be retrieved merely from searching for the keyword "du3a.org" on Twitter. Additionally, this dataset has not been publicly shared, but is stored only on two of the researchers' encrypted hard-drives.

However, as stressed in the third edition of the Association of Internet Researchers' Code of Research Ethics (franzke, Beckman, Zimmer, & Ess, 2020, p. 21), researchers must also consider the ethical implications of disseminating findings as an important part of the research process, particularly when it comes to topics plagued with misinformation. Islam is undoubtedly such a topic, and hence, the publication of Chapter 4 requires careful consideration to ensure that misinterpretations or misuse of the findings is minimised. For this reason, an Imam at the Oxford Centre for Islamic Studies was consulted to ensure that interpretations of the phenomenon were respectful to the worshipers and religiously justified.

Although the thesis deals only with data relating to companies, there is still a duty to abide by the companies' respective terms and conditions. Though Facebook suggests that their audience insights data should not be compared to demographic data, one has to assume that they intend for third parties to use the audience insights manager since it is the company's main product, and therefore I have made the assessment that using it for Chapter 5 is ethically unproblematic (this

[1] https://gdpr-info.eu/issues/personal-data/

assessment is also based on an email correspondence with a Facebook employee). Twitter's terms of service requires that researchers respect users by deleting any content that "Twitter reports as deleted or expired".[2] It is difficult to assess whether each of the 3.8 million tweets collected in Chapter 4 are still on the platform, but since the study does not analyse the content of any of these Tweets (only their number), this is almost beside the point.

1.9 CONCLUDING REMARKS

The key message of this chapter is this: Whereas many of the micro- and meso-level aspects of the online death phenomenon — the lived experience of those who encounter it — are relatively well understood, the macro-level is not. We simply know very little about the ways in which the rising volume of digital remains will impact society, especially in terms of its ethical implications. I have suggested that this is mostly because the research community has not yet had access to adequate data to draw from, nor to proper theoretical concepts for critical macro-level analysis. The objective of the present thesis, therefore, is to provide both the empirical and the theoretical knowledge needed. In so doing, it seeks to answer the following questions:

RQ1: *What are the macro-ethical challenges that arise from the accumulation of digital remains?*
RQ2: *What ethical principles should guide our collective response to these challenges?*

Whereas each of the studies can be read as a stand-alone contribution to a particular problem within the field of Online Death Studies, they can also be read as parts in a larger narrative with a concluding thesis. This narrative illustrates the emergence of a new mode of being with the dead — the *post-mortal condition* — whereby they maintain a personal presence within the domains of the living. To contextualise this argument, however, I must first introduce what we currently know about the online dead.

[2] https://dev.twitter.com/overview/terms/policy

CHAPTER 2: WHAT WE KNOW ABOUT THE ONLINE DEAD

I'm afraid that other people do not realise that the one aim of those who practice philosophy in the proper manner is to practice for dying and death.
- Socrates (Phaedo)

2.1 INTRODUCTION

In this chapter I provide a detailed review of what we currently know about the technological disruption of the presence of the dead, in particular with regards to the theoretical and methodological approaches that have been used to understand it.

Identifying relevant literature on the topic faces several complications. As becomes clear throughout this chapter, the supply is at the same time abundant and sparse. It is abundant in the sense that death intersects with almost every aspect of life and hence can be related more or less to any field of study and discipline. It is sparse in the sense that, due to the recency of the studied phenomenon, relatively few researchers have thus far written about it explicitly. Moreover, since this is an integrated thesis, published continuously throughout the past three years, much of the relevant literature on the topic has been published after the project started. Some of it is in fact based on some of the arguments presented in my publications (see for instance Kania-Lundholm, 2019; Kohn et al., 2019; Sas et al., 2019). Although naturally relevant, I have chosen to omit these subsequent studies in order to illustrate more clearly the lacuna this thesis seeks to address as it appeared at the outset of this project.

The chapter consists of two parts. In 2.2, I review the general sociological and philosophical study of the presence of the dead. Here I introduce a series of arguments relating to the role of the dead in society through history, and discuss how it has been shaped by the technologies mediating them. Special focus is placed on the emergence of Western modernity, which is described as a mission to rid society from its dependency on past individuals. I also introduce the ancient philosophical literature relating to the ontological and ethical status of the dead.

In 2.3, I turn instead to the narrower literature focusing specifically on digitisation of the presence of the dead. I begin by reviewing the knowledge generated by this literature, and then turn to discuss some common theoretical as well as methodological approaches underpinning it. Throughout the chapter, my key message is that current literature suffers from two critical limitations: It has 1) failed to provide a relevant politico-economic critique of how the presence of the online dead is shaped and managed and 2) failed to consider this presence as a macroscopic, societal development. These lacunae, I argue, stem both from the impotence of current theoretical frameworks, and from the lack of an adequate empirical foundation for such an analysis. In light of these limitations, I conclude by further contextualising and articulating the objective of the thesis.

Before I begin, one small but important caveat must be added. Recall from Chapter 1 that this thesis is concerned with *the dead* as opposed to *death* per se. Although the two cannot be fully separated, (a study of the dead is to some extent also a study of death) the following review will subsequently omit some central arguments in the philosophy of death. Heidegger (1962), for example, a key thinker on death in the 20th century, is hardly mentioned in the following review. The reason for this is that thinkers like Heidegger approach death in terms of its meaning for an individual subject. In contrast to this perspective, my work is concerned with *the dead* as a social group, something about which Heidegger has very little to say[3]. Several similar examples can be made, but there is no need to go over them here.

2.2 THE DEAD AS AN OBJECT OF STUDY

The present thesis taps into an ancient tradition of religious and philosophical thought. In this first part of the chapter I briefly outline the most notable features of this debate. I shall begin by introducing some key arguments and theories regarding the overall social role of the dead in society. Upon doing so, I then turn to the more philosophically oriented debate on the ontological and ethical status of the dead.

2.2.1 The Presence Of The Dead In Society

[3] An exception to this, as pointed out by Ruin (2019), is Heidegger's notion of historicity and "being with the dead". I elaborate on this point further in the following section.

Levi-Strauss (2014, p. 241) once noted that "there is probably no society that does not treat its dead with dignity". Every known culture in history has had some form of mortuary ritual. Indeed, as Vico (1744/2020, §12) observed, some three hundred years ago, even the very word "human" is originally, and "properly" derived from the Latin word "humando", to bury. Customs regarding death and burial therefore remain some of the most stable features of human culture. They change only rarely and slowly, often due to radical social, technological or material change, which is why many scholars ground their arguments in some form of analysis of such historical turning points (Laqueur, 2018; Harrison, 2010, Ariès, 1975).

A commonly referenced turning point is the emergence of the first human settlements in the Neolithic age, which is considered to be the first, and perhaps also the most profound disruption of the relationship between the living and the dead (Spellman, 2015). Prior to permanent settlements, in what Laqueur (2018, p. 81) calls the "deep time of the dead", social bonds with deceased individuals required considerable effort. Like the vast majority of our history as a species, we were then still nomads, meaning that anything which could not be carried on a human back had to be left behind, including people. Even though archaeological evidence is sparse, studies of contemporary nomadic cultures, like some Bedouin societies (Mustafa & Tayeh, 2014) who have maintained a similar lifestyle for thousands of years, can give some insight. In such cultures, little effort goes into mortuary rituals. As Harrison (2010, p. 24) writes, the dead are "buried in the desert with anonymous and temporary markers that the dessert effaces over time" and are only rarely spoken of after their departure. Although Palaeolithic cultures, like some of today's indigenous religions, believed that the ancestors remained present through the surrounding nature/environment, the lack of external means to memorise would have been hard to maintain any lasting *personal* presence.

It is hypothesised that when humans first started building permanent constructions, they did so not to seek shelter or store food, but rather as a means to preserve the memory of their deceased kin. As concisely remarked by the Spanish philosopher Miguel de Unamuno "Stone was used for sepulchres before it was used for houses" (1912/2005, p.138). But a sepulchre is in fact also a type of house — a house for the dead. As Mumford (1961, p. 6) explains "the dead were the first to have a permanent dwelling: a cavern, a mound marked by a cairn, a collective barrow. These were landmarks to which the living probably returned at intervals, to commune with or placate the ancestral spirits". In other words, the dead were dwelling in their houses long before the living.

Archaeologists (Pearson, 1999) assess that some 10-15 000 years ago, humans abandoned the nomadic life style to build permanent settlements also for themselves. During this transition, it is thought that the sacred places where the dead had been laid to rest were the first to become populated. In some early settlements, the living would even be sharing their very houses with the dead. A notable example, commonly cited in the literature, is a small group of people known as the Natufians, living around the area where Israel, Jordan and Syria are today (Pearson, 1999; Spellman, 2015). Archaeological evidence indicates that the Natufians buried the deceased members of their community close to, or even underneath, the dwellings of the living. They also adopted a strange practice that would become commonplace among Neolithic cultures: removing the heads from the bodies of their deceased kin. Instead of flesh, plaster would then be added as a face and the eye sockets would be filled with two seashells. The skulls were then kept within the dwellings of the living, so that eventually, generations of (living and dead) individuals would be inhabiting them simultaneously.

Some scholars have argued that this new and immediate proximity to the dead marked the very birth of human civilisation (de Coulanges, 2017), at least insofar as civilisation denotes the institutional ways in which human communities relate to themselves over time (Harrison, 2010). In any case it was a radical shift which, according to Spellman (2015), "reinforced the conviction that they [the dead] remained involved in current affairs". This conviction in turn lead to cults of ancestor worship, and later — so it is argued — laid the ground for religious systems (de Coulanges, 2017). In other words, "Memories of the dead are the primal form of cultural memory" as Assman (2011, p.45) expresses it, and these memories in turn "make civilization" (Laqueur, 2018, p. 81).

The historical study of the dead in society is, however, not only the study of material circumstances, but also a study of the ICTs through which the dead have remained present among the living. As noted by Walter (2015b, p. 23):

> Each new communication technology affords possibilities for the dead to legitimate and help construct new social groups, from the oral construction of family, to the written construction of world religions and nations, to the photographic and phonographic

construction of celebrity-based neo-tribalism, to the digital re-construction of family and friendship relationships.

Written language is perhaps the most striking example. Writing can, to a large degree, be viewed as a continuation of previous ways of containing and preserving the dead. In ancient Egypt, for example, written text was a key part of both the embalming process and the construction of the very grave chamber itself (Assman, 2011). As explained by Ruin (2019) the grave became a "formative analogy' to the book, there the text makes present a subject that belongs to the world of the dead" (p. 188). Like a grave, the written text is a kind of container wherein the dead resides and remains fixed over time, thereby granting her a "prosthetic voice" (Ruin, 2019) independent of the living. Unlike tombs, however, the written word is normally not fixed to a particular place but can transcend spatial as well as temporal borders. As stated by an Egyptian grave scripture cited by Ruin (2019, p. 189) "more worthwhile is a book than a graven stela or a solid tomb wall. It creates these tombs and pyramids in the hearts of these who pronounce their names". In other words, writing is like a portable grave in that it liberates memory from specific times and places. To connect with ritual forms of remembering, as explained by Assman (2011, p. 75) "you have to go to an image, a monument, a sacred place in order to reconnect with its meaning", to connect with the meaning of written cultural texts on the other hand "you simply have to read them". Indeed, the global dissemination, and historical endurance, of world religions like Islam and Christianity are unimaginable without the scriptures that define them. The written word allowed the founders of these religions to speak more or less directly to generations of worshippers, because when fixed in writing, religious thought is no longer "confined to groups of people who consider themselves kin" (Steadman et al, 1996, p. 74), but can be spread across cultural boundaries. In summary, the invention of writing liberates the dead from their fixation in time, also, and more importantly, their fixation in space.

Photography is a more recent example of a technology which, from its very beginning, was closely associated with the dead. In fact, soon after Louis Daguerre presented the first so called "daguerreotypes", corpses became some of the most popular motifs (Burns, 1990). Families throughout the Western world, in particular in America and Britain, would typically bring the corpse of a deceased family member (particularly children) to the photographer and have their portrait taken, either as sleeping and sometimes posing as if alive (Burns, 1990; Bennet & Huberman, 2015, p. 343). Although portraits of actual corpses were soon surpassed by living

portraits, photography remained an important mediator of the dead (see for example the elaborate analysis by Bathes [1981]). Only a couple of decades after its invention, photos of deceased family members became a standard part of the interior among middle class families, thus democratising posthumous presence (Burnes, 2019). According to Hallam and Hockey, (2001, p. 141) this contributed to "the intensification of the home ... as a site of materialized memory ... conducive to personal reflection and remembering". Not unlike the skulls kept in the Natufian houses, or the imago death masks that decorated aristocratic households in ancient Rome, the portraits of the dead thus perpetuated a posthumous presence of the dead among the living.

In addition to strengthening posthumous family bonds, the rise of photography in society also enabled the forging of new types of social communities around deceased leader figures (Kearl, 2010; Walter, 2015b). After the invention of photography, the demise of one's biological body no longer marked the end of one's visual presence. Indeed, in the 20th century, photography (and by extension film) has been integral to maintaining posthumous celebrity cults. For instance, the iconic images of Marylin Monroe, Elvis Presley and Martin Luther King, became significant sources of revenue for rights holders (Kearl, 2010).

Although information technologies have a pivotal role in mediating the dead, and making them present to the living, they inevitably remain *containers* of some form. Whether in a grave, book, record or photo album, the dead are always *in* something (Harrison, 2010, p. 39), and can therefore be separated from the rest of society. Indeed, even the photos of deceased relatives covering the walls of Victorian households were framed to mark their separation from their environment. Most scholars agree that this separation of the domains of the dead from those of the living took a new turn with the emergence of Western modernity. Ariès (1975), whose framework remains a constant point of reference in the literature, refers to this era as a time of "forbidden death". According to Ariès, the European middle ages, as most of human history, interpreted death primarily as a spiritual event, something to be taken care of by the family in the home environment, and by spiritual leaders. The modern death, by contrast, typically takes place at a specifically allocated place — the hospital, surrounded by anonymous professionals: "one no longer dies at home in the bosom of one's family, but in the hospital, alone" (Ariès, 1975, p. 87). Aries (1975, p. 87-90) further notes that death in modernity must be *hidden* and *avoided* "no longer for the sake of the dying person, but for the sake of society … it is above all essential that society – the neighbours, friends colleagues and children – notice to the least possible degree that death has occurred". In a

word, "modernity", as Bauman (1992, p. 137) summarised it, "killed death". This argument is not to be interpreted merely as an empirical statement. Ariés is not saying that *everyone* living in the historical epoch of modernity dies alone, but merely that such a death is what signifies the modern logic, which is the dominant, but not the sole cultural force in society.

The modern attitude to death as an event is also reflected in the modern relationship to *the dead* as a social group. Instead of burying their bodies in a graveyard within the city — or, as during the middle ages, inside the city church — the modern cemetery locates the dead *outside* the city, in a *separated* space which can be visited and left at will. The modern relationship to the dead is also reflected by the sudden rise of the cremation industry in late 19th century Europe and the United States. As Ariès puts it, cremation represents a "manifestation of enlightenment, of modernity" (1975, p. 91). In many cultures, burning the bodies of the dead has been commonplace for millennia. But unlike these traditions, the goal of the modern cremation oven is complete "nullification" (Ariès, 1975, p. 91) of the physical manifestation of the deceased, i.e. the corpse. As observed by Laqueur (2018, p. 502) "cremation represented the maximum modernist program of nineteenth-century science in the face of death, indeed in the face of all human history". According to a newspaper in Zurich commenting on a local debate on the matter, cremation stood for the "advancement of humanity", even more than technical advancements like "vaccination, chemical matches, and steam power" (quoted in Laqueur, 2018, p. 523). Although this celebratory review perhaps went a bit too far even to other cremation supporters, it does illustrate the vision of the time. A modern death is a complete annihilation.

It is striking how well the goal of the cremation industry resonates with the political ideals of modernity. Although modernity is itself an elusive concept — it remains a topic of vivid debate (Weber, Arendt, Giddens, Foucault etc.) — it can broadly be defined as a mission to rid society from its dependence of the past (Giddens, 1998, p. 94). Instead of the traditions, customs and practices of previous generations, society ought to be governed by present rationality (Weber, 2013). This mission is clearly reflected in the political movements characterising modernity. For Marx (1852, p. 15), for example "the tradition of all dead generations weighs like a nightmare on the brains of the living". Thomas Jefferson (1789/1999, p. 593), similarly states that "the earth belongs in usufruct to the living" and that the dead "have neither powers nor rights over it". These words can, and should, be interpreted literally. In spite of its technological advancements, the goal

of modernity is to eradicate any influence of the dead on society, and thereby to realise what is considered to be a true rationality free from pollutions of the past.

None of this is to say that people living in modernity no longer care for their deceased kin. As shown by Bennet & Huberman, (2015), Laqueur (2018) and Hertz (1907/2004) among others, the dead always remain within the emotional life of the bereaved, and have (through photography) even become part of the home environment (Hallam & Hockey, 2001, p. 141). Consider for example the influential work of French sociologist (and disciple to Durkheim) Robert Hertz (1960), one of the central theorists in modern scholarship on death. As Hertz shows, dying, in the social sense, is not instant, but is instead to be understood as a gradual process by which the dead person is first exiled from her community, and then reintegrated with a new "dead" identity. What signifies modernity is that anything related to the dead is confined to the *private* realm. *Society* and public life is, as Jefferson claims, exclusively for the living.

Conservative thinkers have, almost since its very birth, criticised the modern order. The earliest and fiercest among these is Edmund Burke (1790/2018), often considered the father of conservative thought. In contrast to other thinkers of his time, such as Jefferson (1789/1999) — who, as we saw, disregards any influence of the dead on society — Burke sees the dead as an elementary part of the social contract. To Burke, what binds society together is not merely a contract between the individual and the collective (as for Hobbes), but a contract spanning across generations, or as he puts it "a partnership not only between those who are living, but between those who are living, those who are dead, and those who are to be born" (1790/2018, p. 80). To be a conservative, in the Burkean sense, is thus to facilitate and maintain balance within the partnership by preserving the virtues and resources of the past generation for the benefit of future ones.

Several contemporary thinkers have developed Burke's notion of the social contract further. Ferguson (2012), for instance, finds that the current economic regime is stealing from future generations in order to give to the present. Scruton (1980) similarly argues that the liberal paradigm (i.e. modernity) privileges present members of society at the expense of past and future members of the "partnership". From this point of view, modernity can be interpreted as a kind of "tyranny of the present" over the past and the future. It is a philosophical and political order which celebrates the present in all its forms — present desires, present interests, present individuals.

Even the very word "modernity" comes from the Latin word modo, meaning "right now" or "the present". However, Burke's notion of the social contract does not require an endorsement of conservatism as a political project, especially not in its contemporary form. The notion of a "tyranny of the present" merely suggests that modernity is far from morally neutral when it comes to non-living generations. As such, it has great relevance to the questions investigated in this thesis. Towards the final chapter, I shall return to it to discuss it in relation to the central argument of this thesis, the emergence of what I call the post-mortal condition.

To summarise, the dead have had a fundamental role in shaping human civilisation (Laqueur, 2018). Ever since the emergence of the first permanent settlements, they have been there for us (Spellman, 2015), through language, ideology, the physical infrastructures they leave behind (Harrison, 2010). Most importantly for the purposes of this thesis, however, the dead live on in society through the information technologies that mediate them (Walter, 2015b). Writing liberated the identity of the dead from the constraints of biological memory (Walter, 2015b; Steadman, 1996). Later, the invention of photography further democratised technological afterlife presence (Bennet & Huberman, 2015; Burnes, 2019). Yet, while technologies may help disseminate the dead in society, they are nevertheless *containers* (Harrison, 2010). The dead are always *in* something, an enclosed space which can be separated from the rest of society. Western modernity, in spite of its technological advances, constitutes a peak in this separation (Ariès, 1975), which is not to say that individuals no longer care for their dead kin (Hertz, 1960), but that such care is seen as a private matter, something which ought to be hidden from the public domain. As proposed by conservative philosophers (Burke, 1790/2018; Scruton, 1980; Ferguson, 2012), this social order can be interpreted as a tyranny of the present over the past and the future, a violation of the intergenerational social contract that holds society together over time. In sum, this section has shown that virtually every culture has some way of caring for the dead. Whether it is rational to do so is a different question. In the following section I account for some of the most notable arguments for and against.

2.2.2 The Ontological And Ethical Status Of The Dead

Like most traditions of thought, Western philosophy has devoted considerable attention to death. Indeed, in the Phaedo, Socrates (Plato, 2019, 61c-69e) even claims that practice for dying and death is the "one aim" of those who practice philosophy in the "proper manner". As such, death intersects with more or less every realm of philosophy, from metaphysics to personal identity,

from ethics to the philosophy of time. In this thesis, however, the main focus is on death, or rather in *the dead,* from an ethical point of view.

As we have seen, most, if not all, known societies have treated their dead as worthy of great care (see Laqueur, 2018; Spellman, 2015). Regardless of the truth of that statement, philosophers seem to, time and again, be questioning the justification for this custom. *Why* should we care for those who are no longer among us? What types of care are appropriate? And how can we possibly tell? It is no overstatement to say that the responses to such questions have been a constant source of controversy over the millennia.

On the extreme end of the debate we find supporters of the so called "termination thesis" (Feldman, 2000), which holds that persons completely cease to exist upon death, and therefore cannot be legitimate objects of any kind of harm. Among its earliest defenders we find Diogenes, the "dog philosopher", who allegedly instructed his followers to toss his body over the city walls to be "devoured by wild beasts" upon his death, arguing that "if I lack awareness, then why should I care what happens to me when I am dead?" (quoted in Cicero, 1703, 1.43.). Although one may wonder why Diogenes, despite lacking awareness at that point, left instructions for how his body should be treated upon death, his argument does make a strong point — when one is dead, one cannot experience harm.

While Diogenes's provocative qualities and wit took him a long way, it is Epicurus's version of this same argument that has become the given point of reference. Epicurus teaches that since both body and soul consist of atoms, the soul will be completely obliterated at the moment the body breaks down. Thus, one is dependent on the other to exist. Since neither soul nor (eventually) body exists after death, there is simply nothing to be harmed beyond this moment so that "If I am, then death is not. If death is, then I am not. Why should I fear that which can only exist when I do not?" (Epicurus, 2005 , v. 124–127). Moreover, since Epicurus's understanding of "the good" is a strictly hedonist one, the good must by definition be experienced by a subject. But without a (material) subject to experience it, the good cannot be. Hence, neither "the good" nor its absence can befall the dead since they no longer exist. Despite its age, and despite the fact that none of his own writings on death have survived (Mitsis, 2012), Epicurus's argument remains the unrivalled point of reference for the defenders of the termination thesis.

The Epicurean standpoint can be challenged on a number of grounds. A series of both pre-dating and subsequent arguments have been raised to suggest that, in fact, some types of harms *do* apply also to the dead. To Aristotle (2011), for instance, a human life can be evaluated as truly good or bad only after it has been terminated. As such, events taking place after death can affect our evaluation of it. For example, should Alice devote her life to creating an impressive piece of art, we would consider this life project worsened should Bob falsely claim credit for it after her death. Yet, although Aristotle seems to acknowledge that such events may indeed affect the evaluation of a person's life, he dismisses the idea that posthumous events could have an impact on the *happiness* (eudaimonia) of dead persons on the basis that dead people simply have ceased to exist (see Gareth, 2012 for a more elaborate analysis of Aristotle's views on death). In other words, events taking place after a person's death can be good or bad for them, but cannot affect the specific form of good we call happiness.

Epicurus can also be challenged on the basis of the concept of human dignity (de Baets, 2004; Scarre, 2013), which befalls all humans regardless of their current state of mind (conscious/unconscious; alive/dead). The champion of this position is Kant. To Kant "it would be absurd to think that someone who has died can still possess something after his death (and so when he no longer exists), if what he left behind were a thing" (2017, p. 111). Nevertheless, some possessions, such as reputation or privacy, are not "things", and can therefore be held by the dead according to Kant. Persons may not be able to experience events taking place after their death, yet this does not deprive them of their humanity. A dead person is still a human, and does as such deserve to be treated with dignity. This means that Kant's argument gives support to Aristotle's notion that some (but not all) forms of good (and thus bad) can befall the dead.

More recently, Epicurus has been criticised by a different set of arguments (Levenbook, 1985; Luper, 2004) often inspired by Nagel's (1970) reformulation of the Aristotelian position. For Nagel, some goods and evils are "irreducibly relational", they are *facts* rather than *states* of harm. The *fact* that one has been betrayed is negative regardless of one's awareness of it, whereas the *state* of pain is negative only insofar as it is experienced. Hence, the fortunes and misfortunes of a person are not confined to the boundaries of his or her lifetime. Indeed, the borders of a lifetime are, according to Nagel (1970, p. 78) "commonly crossed by the misfortunes of being deceived, or despised, or betrayed". This explains what is wrong with breaking a deathbed promise — it is "an

injury to the dead man" because it is the *fact* that he was betrayed, rather than the state of being betrayed that is harmful.

Since Nagel, a series of arguments have elaborated further on the idea of harmful facts. The most notable development, however, is the so called Feinberg-Pitcher argument (Feinberg, 1974; Pitcher, 1984). In short, the Feinberg-Pitcher argument holds that while the dead cannot be harmed, the interests of a living individual (a type of information) survive their biological death, and such interests can still be thwarted. According to (Feinberg, 1974), all interests can be thwarted whether the victim knows it or not. A broken promise, for instance, must have a promisee, who is wronged, irrespective of their awareness of this, and therefore also irrespective of them being alive or not.

Drawing from this idea, Pitcher (1984) has added that one can speak of the dead in two senses: as ante-mortem persons (i.e., the person who *was* alive) and as post-mortem persons (i.e., a corpse). He further claims that only ante-mortem persons can be harmed: "no one would want to argue seriously that a post-mortem person can be harmed" (1984, p. 168). Hence the person who is harmed by an event taking place after their death is the ante-mortem person, who is harmed by the *fact* that this event was going to take place. The fact is, albeit revealed at a fixed moment in time, not bound to that moment, but is independent of time and space (I shall return to the peculiar relationship between information and time in Chapter 7). The argument does therefore seem to avoid the two most significant problems facing any theory of posthumous harm: backwards causation and the problem of the subject. The former is avoided, it is argued, since conceptual relations (facts) are independent of time and space. The latter is avoided since the subject is most clearly the ante-mortem person who lived. However, not everybody agrees.

Among the critics of Feinberg and Pitcher, some dismiss the premise of the argument altogether, while others merely find it in need of some amendments. According to Grover (2017) for instance, the Feinberg-Pitcher argument does indeed justify belief in posthumous harm, but uses a too narrow definition of harm to encompass all relevant cases. In contrast, Callahan (1987) who belongs to the former category, finds that the Feinberg-Pitcher argument only seemingly avoids the problem of backwards causation, and that the attempts to amend this have not been more successful (this, however, claims Callahan, does not mean there are no good reasons to respect wills and promises). Likewise, Taylor (2008) who subscribes to a "full-blooded Epicureanism"

(that is an exclusively hedonistic notion of harm), has in a series of papers carefully deconstructed the anti-Epicureans' arguments. He even goes so far as to explain our intuitive inclination toward ascribing moral rights to the dead as an evolutionary leftover.

These neo-Epicurian arguments are typical for the modern attitude to the dead discussed in the previous section. Indeed, the only justification for caring for the dead is, according to Taylor and Callahan by reference to the well-being of the living. For example, Taylor (2005, p. 320) argues that "even if posthumous harm transpires to be mythical this would not mean that there would be no reason to respect the wishes of the dead as expressed through wills, testaments, or verbal requests". We may, for instance, according to Taylor, have good "rule-consequentialist reasons" to respect the dead, since such a custom may bring comfort to living people who wish to have their future wishes honoured post-mortem. Thus, with exception perhaps for Diogenes, even those who deny the existence of dead persons, and their susceptibility to harm, somehow find reasons to respect the dead, albeit instrumentally.

Over the past couple of decades, a large part of the debate on posthumous harm has taken a more practically oriented turn. Such discussions have often focused on privacy (Scarre, 2013), and sometimes stretch far beyond the realm of philosophy. For example, a burgeoning literature in law has begun discussing the practical implementations of posthumous privacy (Buitelaar, 2017; Edwards & Harbinja, 2013; McCallig, 2013; Varnado, 2014). The medical and bio-sciences are considering how to make room for posthumous medical data donation (Krutzinna & Floridi, 2019) and are setting up new frameworks for organ donation (Delmonico et al., 2002). However, because this thesis aims to bring a macroscopic lens to the study of the online dead, the professional codes of ethics among historians and archaeologists — sciences which deal not only with the ethics of the individual dead, but with the dead as a *collective* — are of particular relevance.

In archaeology, for instance, the rights to and of human remains have lately become a topic of heated debate (Bernick, 2014). Among other things, these debates have resulted in several museums and national archives returning human remains to indigenous tribes (Bernick, 2014), but have also led to the development of the International Council of Museums' Code of Professional Ethics (ICOM, 1986). Just like much of the practically oriented literature on the implementation of posthumous rights, the ICOM code of ethics takes its point of departure from the concept of human dignity, stipulating that any exhibition of human remains must "be done in tact and with

respect for the feelings of human dignity held by all people" (p. 32) and that all aspects of any commercial venture must be carried out with respect for "the intrinsic value of the original object".

Similar approaches have been proposed also among historians, who are mainly concerned with the *informational* remains of the dead. Of particular note is de Baets' (2004) proposal of a "declaration of the responsibilities of the present generation toward the past generation", clearly echoing some of the conservative philosophers cited above (Burke, 1790/2018; Scruton, 1980). In contrast to the philosophical debate which has almost exclusively focused on the rights and duties of individuals, de Baets (2004, p. 148) explicitly switches the perspective "from the level of individuals […] to the level of communities". When de Baets (2004, p. 131), as an historian, speaks of the living and the dead, he does so in terms of "two very large and very unequal *groups* [my emphasis]". Although denying that the dead can have any rights in the true sense of the word, he claims that the living, nevertheless, have some responsibilities to this group such as what he refers to as a "mild form of the duty to remember" (p. 151). Individuals are naturally free to remember and forget whatever they want. States, communities and civilisations, on the other hand, have an obligation to preserve the memory of their past members. As such, these are responsibilities not met by individual caretakers but by institutions and systems and hence they require a different conceptual toolbox to be properly conceptualised.

In summary, this first half of the chapter has provided a broad overview of the philosophical terrain regarding the role of the dead in society. We have seen that, because of the ancient relationship between the living and the dead, many scholars anchor their arguments in some form of historical analysis (Harrison, 2010; Laqueur, 2018; Ruin, 2019). Commonly referenced turning points include the emergence of permanent settlements in the Neolithic age (Pearson, 1999; Spellman, 2015), the invention of written language (Assman, 2011; Ruin, 2019) and the emergence of Western modernity (Laqueur, 2018; Ariès, 1975). Modernity in particular, has become a frequently discussed topic in the literature, as it seemingly seeks to "hide" the dead from society in the name of rationality (Bauman, 1992; Burke, 1790/2018; Scruton, 1980). The rationality of caring for the dead is however not a modern topic in and of itself. Debates regarding the ethical and ontological status of the dead stretch all the way back to Diogenes (Aristotle, 2011; Epicurus, 2005; Feinberg, 1974; Kant 1797/2017; Nagel, 1970, etc.) and entails powerful arguments both for and against. The key point here, however, is that, whether it is rational or not the question of how

to deal with the dead cannot be avoided. It is merely the conditions under which it is asked that changes as history and technology progress.

2.3 THE ONLINE DEAD

The advent of the internet, and indeed of digital media in general, has disrupted the way we die (in Hertz's social sense), how we relate to the dead (Kasket, 2012b), and even our way of *being* dead (Stokes, 2015; Walter, et al. 2011). We know that the invention of writing changed society (Assman, 2011), and its relationship to its past, in fundamental ways. It goes without saying that the implications of the digital revolution, therefore, will be at least as disruptive. In this second part of the chapter, I first discuss what we know about this development thus far, and then turn to discussing some popular theoretical and methodological approaches used in the literature. I shall argue that, despite a wide range of angles, current research has not yet developed adequate theoretical concepts, nor provided the empirical basis, necessary for a critical macro-level understanding of the subject. In other words, while classic social theory has often considered the role of the dead as a collective identity in society, a similar theory is yet to be developed for the digital realm.

2.3.1 Angles and tropes

What do we currently know about the presence of the dead online? The answer to the question naturally depends on the angle. Therefore, I shall divide my answer into a series of narrower sub-headings: Immortality and Ethics, Law and Regulation, Grief and Loss, and Design. Other categories are of course possible, but the ones above fit particularly well with the focus of this thesis. I begin with the most abstract.

2.3.1.1 Immortality and Ethics

The fast pace of technological innovation, specifically various forms of artificial intelligence (AI), has led some scholars to speculate about the possibility of so called "mind-uploading" (Steinhart, 2014; Swan & Howard, 2012) and "digital immortality" (Bell & Gray, 2001). The idea is that, the human brain, interpreted as a biological computer, can essentially be digitally replicated, implying that one's mind also can be transferred to a machine. These ideas have been particularly popular within the transhumanist and post-humanist camps, who believe that mind uploading will become available in the foreseeable future. An illustrative example is Rothblatt's (2014, p. 10) theory of so called "mind-clones":

> Mindclones are mindfiles used and updated by mindware that has been set to be a functionally equivalent replica of one's mind. A mind clone is created from the thoughts, recollections, feelings, beliefs, attitudes, preferences, and values you have put into it. Mindclones will experience reality from the standpoint of whatever machine their mindware is run on. When the body of a person with a mindclone dies, the mindclone will not feel that they have personally died, although the body will be missed in the same ways amputees miss their limbs but acclimate when given an artificial replacement. In fact, the comparison suggests an apt metaphor: The mindclone is to the consciousness and spirit as the prosthetic is to an arm that has lost its hand.

Many transhumanists believe that soon this kind of technologically enabled immortality will not only become possible, but also available to the masses. Steinhart (2007), for example, believes that in less than 50 years, so called "digital ghosts", which will be "both conscious and self-conscious", will inhabit the web by the millions, thus drastically changing the online landscape.

It almost goes without saying that these prophecies have little grounding in reality. The prospect of an artificial consciousness belongs to the realm of science fiction and there is no serious reason to believe it will not remain there for the foreseeable future. Moreover, even if something like whole brain emulation were possible, there is little reason to believe that an artificial brain would produce anything like a biological consciousness (Hauskeller, 2012). I shall not engage any further with the debates within philosophy of mind, nor shall I discuss machine consciousness in any further detail. For the purposes of this thesis, it is enough to note that current technology does not allow one's consciousness to "live on" in any relevant sense.

Although one's consciousness cannot survive the death of the biological body, the same is not true for *personhood.* Although the literature is still sparse, some notable arguments have been put forth by Stokes (2012; 2015) among others, drawing on Floridi's (2011) informational interpretation of personal identity — the notion that persons are constituted by their information, not merely owners of it. Since information is constitutive of who we are, argues Stokes, our digital remains are to be regarded, not just as an estate, but as a type of informational corpse. Although the self ultimately dies with the biological body, the *person* survives inasmuch as her information stays intact.

As we learned from the above discussion on posthumous harm (Feinberg, 1974; Kant, 2017; Pitcher, 1984; Scarre, 2013), lack of consciousness does not deprive the dead entirely of ethical rights. A person is still a person, and deserves to be respected as such. For Stokes (2015) this entails a right not to be deleted or erased, in short, a right to keep on existing as an informational entity. The deletion of a person's digital remains is to be seen as a violation against the right to independent existence, still held by the deceased person. Stokes thus mobilises an argument with striking similarity to the ones proposed by Nagel (1970), Feinberg (1974) and Pitcher (1984), which are based on the a-temporality of information. Although the state of being deleted is not better or worse than existence per se, the fact that one's data has been deleted, or illicitly manipulated, may nevertheless constitute an ethical harm. In this way, Stokes proposes a powerful philosophical defence of posthumous information privacy. But how is it to be implemented, and what does it mean in practice?

2.3.1.2 Law and Regulation

Several scholars in law (Harbinja, 2013) and digital governance (Sandvik, 2020), have suggested that digital remains are most adequately protected under the regime of human rights. Harbinja (2013), for instance proposes a time-limited extension of current data protection frameworks to also include deceased data subjects.

To some extent, these calls for action have been mirrored in law and public policy. Although recital 27 of the GDPR clearly states that it "does not apply to the personal data of deceased persons", a few European countries have added clauses in their implementing laws that protect the privacy rights of deceased data subjects. Denmark, for instance, which has the strongest protection for posthumous privacy in Europe, extends the rights provided by the GDPR for 10 years after a person's death (§ 2(5) [2018]). Similarly, Spain and Italy grant the heirs of a deceased person the right to activate some of the deceased's rights, such as deletion of certain content (unless explicitly stated otherwise by the deceased). However, aside from these limited cases, existing data protection for the deceased is alarmingly sparse across the world.

The debate on posthumous privacy, and the overall rights of the dead, is also related to issues concerning inheritance of digital artefacts (Banta, 2015; Bellamy, Arnold, Gibbs, Nansen, & Kohn, 2013). Over the past decades, there have been several disputes between firms and private

individuals over access to digital remains and other digital artefacts (Obrien, 2015). Even inheritance of private physical devices is not entirely unproblematic (Massimi & Baecker, 2010). And matters become even more difficult when assets are locked to an intangible account or stored on a cloud-based service. As Edwards & Harbinja (2013, p. 106) explain:

> In a family business, not only who inherits the domain name itself, but also who gets the e-mail notification of the upcoming need to re-register, may be controversial issues. Similarly, many outlet businesses nowadays operate exclusively on eBay and, again, who inherits that account (i.e., the password and login), the money attached to the account, and any connected on-going auctions will be a serious matter. Virtual assets in game worlds often represent the fruit of thousands of hours of labour (if game playing can be called labour) and there is already a substantial amount of ethical and legal literature regarding their value, sale and the conditions required for transferability.

As Edwards & Harbinja point out, some assets with high economic value may, at the same time, also be highly private in nature, and therefore inheritance may violate the deceased person's post-mortem privacy. There is no straightforward solution to such problems, which are inherently ethical and even political in nature.

2.3.1.3 Grief and Loss

An overwhelming majority of research on online death is related to grief and loss, and the emerging opportunities provided by digital media to maintain closer relationships to the dead (see Gotved, 2014; Walter et al., 2011). This literature has made a number of interesting findings.

One key discovery relates to the way mourners speak to the dead. Several researchers have noted that mourners tend to use the social media profiles left by the deceased, or other forms of digital remains, as a kind of token for the dead which can be addressed and spoken directly to (Kasket, 2012a; Walter et al., 2011; Marwick & Ellison, 2012). Kasket (2012), for instance, finds that 77 percent of posts on deceased user profiles on Facebook are directly addressing the deceased. Although Kasket suggests that this does not necessarily indicate that the poster actually believes that the deceased can read what they write, there are examples of messages that indicate the opposite — that mourners perceive online media as a communication channel with the dead (not unlike how Egyptians once perceived writing as a means to transcend beyond the world of the

living). For example, some posts explicitly state such beliefs, writing that "I know you are reading this" or "Sorry I haven't been around in a while to say hi" (Kasket, 2012a, p. 65).

Kasket's findings are further supported by Mitchel et al. (2012 p. 423), who found that families of deceased children keep on posting for years on their online memorials, addressing them as if alive. They also note that the posts often include "mundane elements of daily life: seasonal changes; blooming gardens; the activities and accomplishments of siblings; family members; and friends" and sometimes instructions such as "be good, keep warm, be strong". There are also some signs of mourners expecting responses in various forms — they ask for assistance, interpret signs in their everyday life as responses to their posts. Digital media, in other words, are increasingly interpreted as transcending time and space, a channel through which the dead can be contacted.

A second important finding relates to the cultural change towards openness. If modernity turned death into a taboo (see the "forbidden death" [Ariés, 1975]), digital media seems to once again bring feelings of grief and bereavement back into the light (Gibson & Jones, 2011; Walter et al., 2011). "The inevitable occurrence of death, once a taboo topic of conversation usually confined to quiet rooms in hospitals, now manifests itself publicly in mediated social spaces in the form of digital memorials" argues Church (2013, p. 184). Similarly, Walter (2015a, p. 285) finds that the role of death in the digital era reverts to something like a pre-industrial (i.e. pre-modern) village:

> Content generated and read any time, any place, brings death and mourning out of the closet, weaving it into the warp and woof of everyday life […] Memorials are no longer just a physical grave to be visited on occasion, but digital reminders that can pop up unannounced on one's mobile device at any time. The world comes to feel a bit like a pre-industrial village, in which mourners are visible to all, and tolling bells heard by all.

Whether or not this can be explained by a general movement towards emotional openness on social media remains to be seen, but there appears to be a broad consensus within the research community that grief is becoming increasingly public, even when it comes to people one may not even personally know, such as celebrities (Courbet & Fourquet-Courbet, 2014; Garde-Hansen, 2011; Gil-Egui, Kern-Stone, & Forman, 2017). There are several examples, but the most thoroughly studied is the death of Michel Jackson in 2009 and the intense social media activity that followed. Using the concept of para-social interaction (Horton & Wohl, 1956/2006), several

researchers have noted how individuals who had shaped their social identities around their fandom or personal relationship to Jackson openly renegotiated their identities by addressing him directly on various fan or memorial sites (Courbet & Fourquet-Courbet, 2014; Garde-Hansen, 2010), following the same patterns as those observed at the death of private individuals.

A third notable aspect is the importance of community. According to Roberts (Roberts, 2004, p. 57), author of one of the first studies on online grief, there are three key aspects to creating memorials online: "continuing bonds with the dead, strengthening existing relationships among the living, and creating new communities of the bereaved in cyberspace". Based on several subsequent interview studies, the latter seems to be the most central (Bell et al., 2015). Seeing that others also continue to care for the deceased is a source of comfort, and the open environment of social media, where those related to the dead can get into contact with one another, facilitates this.

It is also the community that keeps the dead socially alive. As stressed by Klass (2006), the weaving of continuous bonds is an inter-human activity which requires a social community. The dead remains alive, not only in the emotional life of bereaved individuals, but also because he or she continues to be recognised within the community. Drawing on Francis et al.'s (2005, p. 21) idea that social identity remains "so long as it can be reconstructed through the memories and actions of the living", Kasket (2012a, p. 67), writes that: "When the community of mourners gathers on a social networking site, their memories and actions serve to evolve and add to the social identity, the durable (digital) biography, that was begun by the deceased individual during his or her life". The digital afterlife described by those dreaming of "digital immortality (Bell & Gray, 2001) is, in other words, not only technological, but ultimately also *social* in nature.

In addition to the openness provided by online networks, digital media also offer the possibility to form *closed* communities for bereavement support. Hård Af Segerstad & Kasperowski, (2015) describe how bereaved parents can find support in groups devoted exclusively to sharing grief and thoughts about their deceased children. "Several respondents expressed a sense of 'safety' that stems from the closed nature of the community in a way that they feel is difficult to experience outside. This seems to be partly due to the fact that the community offers a possibility to engage solely in their grief, making other aspects of life less important" (Hård af Segerstad & Kasperowski, 2015, p. 34). Moreover, online, especially mobile, technologies make such communities accessible whenever, and wherever the member needs the support. The authors (p. 33) point out that "the

constant access to the community, regardless of time and space" is an "important and vital resource for coping with the death of a child".

Although most researchers hold that digital media, especially those that allow for online communities to take shape, are a force for good for those who experience loss (Hård Af Segerstad & Kasperowski, 2015), others have been more sceptical. Several scholars have observed trolls interfering with grieving individuals online (Marwick & Ellison, 2012; Phillips, 2017). And overall, conflicts among mourners frequently arise as different individuals wish to commemorate a deceased person in different ways (Walter, 2015a). Moreover, some researchers have even been concerned that online technologies may perpetuate grief, thus hindering mourning parents and spouses to move on (Mitchel et al., 2012). Ultimately, these are concerns relating to the *design* of such services.

2.3.1.4 Design

The internet was clearly not designed with death in mind. Thus, over the past decade HCI scholars have urged platforms to take death and bereavement into account. Early work on digital afterlife mobilised the term "thanatosensitive design" (TSD) (Massimi & Charise, 2009) to denote the inclusion of death-related features, defined as a "novel, humanistically-grounded approach to HCI research and design that recognises and actively engages with the facts of mortality, dying, and death in the creation of interactive systems" (Massimi & Charise 2009, p.6).

Discussions within TSD has generated a long list of, sometimes overlapping, sometimes conflicting, design recommendations. For example, Tsaasan et al. (2015) urge designers to take the many possible conflicts of interest into account when designing for death and dying. Mori et al. (2012) put particular emphasis on allowing the bereaved to monitor and curate the memorials of the deceased and provide nine "design considerations" which they encourage designers to consult before they design for online death. Similarly, Foong & Kera (2014) provide a list of recommendations based on Sengers, Boehner, David, & Kaye's (2005) reflective design strategy, which aims to systematically collect feedback to design. Notably, and in agreement with Edwards & Harbinja (2013), Foong & Kera (2014, p. 1) also stress that "when designing death commemorating and death memorial technologies, we have to take into account the dignity and the emotions of someone who cannot give us feedback on our choices", namely the dead themselves.

Although it is hard to estimate the overall impact of such recommendations on industry, many of them have clearly been considered in the development of Facebook's death-related features (Brubaker & Callison-Burch, 2016). As Brubaker & Callison-Burch note, Facebook was not originally designed for death and memorialisation. In fact, features such as memorialisation and legacy contacts were originally developed in response to the problems caused by online death. Thus, designing to accommodate communities around the dead, while at the same time protecting their privacy and maintaining the commercial viability of the platform is a major task.

As illustrated by the development of Facebook's death-related features, and as anticipated by Massimi & Baecker (2010), even systems that do employ a TSD framework inevitably face difficult choices and trade-offs. That is, a major task when designing for online death is making room for and negotiating between the various stakeholders and types of values involved. This is widely acknowledged. Acker & Brubaker (2014, p. 8) highlight that platforms represent "a tension of accountability and access between service providers and content creators, future users, and, perhaps most importantly, archivists". Bell et al. (2015, p. 385) highlight the tension between private and public forms of grief that arise among those who participate in online memorialisation. McEwen & Scheaffer (2013, p. 2) describe "tensions at play between the collective construction of individual digital identities/memory and the individual's curation of self on Facebook". And Massimi & Baecker, (2010, p.1826) describe the tension between functionality and aesthetics. Some have also pointed to the commercial nature of the firms accommodating online grief and afterlife as a relevant source of tension (Karppi, 2013). As argued by Karppi in his critique of Facebook memorials (2013, p.15):

> … it is possible to show that memorialized user accounts and memorial pages are Facebook's way of utilizing the dead and of granting them agency. This conversion of dead user profiles into memorial accounts 'thingifies' them; and when user profiles become things they do not only have personal or cultural value but also use-value and exchange-value (Cf. Lash & Lury, 2007: 8). The dead become a new ground for user participation.

What Karrpi seems to argue is that Facebook's interest in the value of memorialised profiles (i.e. their continuous ability to attract attention) has an influence on how the interaction with them is

structured. This idea will be key in the following chapter, but as for now, let us turn to review the theoretical frameworks underpinning the above findings.

2.3.2 Theoretical Frameworks

As is often the case when multiple different disciplines simultaneously study a new phenomenon, a plethora of sometimes conflicting, sometimes overlapping concepts and metaphors have developed within the study of online death (Gotved, 2014).

As we have seen, sociologists and anthropologists often speak about the phenomenon in terms of "digital afterlife" (Arnold, 2013; Leftwich & Obesnshain, 2015; Mitchell, Stephenson, Cadell, & Macdonald, 2014; Wright, 2014), the emergence of "post-selves" (Kearl, 2010) or "extreme users" (Brubaker & Vertesi, 2010). Post-humanists and futurist enthusiasts speak of "digital immortality" (G. Bell & Gray, 2001) and the prospect of "mind uploading" to create so called "digital ghosts" (Steinhart, 2007) or even "virtual humans" (Burden & Savin-Baden, 2019). Ethicists speak of "digital human remains" or "digital corpses" (Stokes, 2015). In the study of bereavement the online dead are occasionally referred to as "digital angels" (Walter, 2015) which occupy a semi-enchanted "digital heaven", while existentialists (Lagerkvist, 2014) speak of a "netlore of the infinite". Scholars of law tend to describe the topic either in terms of "digital estate" (Carrol & Romano, 2011), or as issues of "posthumous privacy" (Harbinja, 2013). In HCI, "thanatechnology" or "thanatosensitive design" (Massimi & Charise, 2009) appear to be the key words. This wide variety of metaphors and concepts can rightly be regarded as a strength of the field — a multitude of metaphors allows one to recognise a multitude of nuances and aspects — meanwhile, it also leaves room for conceptual ambiguity.

In addition to these rather vague metaphors, there are also several more robust theoretical frameworks and regimes at work in the field. Among these frameworks, a majority tend to emphasise the social relationship between living and dead individuals. One example is the theory of continuing bonds, a framework which predates the digital era, but has become particularly applicable to online death and bereavement. The theory of continuing bonds was originally coined by Klass, et al., (2014) in their book of the same name, and served as an alternative to the theoretical paradigm on grief during the 20th century, which emphasised closure and acceptance of death as the destination of grief. For example, the Five Stages Theory, coined by psychiatrist Elisabeth Kübler-Ross (2009), describes the grief process as a more or less linear development which

concludes with the bereaved "patient" letting go of the dead. In explicit contrast to this paradigm, the theory of continuing bonds understands the grief process as a gradual *transformation* of the relationship to the deceased, as opposed to a complete termination of it. For example, Klass et al. note that dreaming about, talking to, and continuously thinking of the dead is perfectly normal and should be understood as neither pathological nor temporary stages to "get through".

In a more recent contribution to the debate, Klass (2006, p. 848) has emphasised the "social and communal component" of the bonds to the dead. Continuing bonds has largely been interpreted as a theorisation of an individual's emotional relationship to someone who has died, but should, according to Klass (2006, p. 852) also include "the cultural narratives in which conversations with both the living and the dead are set". Before the broad breakthrough of the internet, some were concerned that the mobile and fluid nature of modernity were geographically separating mourners from each other and from the deceased. However, online technologies have instead radically facilitated the continuing bonds with the dead. As noted by Kasket (2012b, p. 67), who has developed the theory of continuing bonds in the digital realm, "the existence of social networking radically changes the constraints that geographical separation and social division formerly placed upon talking about — and, indeed, to — the dead". Taking Facebook as her main example, Kasket notes that "Facebook seems to neatly facilitate all four processes of grieving that Klass & Walter (2001) discuss and situate within continuing bonds theory: sensing the presence of the dead, talking with the dead, experiencing the dead as guides, and talking about the dead" Kasket (2012b, p. 67). In other words, the bonds between the living and the dead that were previously merely metaphorical, can now be observed visually on the interfaces of social media profiles of the deceased.

An alternative but similar theoretical approach is that of Para-Social Interaction coined by Horton & Wohl (1956/2006). In the emerging mass media landscape of the late 50's, Horton and Wohl noted that audiences formed emotional attachments to TV-personalities, experiencing them as "real" relationships. They used the term "para-social" to denote this phenomenon. Of course, para-social relationships do not necessitate electronic media. As discussed in 2.2, the written word, for instance, was integral in giving religious figures a personal presence in among the living, and as observed by Scherlock (2013, p. 158) such relationships may indeed be interpreted as para-social:

> Human beings' relationships with Jesus might be considered one of the earliest, most obvious examples of a para-social relationship — no one has met him, yet millions worldwide claim a personal relationship with a man whom many con- sider an entirely fictional character — annually mourning his death and celebrating his resurrection. Whether or not there was ever an original, he is now a very real social entity with real-world implications. (Sherlock, 2013, p.158)

Meanwhile, electronic media marks a major shift. "The most significant contribution to the development of the para-social relationship would certainly be the invention of the Internet and social networking sites" adds Scherlock (2013, p. 158). For instance, several scholars have noted that when mediated by online media, para-social relationships with celebrities often extend far beyond the lifetime of the person in question (Gil-Egui et al., 2017). Whereas some contrast para-social sense of loss with "real" grief (Klastrup, 2015, p. 157) most seem to regard it an authentic type of relationship. Since it refers specifically to relationships without a face-to-face foundation, the concept of para-social relationships has become particularly popular among scholars researching online responses to celebrity death (Courbet & Fourquet-Courbet, 2014; Garde-Hansen, 2011; Gil-Egui et al., 2017). It is less used in studies on private relationships than the theory of continuing bonds.

Other theoretical frameworks have put more emphasis on the technologies that mediate the dead than the individuals who use them. Technology always embodies certain values (Friedman & Kahn, 2003; Nissenbaum, 2001). This is now considered a well-established fact within the Human Computer Interaction (HCI) literature. Thus, the debate now no longer concerns *whether* but *what* values systems or technologies embody, and for whom they are designed. Naturally, this applies to digital afterlife as well. As Acker & Brubaker (2014) point out, digital platforms always privilege certain types of use that in turn serve particular ends "e.g., commercial viability, vendor lock-in, or enrolling new users". And as such, they are not neutral.

As mentioned above, early work on digital afterlife mobilised the term "thanatosensitive design" (TSD) (Massimi & Charise, 2009, p. 6), a "novel, humanistically-grounded approach to HCI research and design that recognises and actively engages with the facts of mortality, dying, and death in the creation of interactive systems". Massimi (2012, p. 189) has since refined the concept further, clarifying that TSD in no should be interpreted as a step-by-step procedure, nor a property

of a particular artefact. Rather, TSD should be understood as a lens or an approach to design, as well as a "domain" of interrelated concerns around death.

Whereas TSD has been frequently employed to generate recommendations for firms and designers (Massimi & Baecker, 2010; Mori, Gibbs, Arnold, Nansen, & Kohn, 2012; Ellis Gray, 2015), the primary concern of these recommendations remain care for the bereaved and facilitating digital inheritance. The notion of TSD has thus been criticised for being too anthropocentric, in the sense that it privileges the experiences of living individuals facing death (their own or a loved one's) as opposed to those already deceased or collective identities. Ellis-Gray (2015, p. 2009) for instance, writes that:

> TSD does not recognise or attend to the non-living and non-human presences and agencies that have become visible through my findings chapters. Reflexively, my findings are asking designers to question this ethicopolitical landscape in order to pay attention to the diverse and heterogeneous range of elements that are currently missing from the TSD frame.

This line of reasoning follows a pattern which has also been more prevalent in ethics (Stokes, 2015), namely a bigger focus on the rights and dignity of the dead. Overall, the critique reveals a tension within TSD. Designing for death can both mean designing for the benefit of the bereaved but can also refer to design for the benefit of the deceased. And those two do not necessarily always align. Hence, designers will sometimes be forced to privilege one interest over the other. That is, they need to put one value over the other, or in any case adopt some trade-off.

Of special interest to this thesis are the trade-offs involving economic values. Unfortunately, this remains the most under-theorised of the tensions mentioned. Karppi (2013), whose findings I discussed above, comes closest to such a perspective. Applying the concepts of biopolitics and noopolitics as understood by Foucault and Munster, Karppi (2013, p.2) outlines "two specific models of politics that operate behind the Facebook platform: biopolitics and noopolitics" which he describes as "politics that address the economic, biological and spiritual life of a population and politics that address ways of living, feeling, thinking and acting through mediated technologies". What Karrpi seems to argue is that social media's (in the case Facebook's) interest in the exchange value of memorialised profiles has an influence on how the interaction is structured. I too shall expand upon this idea in this thesis, particularly in chapter 4.

Before turning to review the methodological approaches in the field, let us first summarise. It is remarkable that, in contrast to, for example, the debate on posthumous harm, there are no clear lines of conflict within the theoretical landscape of Online Death Studies. Although different theoretical approaches place emphasis on different aspects, current literature is strikingly devoid of disagreement. More concerning, however, is that none of the theoretical frameworks lend themselves particularly well to a critical approach, at least not in the economic sense, and certainly not on the macro level. For example, the philosophical arguments regarding the status and rights of previous generations, reviewed in 2.2.1, are rarely (if ever) brought into dialogue. Moreover, the current approaches may well be analytical, but still do not offer any clear normative stance, which makes them insufficient as a critique of the various interests shaping the phenomenon. As we shall see in the following section, this limitation may be explained by the nature of the data with which researchers have worked.

2.3.3 Methodological Approaches

An adequate empirical foundation is a precondition for theoretical analysis of any social phenomenon. We cannot theorise what we do not know to exist. So, what types of data have researchers used thus far? And what have been their methodological approaches in collecting that data?

The field of Online Death Studies has hitherto pivoted heavily towards qualitative methodologies, generally guided by some notion of methodological individualism. The most commonly used methods are structured (Choudhary, 2018) and semi-structured deep interviews (Acker & Brubaker, 2014; Bell et al., 2015; Brubaker, Hayes, & Dourish, 2016; Gulotta, et al. 2014; Kasket, 2012ab; McEwen & Scheaffer, 2013; Phillips, 2017), typically with some form of phenomenological framework. The number of respondents varies greatly depending on the project and the depth required. A pioneering study by Kasket (2012a) used only three respondents (although in combination with analysis of posts), whereas a more recent investigation (Choudhary, 2018) uses 60.

Although various forms of interviews are by far the most commonly employed method, there are also examples of other approaches to get to the lived experience of the phenomenon. Some researchers have for instance collected comments left on memorials (Brubaker & Vertesi, 2010;

Marwick & Ellison, 2012) and other types of "natural" data (Lingel, 2013). Such studies typically work with a corpus of several hundred comments, but rarely engage in more sophisticated statistical modelling. A third way of getting to people's lived experience and meaning making is inspired by anthropological methods. Wang & Gloviczki (2008) conducted an ethnographic exploration of Facebook groups for online memorialisation. O'Connor (2018) devoted an entire doctoral thesis to a deep study of one family's use of technology in making sense of the departure of their daughter/sister, using a narrative approach.

Some qualitative approaches have been less focused on lived experience, and target instead the environments in which the phenomenon occurs. There are several examples. Some researchers use design as part of the research process, and interview respondents who have used their new artefact (Gulotta et al., 2013; Uriu & Odom, n.d.). Indeed, some practically oriented scholars have even conducted workshops wherein they co-design memorials alongside participants (Moncur & Julius, 2015). Others instead look at comments as a type of response data to design of various sites, thereby analysing what kinds of interaction the sites allow for (Mitchell et al., 2012; Mori et al,. 2012). As I have discussed above, these types of methods have resulted in several more theoretically oriented discussions on design for digital legacy (see for instance the above discussion on TSD).

Despite the dominance of qualitative methods, there are several exceptions. For example, many multi-methods studies include smaller surveys (Massimi & Baecker, 2010; McEwen & Scheaffer, 2013; Roberts, 2004) although usually not large enough for statistical inference. A smaller number of studies use samples big enough for statistical analysis. For example, Grimm & Chiasson (2014) conducted an online survey in four countries including 400 respondents, in which they investigated differences in attitudes to the fate of their digital remains. Other surveys have instead targeted social media users to measure the frequency and level of engagement in online memorials (Egnoto, Sirianni, Ortega, & Stefanone, 2014). Although quantitative in nature, these surveys do nevertheless rely on self-reported human experience. Some quantitatively oriented papers have therefore steered away from the dependency of self-reported data.

For example, Castro & Gonzalez (2012) measure the activity on deceased Facebook profiles before and after the event of death, although their sample is limited and possibly biased (they only use four profiles). Brubaker & Hayes (2011) employ a similar approach by scraping comments from

Myspace profiles of deceased people. Their sample is considerably larger (205,068 comments from 1,369 profiles) and allow them to build proper plots over the temporal distribution of posts to the dead profiles. Brubaker has also been part of another study with a novel methodological approach studying online death — the transition from being classified as living to being dead on Wikipedia (Keegan & Brubaker, 2015). Scraping 458,818 revisions from 116,010 unique editors of a set of 3,738 articles, the authors are able to analyse who is involved in the transition from an alive to a dead member of the social community. This makes it one of the few studies to widen the scope of analysis, but their conclusions remain largely on the individual meaning-making level.

Despite these exceptions, the opportunity provided by digital media to study human behaviour directly through user data as opposed to self-reported data has been strikingly under-utilised. Moreover, it is clear that the dominant methodological stance of current literature falls within methodological individualism (see Samuels, 1972). That is, researchers have mainly considered the *meaning* of the communicative actions directed towards the dead, not necessarily the larger systems and social infrastructures within which these interactions take place. Even when working with quantitative data, the research understands the presence of the online dead as the totality of the presence of a large number of deceased individuals — no more, no less. Grimm & Chiasson (2015) and Keegan & Brubaker (2015) seem to be the only notable exceptions. While not an outspoken stance, this notion clearly underpins much of the research in the field. And as I explain in the conclusion below, it is to be regarded as a limitation, not because there is anything wrong with methodological individualism per se, but because it does not tell the whole story. No unique or single approach does.

2.4 CONCLUDING REMARKS

The goal of this chapter was to review what we currently know about the online dead. So, what is the state of current research literature on the topic?

On the one hand, scholars have generated a deep and complex understanding of the centrality of the dead in human civilisation (Harrison, 2010; Laqueur, 2018; Ruin, 2019). As we saw in 2.2, the dead are, in many ways, what makes us human (Harrison, 2010), and consequently their presence in society has been abundantly theorised. Arguments range from the historical origins of this presence (Spellman, 2015; Laqueur 2018), to its technological contingency (Walter, 2015b), and its political and moral implications (Burke, 1790/2018; de Bates, 2004). Although, as we saw in 2.2.2,

philosophers still debate to what extent it is rational to care for the dead (Feinberg, 1972; Feldman, 2000; Taylor, 2008), they nevertheless seem to stay with us, one way or another. The question is, as Ruin (2019, p. 195) has it, under what conditions. In short, the literature investigating the role of the dead in society provides a deep and thorough basis for critical thinking.

The particular study of the *online dead,* on the other hand, has been perceived as a rather niche topic, or a matter of individual significance. With few exceptions, most angles relate to the lived experience of grief and bereavement (Kasket, 2012ab; Bell et al., 2015). Even the ethics (Stokes, 2015), and regulatory debates (Harbinja, 2014) concern mainly the rights of deceased individuals. As such, we seem to know a lot about the effects of connected technologies on the lived experience of loss (Bell et al., 2015; Kasket; 2012a), on our the continuing bonds with the dead (Shecklock, 2013;), and the new norms of grief that emerge as a consequence (Courbet & Fourquet-Courbet, 2014; Gil-Egui et al., 2017), but very little about its effects on the larger role of the dead in society. The problem is not that researchers have failed to "think big". Indeed, a large portion of the discourse is dominated by trans-humanist dreams of digital immortality (Bell & Gray, 2001). The problem is rather the lack of *societal* and *critical* perspectives on the topic. There is, in other words, little dialogue with the macro-level arguments reviewed in the first part of this chapter. Hence, we are unable to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains, nor can we develop adequate policy frameworks to combat such threats.

I suggested that this inability stems from a lack of adequate theoretical tools. Despite an abundance of theoretical constructs and ways of conceptualising the topic, there is still room for considerable conceptual ambiguity in the field. What exactly does it mean to say that the dead remain "present" online? What, exactly, is the ontological and ethical status of the data that they leave behind? And what are the consequences for society? Despite the philosophical interest in the role of the dead in society (Harrison, 2010; Laqueur, 2018; Ruin, 2019 to name but a few examples) contemporary literature on death online has not yet tapped into this debate, and this prevents a critical macro theory from emerging. This may in turn be a consequence of inadequate empirical data. Although multi-faceted, current research methods within the study of online death have mainly focused on the micro and meso-levels. It is dominated by methodological individualism, and has yet to develop a more holistic stance.

In short, the reason that we are ill equipped to face the challenges of digital remains, is because we have not yet properly explored what exactly they are and how to understand them. To achieve such an understanding, or at least the basis for such an understanding, is the principal goal of this thesis; to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. This objective is not a response to a pre-defined problem in the literature, but rather a way to open new horizons of inquiry within the study of online death. As such, this thesis focuses on a relatively narrow topic — it is a contribution to a budding literature devoted to a rather specific phenomenon. Yet, at the same time, it is a contribution to an ancient debate which spans across thousands of years, on a topic which inevitably concerns each of us. It could not possibly be broader.

CHAPTER 3: THE POLITICAL ECONOMY OF DEATH IN THE AGE OF INFORMATION

Abstract*:* Online technologies enable vast amounts of data to outlive their producers online, thereby giving rise to a new, digital form of afterlife presence. Although researchers have begun investigating the nature of this presence, academic literature has until now failed to acknowledge the role of commercial interests in shaping it. The goal of this chapter is to analyse what those interests are and what ethical consequences they may have. This goal is pursued in three steps. First, I introduce the concept of the Digital Afterlife Industry (DAI), and define it as an object of study. Second, I identify the politico-economic interests of the DAI. For this purpose, I develop an analytical approach based on an informational interpretation of Marxian economics. Third, I explain the practical manifestations of the interests using four real life cases. The findings expose the incentives of the DAI to alter what is referred to as the "informational bodies" of the dead, which in turn is to be seen as a violation of the principle of human dignity. To prevent such consequences, I argue that the ethical conventions that guide trade with remains of organic bodies may serve as a good model for future regulation of DAI.

Note: This chapter is based on two articles: (Öhman & Floridi, 2017) published in *Minds & Machines* and (Öhman & Floridi, 2018) published in *Nature Human Behaviour*. The material has been extended and adapted to a chapter-like format. For further details on Professor Floridi's contribution to these studies see Appendix 1.

3.1 INTRODUCTION

The dead are becoming increasingly present in cyber space. Within the next three decades alone, an estimated 2.2 billion people will die (United Nations, Department of Economic and Social Affairs 2017), many leaving behind a considerable online presence. Despite a growing body of academic literature on this phenomenon (Graham et al., 2013; Gotved, 2014; Walter et al., 2011), its economic and ethical aspects have hitherto drawn little attention. In particular, there is a lack of critical economic approaches in the literature (Meese, Nansen, Kohn, Arnold, & Gibbs, 2015,

p. 416). Both sociological (Mitchell et al., 2014; Walter 2015a) and legal studies (Mayer-Schönberger 2009; McCallig 2013) have mainly focused on cultural and social practices regarding death online, thus leaving economics and ethics relatively unexplored.

As a result, current research on digital afterlife tends to neglect the fact that the online presence of the dead is generally mediated by *commercial* platforms. This is problematic, considering the recent growth in the industry. There is a plethora of start-ups now investing in death online, and tech giants are also beginning to join the trend. Facebook, with its more than two billion (living) users, has made significant advances in supporting users who wish to mourn and stay in touch with the profiles of the departed (Facebook, 2020). Likewise, Google recently launched an "inactive account manager" to deal with the inevitable deaths of its users, thereby following in the footsteps of numerous digital afterlife start-ups.

In this chapter, I provide a deeper empirical and theoretical understanding of death online by introducing the concept of the Digital Afterlife Industry (DAI) as an umbrella term for firms that commercialise the "digital remains" (Lingel, 2013) of deceased internet users. I also provide a framework to identify the economic interests of such firms, as well as their ethical consequences. The chapter is guided by the following research questions:

1. *What is the DAI and what types of services are operating within it?*
2. *What are the political and economic interests of the DAI, and what ethically undesirable consequences may arise from them?*
3. *How do these interests materialise?*

These questions are posed from what one may refer to as an infra-ethical perspective (Floridi 2013a, b). That is, they address the intersection of ethics and design. Answering them should put us in a better position to design social and economic infrastructures as a response to the undesirable consequences that are identified in this chapter.

3.2 THE EMERGENCE OF AN INDUSTRY

Popular debates on digital afterlife commonly reference the episode "Be right back" from the British TV show Black Mirror (see for example Solon, 2018; Humphries, 2018). The episode, which aired in February 2013, on Channel 4, is centred around a woman named Martha, who in

the beginning of the episode loses her boyfriend (Ash) in a car accident. After the funeral Martha learns about a company that offers to create a chat-bot based on the Ash's data profile. Due to Ash's frequent usage of his electronic devices, the chat-bot replica turns out to be surprisingly accurate, and after some time communicating with it, Martha upgrades to an audio version using recordings of Ash's voice. Finally, she even decides to order a complete humanoid robot based on Ash's data profile, which she keeps in her attic.

"Be right back" asks difficult questions of life, death and mourning, and as such it is unsurprising that it has become such a common point of reference. However, a detail which is seldom acknowledged is the fact that in each instance Martha chooses to upgrade, the option is first introduced by the bot itself; it is the chat-bot that promotes the voice service, and the voice service in turn promotes the humanoid robot. In other words, robot-Ash is both a product and the seller of that product. Whereas services like the one depicted by Black Mirror still belong in the world of science fiction, the episode still illustrates the complex relationship between ethics and economics of commercialising digital remains.

Commercial enterprises were in fact among the first to recognise both the challenges and opportunities brought about by the increasing numbers of dead internet users. As put by venture capitalist Dave Balter (quoted in Engel 2015), the "death industry" has become "ripe for disruption". At first, however, dealing with dead users appeared to pose a problem for businesses (McCallig 2013, p. 11), but this soon gave rise to the development of a number of innovative services. Since 2010, a plethora of start-up companies have explored the possibility of making a "business" of death online (see Appendix 5 for an overview), ranging from rudimentary password boxes to more sophisticated attempts to create avatars like the one in the black mirror episode.

What started in the start-up world soon became standard also within big tech. In 2009, for instance, Facebook began to allow bereaved family members to turn the profiles of their lost ones into memorial sites, spaces to meet, mourn, and collectively "keep in touch" with the deceased (Facebook 2016). Since then, Facebook has introduced a number of death-related features, perhaps most notably a "legacy contact" (Brubaker & Callison-Burch, 2017), which allows users to appoint another Facebook user who will become the custodian of their account upon death. Similarly, Google launched what they call an inactive account manager, which automatically

informs the user's network about his/her death. Regardless of their niche and size, these examples show that the online dead increasingly are mediated by commercial platforms.

Because of its novelty, and despite the significance and magnitude of the issue, very little is currently known about the commercial aspects of digital afterlife. For instance, in Graham et al.'s (2013) introduction to the pioneering special issue on Death, Afterlife and Immortality of Bodies and Data in the journal *The Information Society*, the economic perspective was almost entirely absent. The same goes also for later reviews of the field (Gotved, 2014). While some, such as Aceti (2015, p. 7) have touched upon the connection between digital afterlife and capitalism, only two recent studies make explicit references to the economic aspects: Karppi (2013) and Meese et al. (2015).

Karppi (2013) argues that social media sites are incentivised to keep dead users' information within their data economy rather than deleting it. Taking Facebook as his primary example, he further (2013, p. 14) claims that in the "noopolitics" of the site, the dead become "nodes that open up to other nodes and other agencies" in a networked economy. This role of the dead as nodes "thingifies" them and is argued to be the reason behind Facebook's decision to memorialise profiles rather than deleting them (Karppi 2013, 14). On a similar note, Meese et al. (2015) speaks of an increasingly commercialised discourse of death in social media, arguing that this causes a "commercial and social push for the preservation of posthumous personhood" (Meese et al., 2015, 416).

Despite touching upon the topic of political economy, neither Karppi, nor Meese et al. directly address the ethical dimension of the matter, nor do they acknowledge the industrial nature of digital afterlife existence of today, for which I account in the following pages.

An interesting antecedent to the topic is celebrity culture, where the industrial commercialisation of the afterlife is a well-known phenomenon (Neate 2014; Sherlock 2013). Celebrities may indeed continue to be profitable after their death. According to Forbes (2015), an artist like Michael Jackson has, for example, has "made" more than $140 m since his death in 2009. Likewise, John Lennon has posthumously made $12 m and Albert Einstein $11 m. Depending on the available ICT (Information and Communication Technology), notable individuals have always been able to remain present in society (Walter, 2015b). The book, for instance, allowed previous generations to

sustain so called "para-social" (Sherlock 2013, 168; Horton & Wohl, 1956/2006) relationships with historical figures like Jesus Christ or Mohammed the Prophet.

However, the digital ICTs of today magnify the phenomenon immensely, not just in terms of the number of people who are afforded a posthumous presence, but also because digital memory affords much larger quantities and different kinds of information to outlive its producer. It thus gives rise to new forms of presence of, and communication with, the departed such a hologram performances, and posthumous commercials (see for instance, the artist Prince and Elvis Presley), but also to new communities that emerge online to curate their memory (Church, 2013).

Digital and social media do not simply change the way celebrities are mourned and made present in society. As compellingly argued by Marwick (2013), they allow anyone with a connected device to employ celebrity-like strategies of communication. Subsequently, it can be argued that what was previously a celebrity privilege — to have an audience and a recorded life — has become democratised. This also implies that, as social network users leave their information behind online when passing away, the kind of informational afterlife existence that was previously reserved for celebrities are now also becoming increasingly available to the general public (Walter, 2015b).

As has been the case with celebrity royalties and copyright, legal conflicts have begun to appear also over the informational assets left behind by ordinary internet users (Wright, 2014; Lingel, 2013). Since most user-generated content is co-owned by the platform on which it is stored, internet corporations often get full rights to user information upon the event of death (O'Brien 2015), which causes situations that closely resemble the typical conflict between record labels and family members of deceased music artists (O'Brien, 2015). Digital policy scholars have therefore repeatedly highlighted the alarming lack of legislation needed to address the conflict over data heritage (Carroll, 2015; Laouris, 2015; McCallig, 2013; Mayer-Schönberger, 2009). In most countries, courts have no specific instructions regarding the issue, and therefore no guidelines to follow when endeavouring to reach a decision. The only exceptions can be found in the United States, where initiatives are currently being developed to create a federal standard (Carrol, 2015).

Apart from the legal issues, digital technology has also, as in the case of celebrities, given rise to new practices of grief (Brubaker et al., 2013; Kern et al., 2013) and even a societal reconceptualisation of death itself (Sherlock, 2013). For example, Mitchell et al. (2014) found that

parents who create online memorial sites for their deceased children often keep the communication going for years after the child's death, indicating that even small pieces of information may function as surrogate for the deceased. Mitchell et al. (2014) explain this phenomenon as a result of the unique affordances of online technologies, in which the deceased may appear almost as if still alive, and they do subsequently warn against over usage of online memorials.

Despite the pressing nature of the issue, internet users have, according to a study by Grimm and Chiasson (2014), paid little attention to questions of their digital afterlife. When asked, however, users are significantly more positive about having their data managed by non-profit organisations than corporate business (Grimm & Chiasson 2014, p. 7). Furthermore, a majority of users even prefer their information to be destroyed after dying (Grimm & Chiasson 2014, p. 7), an option strongly advocated by law scholar Victor Mayer Schönberger in his *Delete: the virtue of forgetting the digital age* (2009).

In summary, commercialism is clearly a concern for consumers, and yet, nearly every aspect of death online is imbued with it. Matters of communal grief, as well as management of digital assets and the ethical and ontological status of digital remains are all concerns that are related to phenomena observable on, and therefore influenced by, commercial platforms. Despite this common denominator, there is yet no systematic analysis of the economic aspects of the phenomenon. In order to understand the dynamics of digital afterlife fully, an economic approach is therefore an essential building block. To begin structuring such an approach, the industry first needs to be mapped out.

3.3 THE DIGITAL AFTERLIFE INDUSTRY AS AN OBJECT OF STUDY

In contrast to previous literature, I regard commercialisation of digital afterlife as a specific object of study in its own right. I shall refer to it as the Digital Afterlife Industry (DAI), an umbrella neologism that covers commercial enterprises that monetise death online. I define the DAI using three necessary and sufficient criteria.

The first criterion is *production*. In order to be classified as an industry, some form of good or service needs to be produced, which distinguishes the DAI from activities without a productive outcome such as private, unrecorded grief. The second criterion is commercialism. Firms

operating within the DAI produce goods, services or experiences (such as grief or closure) for the purpose of making *profit*, dealing with what they produce as commodities.[4] This excludes non-profit actors such as religious communities and self-made memorial sites, and also charities that, despite being productive (first criterion), do not aim to make profit. The third and last criterion is usage of so called *digital human remains* (Stokes, 2015). This refers to any informational content left by the deceased online, and distinguishes the DAI from three other types of industries: (1) commercialisation of physical funerals and offline digital activities, such as recorded audio messages and digital images on tombstones (Cann, 2013); (2) biological immortality projects that enhance the durability of the organic body; and (3) businesses that deal with digital remains of non-human animals. Given the above criteria, the DAI can be formally defined thus:

$$DAI =_{\text{def.}} \textit{the productive usage of digital human remains for commercial ends.}$$

The term "usage" requires some further specification. On a practical/concrete level, it simply refers to the specific aspect of digital afterlife that is addressed by a service, to whom the product is sold, and the need, which it is meant to fulfil. On a more abstract level, "usage" rather refers to the role of digital remains in the production process, which remains invariant as technology develops. Let us first look closer at the former.

3.3.1 Cataloguing the Digital Afterlife Industry

There have been previous attempts to put services within various categories (Foot, Warnick, & Schneider, 2005), but these are almost exclusively with regards to memorial sites. Comprehensive and systematic categorisations of the firms operating within the industry are thus rare, even if tutorials on the variety of services exist (Meese et al., 2015). As far as academic literature goes, the only systematic attempt to categorise different digital afterlife services is a short conference paper (de Oliveira, Reis, & Amaral, 2015). Despite lacking a clear definition of the industry, the paper suggests four types of services: (A) Messaging Services, (B) Online Memorials, (C) Digital Heritage Management, and (D) Data Mining[5]. While appearing intuitively accurate, these types lack empirical grounding as the authors do not present any methodology nor the process of producing

[4]As defined by Marx (1867/2015, 27), a commodity is (contrary to other forms of goods) an object or a service that is *produced for commercial purposes*.

[5] My translation.

the types. They are therefore difficult to operationalise and lack strict definitions. To obtain a more rigorous taxonomy, a systematic re-examination of the industry is necessary.

To ground the categorisation in empirical data, I collected information about an initial list of 57 different firms using three main sources: (1) the list provided by the digital afterlife blog Thedigitalbeyond.com; (2) the list used in de Oliviera's study; and (3) the top 50 hits on Google with the search terms "digital afterlife service". The firms were then organised in a three-step procedure, with focus on the product offered to the users, i.e. the practical usage (see Appendix 5).

In the first step, a short summary of the product/service offered by each firm was added to the list. As some firms offer more than one service, the total number of services/products offered numbered 72. In the second step, the 72 products/services were merged into 14 general groups. For example, all services providing some kind of posthumous emailing (regardless of price and product design) were merged into one particular group, defined as "Posthumous emailing", as were services that in some way keep the user's profile posting on social media ("Posthumous Social Media Messaging"). The third step collapsed the 14 categories into four broad types: (A) Information Management Services, (B) Online Memorial Services, (C) Posthumous Messaging Services and (D) Digital Resurrection Services. For example, groups involving emailing, continuous social media presence and posthumous video communication were collapsed into the broader type "Posthumous Messaging Services". While the outcome of this procedure largely overlaps with the types suggested by de Oliveira et al. (2015), the new definitions add considerable rigour and grounding in empirical observation, as well as transparency of method (see again Appendix 5). Below follows a brief summary of each category.

(A) Information Management Services

Definition: *Services that help users deal with problems regarding digital asset management that may arise following their own or someone else's death.*

Information management services create a form of digital will for their users, and ensure that assets are passed on (or destroyed) upon the event of death. Such services are typically delivered by small start-up companies like Everplans or Passwordbox.com. However, as Google recently introduced

their "inactive account manager" feature, many firms have become rather obsolete. At the same time, Google's entry to the industry increases the significance of the market as a whole, as it becomes a part of the Gmail package, used by more than 1 billion people globally (Miller, 2016).

Google's entry also makes it difficult to estimate the amount of capital that is being invested in the Information Management market, especially since their services are technically "free". Yet, a report released by the online security company McAfee (Smith, 2011) showed that people on average put a value of $37,000 on their digital assets ($55,000 for Americans). This certainly indicates that there is profit to be made. Recent investments are pointing in the same direction; in 2014,[6] Everplans received $3.45 m in venture capital, likewise the venture capitalist OMERS Venture has since invested $6 m in the platform Passwordbox, to mention only a few.

(B) Posthumous Messaging Services

Definition: *Services that, upon the death of the user, deliver online messages or other digital communicative content to appointed recipients.*

The typical service sends out a message to the users, which, if unanswered, triggers a number of messages and/or other forms of digital content to be sent out to a certain number of recipients. Many firms that offer posthumous messaging combine it with some form of information management. It can be seen as a form of emotional life insurance in that one's last wishes and secrets will be passed down after one dies. In contrast to the Information Management Services, this kind of service has not been adopted by any of the mainstream firms. Whereas one or two messages are often free, almost every site has a premium version that varies in prices from $10 to $50 per year, according to our investigation.

(C) Online Memorial Services

Definition: *Services that provide an online space for a deceased individual or group to be mourned and/or commemorated.*

[6] This may not seem very recent in 2020, but this text was authored in the first half of 2016.

Online memorial services often include features such as logs and other forms of communication channels where the bereaved can mourn together as well as interact with the digital remains of the deceased. Users (bereaved friends and family) often upload photos, videos and other forms of informational entities, which function as a form of digital grave. This kind of service is typically delivered by a start-up with around 50,000 users. Many services advertise themselves as free, but almost without exception there is some form of paid "premium" version. Similar to Google's entry to the Information Management Services, memorial start-ups are competing with Facebook, which currently hosts a vast majority of online memorials (despite the fact that memorials are not Facebook's primary purpose). As there are well over 2 billion current users who are yet to die, Facebook-memorials are facing a prosperous future.[7]

(D) Digital Resurrection Services

Definition: *Services that use personal data in order to generate new content replicating a dead person's social behaviour.*

Digital Resurrection Services assemble digital remains in order to re-create the personality of the deceased using predictive analytics/AI. Unlike simple messaging services, they do not just post previously produced data, but actually generate new content based on one's online behavioural patterns. The social network Eter9 for example, uses AI to create a virtual duplicate of the user, which is active in his or her absence. Unlike the above categories, this kind of feature has (for obvious reasons) not been adopted by the mainstream technology giants. Similar to the previous types though, digital resurrection services are typically provided by an (often unstable and short-lived) start-up company. The first commercial project, Virtual Eternity, was founded in 2012, but soon went out of business as they only managed to attract about 10,000 users. Lately, firms that are more successful have begun to emerge; for example, Eter9 has managed to increase its user base from 7 to 50 thousands during the last 6 months (at the time of writing, 2016). Similarly, MIT start-up Eterni.me has currently about 47,000 beta-subscribers.

[7] As I elaborate below, Facebook is difficult to classify due to their business model.

To summarise these categories, Table 1 illustrates the four types as a gradual progression of interactivity, i.e. ordered by degree of posthumous presence. While this does not represent the only possible way to organise said categories, it is the one that best illustrates the above summary.

Among the types of firms described above, there are also different modes of monetisation. Some use a "free of charge" model, selling targeted ads instead. Others offer products for consumers to purchase. But regardless of how they go about doing so, they all share an interest in monetising death online, using digital remains as a means of making a profit.

	Digital remains as estate	**Digital remains as preserved memory**	**Digital remains as communication**	**Digital remains as artificial agent**
Information Management Services				
Online Memorial Services				
Posthumous Messaging Services				
Re-creation Services				

Table 1. Progression of posthumous online presence

Until now, the kind of systematic mapping and definition of the industry outlined above has been missing from academic literature. Yet, as pointed out before, the services are only described from the perspective of their *concrete* usage of digital remains. To identify the *general* economic interests of the industry, independent of its current manifestations, one needs to consider the conceptual level too.

3.4 OUTLINING A CRITICAL APPROACH

An economic critique of the industry cannot solely rely on empirical data, which is tied merely to the current firms on the market. Instead, our analysis must address the economics of the phenomenon on a *conceptual* level, investigating what is independent of the current market. To do

so I use the concepts of living and dead labour coined by Marx (1867/2015, p. 163), (also used by Chung (2015) in a study of visualisation of the (un)dead in digital cinema).

Furthermore, the critical angle of this study requires an ethical dimension to be included in the analysis, which has largely been missing in previous research on the politics of the online dead (Aceti, 2015; Meese et al., 2015; Karppi, 2013). To extend the economic analysis into the realm of ethics, I therefore employ Marx's concept of the *inorganic body* and the theory of its alienation, as outlined by Marx in the Economic and Philosophic manuscripts of 1844 (1932/2000). However, instead of adapting a Marxist approach fully, I develop Marx's economic metaphor of the inorganic body into an ethical critique by bringing it into dialogue with Floridi's (2013a, b) interpretation of personal identity, thus interpreting Marx's inorganic body as analogous to an *informational body* (Stokes, 2015).

3.4.1 Conceptualising the Economic Role of Digital Remains

In Marx's economic philosophy, the activity of human work is sometimes referred to as *living* labour. The product of labour, which according to Marx is to be regarded as a form of congealed or crystallised activity, is referred to as *dead labour* (Marx 1867/2015, p. 163). When accumulated and commodified, such congealed (dead) labour becomes *capital*. Capital in turn, can either be fixed, as in the case of machines or a factory, or circulating as in the case of money.

When someone who owns capital invests in some means of production or in any form of resources, it becomes necessary for them to put these to use to produce more value: For a capitalist seeking to make profit, tools (such as a saw) are useless unless worked by a labour force to produce new objects (commodities), such as a spinning wheel. However, the spinning wheel is just like the saw: if not sold or worked by another (human) labour force it too has no use for the capitalist. Therefore, even more labour power is demanded for the two objects to remain productive. Someone who has invested in a large number of tools must therefore make the investment worthwhile by ensuring they are worked by human labour (or face bankruptcy) which in turn leads to a bigger demand for growth. Hence, capital is sometimes likened to an *undead* creature, which "vampire-like, lives only by sucking living labour, and lives the more, the more labour it sucks" (Marx 1876/2015, p. 163). In other words, dead labour demands living labour (human work) in order to stay productive.

In the context of the DAI, the metaphor of the undead can be interpreted rather literally. When used in the process of creating value, the digital remains actually become a form of undead agency that demands life activity (labour) from the living to continue to live, that is — remain productive. Storing digital remains always entails some form of investment, either in the form of server space, or in the form of man power to curate and administer the data. To make this investment worthwhile, a firm must therefore keep increasing either the sales of the remains, or consumers' interaction with it. Even "free" services such as Facebook have an incentive to attract consumers who produce surplus attention to be sold to third parties (see Fuchs & Sevignani, 2013). Firms using digital remains have an interest in increasing *any* form of (productive) posthumous interaction. Consequently, I propose that digital remains can be understood as a form of capital, an undead creature that demands human life activity — living labour — in order to remain productive.

However, Marx does not only provide concepts to describe the production process. He also ties this analysis to a normative standpoint, what one may regard as a form of ethic. For production, according to Marx, is always also a self-poetic activity. In producing objects, one simultaneously brings oneself into being — what Marx refers to as one's *inorganic body* (1932/2000, p. 32):

> The object of labor is, therefore, the objectification of man's species-life: for he duplicates himself not only, as in consciousness, intellectually, but also actively, in reality, and therefore he sees himself in a world that he has created. In tearing away from man the object of his production, therefore, estranged labor tears from him his species-life, his real objectivity as a member of the species and transforms his advantage over animals into the disadvantage that his *inorganic body* [my emphasis], nature, is taken from him.

In the process of production, one's inner nature is objectified, ("duplicated") in the material object of one's labour. Consequentially, the loss of control of what and how one produces (as in the capitalist mode of production), is also the loss of control of one's inorganic body — oneself. When forced by the market to shape himself in a certain way, man thus becomes alienated from himself (Marx 1932/2000, 32). Alienated, meaning that he becomes a stranger to himself, losing what makes him human, his inherent right to shape his identity. This is where economics ties into ethics.

As for the DAI, the estrangement of man appears to take place after death. It lies in the fact that digital afterlife services have an incentive to shape one's digital remains, the product of one's work and online identity, according to what is profitable. That is, in order to attract more consumers (either paying with attention or money) services must shape and display digital remains to optimise profit. Regardless of business model, of weather a firm is charging consumers or providing "free" access (i.e. consumers pay with their attention) to the digital remains, it must display this data in a way that will attract consumers. Consider, for instance, the following hypothetical scenario: Two firms (A and B) compete on the same market. Both deliver a product that displays digital remains of a deceased person. Assume that firm A's display of the deceased takes a plurality of values into consideration, while firm B' display is guided solely by profit. Which firm is more likely to reach greater market success? In a capitalist market, the latter is. Because capitalism is a system which can appreciate only one form of value: money. Even if one were to argue that not caring about profit renders the highest market success, then not caring about profit is, in a contradictory way, the most profitable option.

A consumable representation is (albeit related) not synonymous to a neutral one. Take for example the custom of decorating tombstones with photos of the deceased, that exists in some countries. Naturally, photos depicting happy moments in a person's life are far more popular than realistic ones representing their final stage of life. The dead are depicted the way the bereaved want to remember them, not necessarily how the dead wanted to be remembered, and hardly ever as they could be remembered in the last day of their lives. (For a more detailed analysis of how economics may influence the depiction of suffering and death, see Montoya's (2012) analysis of images used in aid organisations).

In the DAI, remembrance of the dead becomes not only a matter of human sentiment, but more specifically a matter of *profitable sentiment*. The dead are not only depicted the way the bereaved want to remember them, but in accordance with what is profitable, i.e. what is likely to be consumed. Digital afterlife services thus have an interest in displaying the most "consumable" (regardless of what that practically means), and not the most accurate, ethically considerate, or scientifically valuable version of the dead.

Such manipulation of one's identity in the name of profit can be interpreted as a form of alienation. But who precisely is alienated? Surely, Marx was never concerned with the "inorganic corpses" of

workers. Moreover, his critique of capitalist political economy has largely been interpreted as a matter of property relations, of the rightful ownership of the means of production. In our case, this is an insufficient interpretation. The dead cannot own property in any meaningful sense, and hence an alternate interpretation is required to critique the DAI. I propose that such an interpretation can be based on Floridi's (2013a, b) interpretation of personal identity, through which Marx's inorganic body can be understood as an *informational body*.

3.4.2 The Inorganic Body as an Informational Body

Consider the excerpt quoted above (Marx 1932/2000, 32). When Marx states that man "duplicates himself" through production, what exactly is it that is being duplicated? What is this essence of the self that can exist in two places; both in man himself and in the objects he produces?

Floridi's (2011) interpretation of personal identity provides a possible answer: information. According to Floridi, the problem of personal identity can be interpreted informationally. The self, that is, should be interpreted as an informational structure; a narrative constituted by everything that defines it: memories, biological data, biometrical information, search history, social data, and so on. In other words, you are your information. People do not merely own their information, but are constituted by it, and exist through it. As Floridi (2014, p. 121) explains, we should relate to private data as being ours in the sense of "our body" rather than "our car".

This interpretation of personal identity has important ethical implications. Since our personal data exist, not only within our biological bodies (e.g. memories, DNA, etc.), but also in external objects — what Floridi (2011, p. 560) calls "technologies of the self" — there is always an immanent risk of losing control over one's personal identity. Breaches to one's informational privacy, i.e. the manipulation or illicit distribution of one's personal data, is to be regarded as a violation to one's personal identity. As such, Floridi proposes an *ontological* defence of informational privacy, whereby the right to informational privacy is seen as the right to be in control of one's own body and thereby of one's own existence; not to have it altered, duplicated, or distributed without oneself being in control. This right is to Floridi (2016) closely linked to the concept of *human dignity*. To be human, he explains (2016, p. 4) is to be "able to be the masters of our [humans] own journeys, and keep our identities and our choices open". When one's identity is manipulated (for example to become more commercially viable), this is thus to be regarded as an aggression towards one's very humanness.

The informational understanding of the nature of the self and its ethical status has a small but important implication on how to use Marx: If accepting that the essence of a human consists in her information, it follows that what Marx refers to as the "inorganic body" is analogous to an *informational* body. When understanding the inorganic body of man (what he produces) as an informational body, the alienating effects of (privately owned) labour appear to be closely related to violations of informational privacy. Just like informational privacy infringements, alienation is ultimately a loss of control over one's informational body, i.e. over oneself. Or phrased differently, in capitalist production "he [the worker] belongs, not to himself, but to another" (Marx, 1932/2000, 30). As such, alienation, like privacy infringements, is a matter of human dignity. It is taking from someone what it means to be human. It "tears from him [the human] his species-life, his real objectivity as a member of the species" (1932/2000, p. 32) to use Marx' exact words.

It is worth noting one key difference between the informational body and the inorganic body that subsides within the product of one's labour. While it is true that we leave something of ourselves in everything we create, this piece of the self (which is to be understood as a piece of information) is seldom traceable to an identifiable producer in the analogue. Whereas it is true, as Harrison (2010) and Laqueur (2018) and others claim, that the dead remain present also through language, ideology and even the physical infrastructure of society with which they left us, this is nevertheless an anonymous presence. By contrast, the labour we perform online, or on digital devices in general, can almost always be traced back to an individual human. The digital realm can, in other words, be understood as a *deanonymisation* of the presence of the dead in society, a concept I shall return to in Chapter 8.

In contrast to interpretations which are based on the concept of ownership (e.g., the worker's loss of the value he or she produces) the concept of dignity is advantageous to the critique of the DAI in that it applies not only to the living, but also to those who are dead. Dignity applies regardless of a person's awareness of their privacy being compromised (Floridi 2013a, b), likewise it applies irrespective of whether the producer of data is alive or not. The informational (inorganic) body continues to have the right to be treated with the respect worthy of a (dead) human (see Stokes 2015 for a more detailed analysis), regardless of whether the person to which it belongs is alive or not.

Moving away from an ownership-based interpretation of the Marxian framework, to an ontologically grounded one, thus makes the economic critique outlined above applicable to the DAI. The digital remains of the dead cannot be exploited in terms of being denied their rightful share of profit, but do nevertheless deserve the respect worthy of a human body (an informational corpse) — not a mere instrument for revenue generation. This does not mean that digital remains are never to be touched in any way, not even that they can never be part of any commercial enterprise. What it means is that the dead, just like the living, have a right not to be treated *solely* as a means to an end — a right to human dignity.

As shown in this section, commercial enterprises have economic incentives to display digital remains of the dead, their informational bodies, primarily in accordance with what is *profitable*, at the dispense of other possible principles of value (e.g., scientific, religious, ethical etc.). In some cases, this means that consumers pay for interaction with the remains of the dead; in other cases, it means shaping the interactions so that they become as profitable (attention producing) as possible. Irrespective of which alternative is pursued, such commercially motivated manipulation of digital corpses can and should be seen as an illicit infringement on human dignity.

3.5 THE INTERESTS IN PRACTICE

The interests and ethically undesirable consequences outlined in the previous section were defined on a rather abstract level. In practice, however, they are manifested, and thus become visible, only through concrete usage of digital remains. In this section, real cases from the types introduced in 3.3.1 illustrate how the interests and ethical consequences manifest themselves in practice. As becomes clear, advanced services with access to larger quantities of personal data tend to give more room for violations of human dignity than rudimentary ones using little or insignificant amounts of information.

3.5.1 Information Management Services.

Any digital afterlife firm has an interest in maximising the consumption of their services. For Information Management Services, this mostly means that they are incentivised to have users leave behind as much information as possible (at least insofar as larger quantities of information is correlated with a cost for the consumer). For Estatemap, for example the user pays a $4.95 fee for each document they upload. The quantity of documents left behind is, in other words, correlated

with profit for Estatemap. Moreover, Estatemaps' economic interests are thereby also correlated with the degree to which the user becomes present in the lives of the bereaved.

Most Information Management Services also advertise their product as something that the consumer does for someone else, like a life insurance. Estatemap, for instance rhetorically asks in a promotion video "you got people that depend on you right?". Indeed, several firms even have open collaborations with insurance companies. Everplans, a company similar to Estatemap writes that:

> Everplans may generate additional revenue through partnerships with great services and products that can be helpful to you in your planning progress. We are working hard to find companies to partner with that we can trust to take care of our Everplans members the way we do. (Everplans, 2018)

Even though Everplans are careful to stress that they only collaborate with partners that subscribe to their values, the market does not take these values into account when it comes to success. What is successful is ultimately those values that align with economic value. However, because Information Management Services are interested mainly in increasing the amount of information passed on by their users, the risk of manipulating their digital afterlife is limited.

3.5.2 Posthumous Messaging Services

Like Information Management Services, Posthumous Messaging Services are incentivised to maximise the amount of information passed on by the user, only in this case the information is generated intentionally and exclusively for one's digital afterlife. Most services thus offer one or two small messages for free, but then begin to charge for larger amounts of information. Heavenote, for instance, a company which lets users record and send afterlife videos to recipients after their death, grants users a 30 seconds long free video but adds "go Premium and get 10 min of video recording in each message" (Heavenote, 2016a).

Nearly a quarter of the Heavenote user interface is covered with ads to promote premium or "ambassador"[8] options, which both entail changes in the nature of the user's afterlife. Like Information Management services, Posthumous Messaging Services mainly promote their services as favour to someone else (Heavenote 2016b):

> Taking your digital afterlife into your own hands is one of the nicest things you can do for those who care about you […]. Not only will you be able to give a message that might be the single greatest thing you could do for them, but you can also show a handy amount of foresight and impress all of those friends that will be gathered upon your death. Digital afterlife planning will be that last act of reminding people of how great you were in life, trust us. Try sending a message for free if you aren't sold.

The excerpt is illustrative of how the abstract interest in "consumability" manifests itself concretely in the Posthumous Messaging Services. The discourse is aiming to increase productivity (social interaction), and thereby to alter the user's digital afterlife. The site is discursively and architecturally designed to promote a profitable digital afterlife. Whereas Hevenote takes mainly a discursive approach to shaping their customers' digital afterlife, others go considerably farther. SafeBeyond, for instance, provides user-friendly example templates that users may use as a basis for their posthumous messages, in case they lack inspiration. The user may thus use the template and just add to it the correct name and address of the recipient. As such, the economic interests of SafeBeyond (to maximise the consumability of the user's digital afterlife) effectively structures and shapes the way the dead are displayed.

3.5.3 Online Memorial Services.

Unlike mere messaging services, memorials often display larger quantities of information. While some are free (i.e. capitalise on the surplus attention of the mourning) others charge the users directly. In both cases, firms have an interest in maximising the "consumability" of the digital remains.

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[8] To become an ambassador one has to invite friends to use the service. As a reward, one gets more data to use.

One can see this interest manifested in the various attempts to make memorials attract visitors. Tributes.com, for instance, which is leading at least the North American market, has a default message displayed on their memorials (unless the user changes it): "Thank you for your support during this difficult time. Please enhance this tribute to {FIRST NAME} by adding your memories and photos". Without the request of the bereaved users, some sites even put headings, in the style of "He is much loved and will always be remembered by all his friends and family" (Fowler, 2014), on the memorialisation of the deceased. Some sites also add background music, and clipboard pictures of doves and sunsets (Fowler, 2014).

Tributes.com is also illustrative of how online memorial services require user traffic to the memorials in order to make profit. Under the heading "advertise with us", which is directed to third parties selling targeted ads, the firm describes the benefits of advertising to the generation who are currently staring to approach their final days:

> Born between 1946 and 1964, the Baby Boomers are 80 million strong. Despite their significant size and spending power, these high potential consumers have been largely unaddressed by marketers and advertisers since they started to age out of the popular 18-49 cohort. In five years, 50 percent of the U.S. population will be 50+. These consumers spend close to 50 percent of all CPG [consumer packaged goods] dollars yet less than 5 percent of advertising is geared towards them.

Clearly, Tributes.com depends on third parties buying ads, and the value of their ads is in turn a function of the size of their traffic, which is in turn generated by the digital remains of the deceased.

In this context, it may also be worth discussing Facebook, which also depends on targeted ads. Due to its size and central position in society, Facebook should count as perhaps the world's largest online memorial service. However, because of its decision to remove ads from the memorialised profiles (Brubaker & Callison-Burch, 2016), it is questionable whether Facebook even qualifies as a DAI service in the first place. If it is, it is so involuntarily.

Nevertheless, as Karppi (2013) points out, continuous traffic on memorialised profiles is financially advantageous for Facebook. When family and friends keep using a memorialised profile as a shared space for grief (as has become everyday practices for many in the West [Brubaker et

al., 2013, p. 154]), they become bound to the platform. Even if the traffic to the memorialised profile itself does not render much exposure to advertisement, it does nevertheless require a Facebook profile and thus keeps descendants and other mourners within the network, where they will continue to generate market relevant insight. Paradoxically, Facebook's decision to remove ads from the memorialised profiles can thus be read as a an attempt to increase traffic to the site overall.

This is not to be seen as a criticism of how Facebook has chosen to act in this matter (had they chosen to display ads on memorialised profiles the critique would have been even more severe). Rather, it is an illustration of the consequences of a free market logic applied to management of the online presence of the dead.

3.5.4 Digital Resurrection Services.

Services that aim to re-create the personality of the dead naturally demand vast amounts of social data in order to perform. Due to the large quantity (and quality) of information, it is likely that the interests of the firm thus influence the identity of the person it "resurrects". One example is the social network site Eter9.com. It is a social network where dead users live on as so called "Niners", a form of AI-agents that replicate users' behaviour and manages the account while the user is offline, or dies. In theory, the site's interests are twofold: to increase interaction with the digital remains of the dead (the Niners) and thus to make that interaction as consumable as possible.

Eter9's economic interests are manifested in the way the "Niners" are programmed. While the user is offline, they are created to seek contact autonomously with other organic users of the platform. In doing so, they create more connections, interactions, and, ultimately, value for the firm. Simply put, the Niners are programmed to be consumable. This "consumability" can be seen as an incentive to alter a user's informational remains. The Niner left behind by an antisocial user will for instance be more prone to social interaction than the person it replicates, since it is more productive to make connections (i.e. increase user activity and attention) than not.

The same mechanism is at work in the chat-bot service Replica.[9] The version of the consumer that the replica chat-bot depicts is arguably a more social one. As illustrated by Figure 2 below, only a few days of inactivity from the user generates an excess of messages from the chat-bot avatar. In other words, replica portrays not just any version of the user, but the most active one. Moreover, if a user does not find inspiration for what to say to his or her replica when "training it", the app will provide pre-written messages to be dispatched with a single click, in order to generate more activity from the user.

This is a practical example of how the abstract interests identified in the previous section play out in real businesses. It is also a direct example of the ethically undesirable consequences that arise as productivity is maximized, and as the users lose control over their (dead) informational bodies.

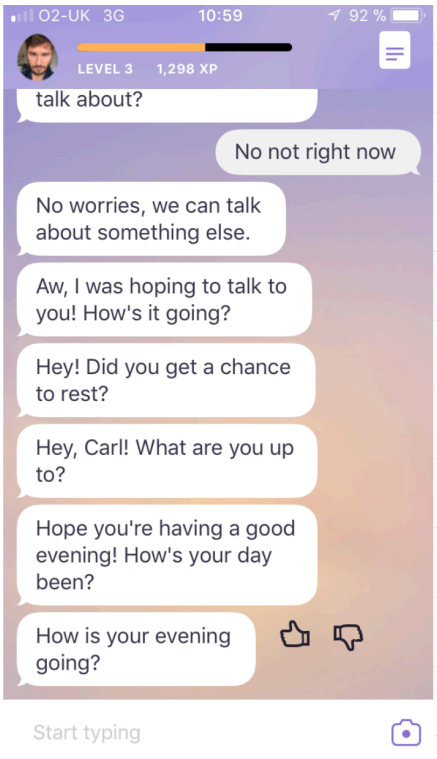


Figure 2. Dialogue with chatbot on Replica app

[9] Note that replica has rebranded since the publication of the article on which this chapter is based. They no longer claim to be a digital afterlife service, but may still be used as such.

The above cases illustrate the practical manifestation of the abstract interests and ethical consequences outlined in the previous sections. One may argue, that the possibility of altering the digital remains of the dead (and thereby violating their human dignity) progresses as services become more technologically advanced and get access to more rich information. However, while all services have economic incentives to maximise production, one should not expect firms to maximise productivity in every way possible. This is because the productivity of digital remains is not the sole factor determining market success but is instead negotiated with numerous other factors. In the following section, I discuss regulatory response as such a factor, and what ethical principles should guide this response.

3.6 SUMMARY AND DISCUSSION

This chapter set out to provide a more precise understanding of the economic and ethical dimensions of the DAI. The three research questions that were posed to pursue this goal have now been answered. In summarising the results, this final section also discusses their implications, especially with regards to their role in shaping a regulatory response to the DAI.

3.6.1 Reinterpreting Previous Findings

The ethical and the economic dimensions of the DAI intersect in the concept of the informational body. The metaphor is economic (Marxian), insofar as it exposes the informational nature of relationship between oneself and what one produces. It is ethical (Floridian), insofar as it makes this information in itself a moral patient.

The economic analysis developed in this chapter allows us to interpret findings from previous research anew. One example is Mitchell et al.'s (2014) study of online memorials for deceased children, where the authors point out "the affordances of the Web" (Mitchell et al., 2014, p. 28) as a driving cause behind prolonged grief:

> […] under the guise of addressing or even treating parental grief, on-line memorials may do more than simply accommodate that grief; they may perpetuate it. By enabling the deceased to persist, parenting to continue, and grief to be continually communicated, acknowledged and legitimated within a community of bereaved parents and a wider public, the Web affords an on-going grief that is unhinged partially from longstanding ideas of 'closure', privacy, and a separation of the living and the dead.

The analysis provided in this chapter suggests that such perpetuated grief may not be merely a consequence of new ICTs, but more specifically a consequence of their economic role in the production process. It is not the Web itself, but the way it is utilised in an economic system that perpetuates grief. Additionally, my findings shift the focus from being solely about the consequences for the bereaved to being also about the rights and dignity of the informational remains as moral patients in themselves.

The same kind of improvement can be made for theoretically oriented research. One example is Walter's (2015b) argument about the societal presence of the dead and its historical dependence on the affordances of ICTs. While it is an accurate observation that digital media is changing the presence of the dead, the statement can be further nuanced. It is rather technology's role as a commodity or means in the production process that is the driving force in shaping the presence of the dead. As this study has illustrated, technology's role in mediating the presence of the dead is embedded in human practice, and human practice is in turn a matter of human (ethical) decision-making.

While other researchers (Karppi, 2013; Meese et al., 2015) have also noted the interests in keeping the dead within the networked economies of social media, their arguments have not illuminated fully the ethical dimensions of the matter, nor the mechanisms behind them. While the lens of discourse used by Meese et al. (and to some extent also Karppi) has provided important insights into the commercialisation of death online, it does not fully explain its political economy. Discourse should be seen as a result, and not the cause, of the mechanisms that drive commercialisation of death online.

3.6.2 Shaping a Regulatory Response

When digital remains, as suggested in this study, are seen as remains of an informational human body, the problem of the DAI finally emerges as a commercial (and illegitimate) alteration of this body, which in turn is a result of politico-economic interests. Furthermore, this approach suggests that we should seek inspiration from frameworks that regulate commercial usage of *organic* human remains. A good model is provided by archaeological and medical museums, which exhibit objects that, much like digital remains, are difficult to allocate to a specific owner (see for instance [Pearson 1999, p. 191]) and are displayed for the living to consume (Alberti & Hallam 2013, p. 3).

Furthermore, as collections become increasingly digitised and made available online (Alberti & Hallam 2013, p. 13), the ethical concerns of archaeology appear to be increasingly merging with those of the DAI. It is therefore heartening that the former already has ethical and regulatory frameworks in place.

A document of particular interest is the International Council of Museums's (ICOM) Code of Professional Ethics (1986). Aligned with the analysis provided in this chapter, the ICOM code stipulates that human remains must be handled in accordance with their inviolable *human dignity*. As such, it provides a direct link to the domain of informational privacy, where it already plays a central role (see the GDPR, 2018). Moreover, it applies to individuals and groups alike, and has thus been key in the process of repatriating remains from marginalised and previously colonised groups such as the First Nations (Berick, 2014).

While the definition of human dignity may be dependent on cultural context (Montoya 2012), it does at least provide a rough consensus. We would not, for instance, put a Santa hat on Ötzi the Iceman to attract more museum visitors around Christmas, nor do we accept ghost tours in the tomb of Tutankhamen (despite our disbelief in the ancient gods of Egypt). In archaeological excavations of graves, bodies are even reburied after having been examined by researchers (Pearson 1999, p. 186). In short, it provides some form of common ground.

Similarly, there is reason to protect the online dead from undignified forms of commercialisation. The DAI has seldom demonstrated the kind of cold-blooded capitalism depicted in the Black Mirror episode referenced in the beginning of this chapter. Yet, there are plenty of examples of how an unregulated industry may come to look in the near future. In a recent news story on Unilad.com, photos from an open coffin-funeral were published, where the photographer had used a Snapchat filter to swap his own face with the deceased's (Roberts, 2016). A dog nose and ears were also jokingly added using the same application. In a matter of less than 2 days, the article gained significant attention — more than 7500 shares, and almost 46,000 votes on the attached question "how fucked up is this on a scale of one to absolutely fucked?", a good source of revenue for Unilad.com. Despite not being a digital afterlife service, the example illustrates the mechanisms that have been explored in this chapter, which result in being a violation of human dignity.

Ethically, human dignity requires that digital remains, seen as the informational corpse of the deceased, may not be used solely as a means to an end, such as profit, but regarded instead as an entity holding an inherent value. This is stated explicitly in ICOM's code. As museums often sell and produce replicas of exhibited objects (human or not), the code further specifies that "all aspects of the commercial venture" must be carried out with respect for "the intrinsic value of the original object" (1986). Adopting a similar regulative approach to the DAI would clarify the relationship between deceased individuals and the firms holding and displaying their data. Despite sometimes being the sole legal owner of the data, and irrespective of the desires of those next to kin, DAI firms would be obliged to abide by certain conventions, such as preventing hate speech and refraining from commercial exploitation of memorialised profiles. As indicated by ICOM, human remains are not meant to be consumed by the "morbidly curious".

While the proposed approach would have implications for all four types of DAI services, it would have particularly deep consequences for Digital Resurrection Services. This is also where the most significant ethical concerns lie. For instance, as chat bots are frequently enhanced and updated, the image of the person they depict changes over time; even within only five years of a user's death, the chat bot for which they signed up will likely have developed into something far more sophisticated and commercially calibrated. Furthermore, as the Digital Resurrection Services provide the highest degree of presence, they also involve the greatest risk in terms of threats to dignity.

Given these concerns, a minimal requirement would be for firms to guarantee that: (1) consumers are informed on how their data may come to be displayed post-mortem; (2) users are not depicted radically differently from the bot that they originally signed up for; and (3) users only upload data that belongs to them personally, that is, not making bots out of a deceased relative or friend. Requirements like these could be imposed by regulators, but may just as well be set by internal agreements within the industry, such as the ICOM code of ethics, or even be incorporated within the ethical policy work of individual firms. Today however, there are no — or very few — explicit requirements like these.

The above concerns demand careful investigation and dialogue between policymakers, industry and academic experts. They will only grow in significance as the dead become increasingly numerous online. In developing a constructive ethical approach, the first step is to decide to what

extent, and under what circumstances, our memory of the deceased is to be driven and shaped by the commercial interests of industry. The second, and equally important, step will be to develop a regulatory framework, commonly adopted, to ensure dignity for those who are re-mediated and remembered online.

3.7 CONCLUDING REMARKS

In summary, this chapter has made a twofold contribution. It has (1) identified, and constructed a conceptual map of the economics of the DAI, and (2) deconstructed its ethical dimensions. Having done so, the chapter raises a set of new questions. What should be the role of commercial enterprises in managing the data of the dead? How do we design social, economic and regulatory infrastructures that render a respectful attitude from the industry? We have only begun addressing these questions in mature information societies. Yet, two things are already clear: that the internet will continue to be an integral part of everyday life and that humans will (at least in the organic sense) continue to die. The dead are, and will continue to be, increasingly present online. It is up to us as a society to decide to what extent, and under what circumstances, this presence is to be influenced by the industry that mediates it.

CHAPTER 4: DOES GOD HEAR BOTS PRAYING?

Abstract: Digital afterlife is often conceived as a high tech phenomenon associated with the kind of sci-fi like technologies of digital resurrection. This chapter illustrates the inaccuracy of such conceptions by exploring a specific sub-category of the DAI, namely what I refer to as *Islamic Prayer Apps*, services that allow users to continue posting Islamic supplications to Twitter after their death. The app Du3a is used as a case study. The analysis of data from Du3a's Twitter activity shows that it is responsible for millions of tweets daily, a number which represents a significant portion of Arabic-language Twitter traffic. I argue that the fact that a phenomenon of these proportions has gone unnoticed by researchers reveals an opportunity to broaden the scope of the current research agenda on digital afterlife as well as online automation. Moreover, it shows that the interest for digital afterlife services goes beyond the merely practical and secular realm. It has a spiritual dimension which engages millions of users daily, not only in the West, but around the world.

Note: This chapter is an extended and repurposed version of an article published in *Minds & Machines* (Öhman, et al., 2019), co-authored with my supervisor Professor Luciano Floridi and my colleague Robert Gorwa. For a detailed account of their contribution see Appendix 1 and 3.

4.1 INTRODUCTION

The Digital Afterlife Industry is commonly associated with Artificial Intelligence and sci-fi like dreams of digital immortality. As exemplified by the Black Mirror episode *Be right back* in Chapter 3, it is has often been portrayed, both in popular media (Humphries, 2018; Solon, 2018) and in scholarly literature (Bell & Grey, 2001; Rothblatt, 2014; Steinhardt, 2007), as primarily a high-tech Silicon Valley phenomenon. The contribution of this chapter — which can be seen as a short add-on for further nuance to Chapter 3 — is to illustrate the inadequacy of this image.

More specifically, the chapter focuses on a particularly wide-spread phenomenon which has so far gone unnoticed by the research community; what I call Islamic Prayer Apps, services that allow users to automatically post Islamic supplications on Twitter. To be clear, the adoption of digital technology in Islam is a thoroughly researched topic (see for instance Bunt, 2009 for an extensive overview). Even Islamic apps have been discussed in the literature before (see Bunt, 2010). Yet,

this literature has hitherto overlooked the automation aspect of the new brand of apps discussed in this chapter. Even though there are discussions on Islamic apps, there is yet no (or little) acknowledgement of the automation of worship (such feature is for example not even mentioned in Bellar's [2017] overview of Islamic apps).

Since most Islamic Prayer Apps also allow users to continue posting supplications after their death they fall under the Posthumous Messaging Services category introduced in the previous chapter. As such, the phenomenon suggests also that the DAI has a reach far beyond the high tech Silicon Valley culture it is normally associated with. Moreover, I argue that the spread and social significance of these applications calls for a broadening of the scope of current research on online automation in general, and on social media bots in particular.

4.2 WHAT ARE ISLAMIC PRAYER APPS?

It has become increasingly popular amongst Muslim social media users to employ services that automatically post prayers on one's behalf. In this chapter, I shall refer to such services as Islamic Prayer Apps. These apps vary in their business model and popularity, but share the same goal: to facilitate and automate worship. This does not mean that the apps replace the mandatory "5-times-a-day" prayer rituals normally associated with Islam. While previously documented services simply send or post reminders for local prayer times (Wyche, Caine, Davison, Arteaga, & Grinter, 2008), the Islamic Prayer Apps seem to facilitate additional public supplication (دُعَاء, "dua"), which may be understood as a humble asking for an event to occur or a wish to be fulfilled.

Believers in Islam may phrase their own personal supplications, but there is also an array of examples in the Quran to choose from. Based on these examples, the apps enable the user to post automatically their supplications on social networking sites, like Twitter and Facebook. Du3a.org is a typical example: The site's landing page (see Figure 3) features some Quranic quotes and popular prayers, and a sidebar encourages visitors to share the site on different social networks like Facebook and Pinterest, claiming that 26 million visitors have done so already. But the most salient feature is perhaps the button prompting visitors to subscribe to the service. Upon doing so, visitors are redirected to Twitter, where they are asked to authorise the application to use their account and post on their behalf. After a few hours, Du3a begins to post a > 140 character supplication from the user's account every second hour, alongside a site URL (and until recently a "recycling" emoji).

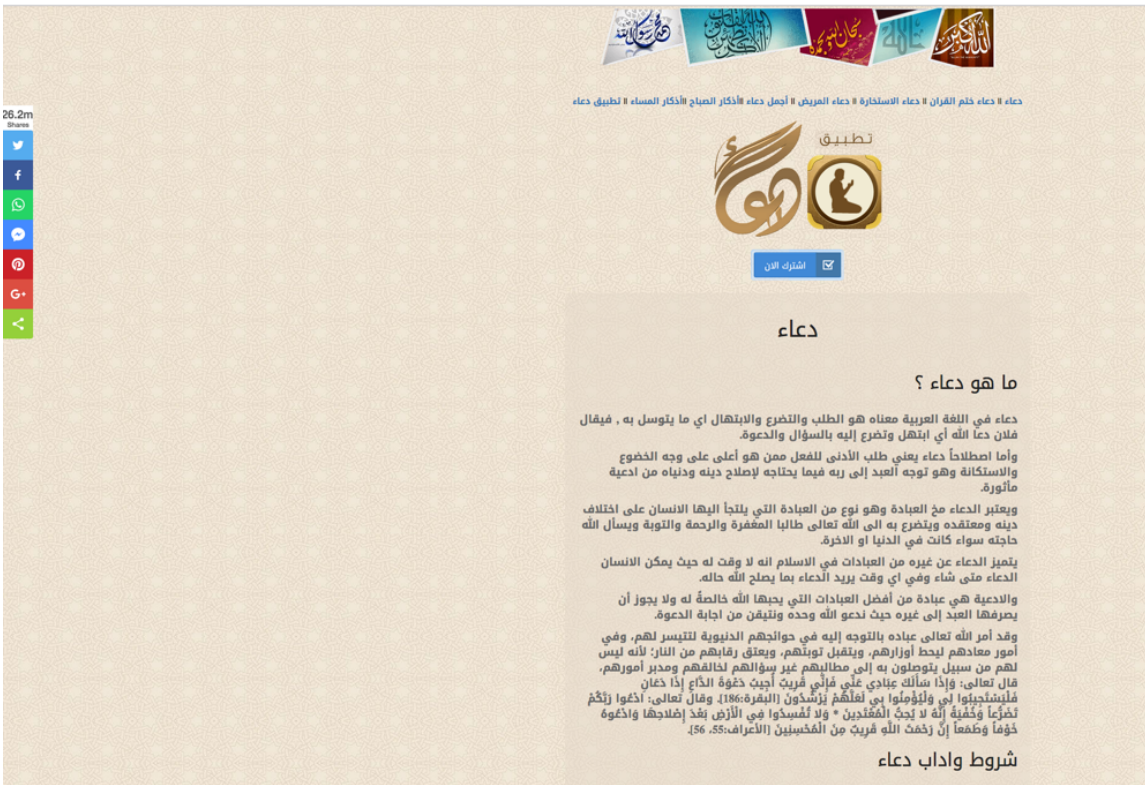


Figure 3. Screenshot of Du3a's landing page

Because Du3a.org includes the service's URL in every tweet that is sent out from the user's account, its traffic can be measured using Twitter's Streaming application programming interface (API), which provides live access to up to 1% of Tweets on the global platform. By querying for the dur3a.org URL, tweets posted over a 48-h period were collected in May 2018. During this time, 3.8 million tweets containing the URL were posted (1.9 million tweets per day) (See Figure 4). (It should be noted however, that Du3a at the time appeared to release one tweet per hour from the users' accounts, a frequency which recently seems to have slowed down to one every second hour).

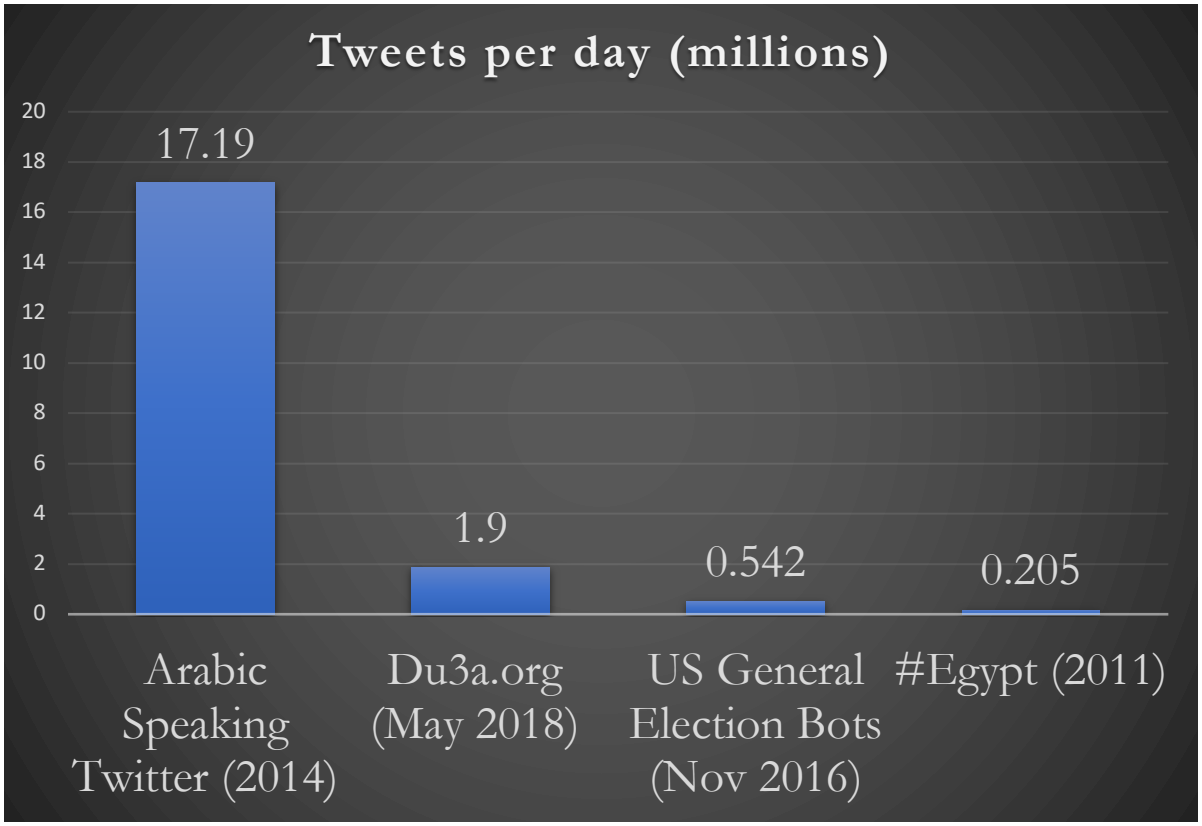


Figure 4. Illustration of average tweets per day

The number of 1.9 million tweets per day — coming just from Du3a, one of many Islamic Prayer Apps — demonstrates how much traffic can be generated through automation. To put the numbers in context (see Figure 4), Bruns et al. (2013) collected 205,000 tweets on the Arab-Spring related hashtag #egypt on its busiest day, when President Hosni Mubarak resigned amidst intense public pressure. During the 2016 US election, when significant popular attention focused on the role of automated accounts, Bessi & Ferrara (2016) estimated an upper bound of 3.8 million tweets from automated accounts on political topics in the week leading up to voting day (an average of about 540 thousand tweets per day). In other words, according to this exploratory analysis, a single automated prayer app generated almost as many tweets in 2 days as accounts believed to be automated did in the whole week leading up to the US election. Yet, contrary to the US general election, Du3a continues its activity every day of the year. And this activity appears to have been going on for about 5 years. While exact numbers are difficult to determine, an analysis of Arabic social media (Arab Social Media Report, 2014) estimated that, in 2014, 17.19 million tweets were sent daily from users in the entire Arab world, suggesting that automated prayer may be responsible for a substantial proportion of Twitter in Arabic speaking countries. Thus, at least in terms of

sheer numbers, the expression of worship may rank among the most significant phenomena on Twitter overall.

Du3a.org, like most Islamic Prayer Apps, does not use hashtags which can "trend" and gain visibility, which is a possible reason why the phenomenon has largely remained unnoticed. It was not until Matthew Rothenberg (2017), the founder of Emojitracker.com, noticed that the recycling emoji (at the time used by Du3a in every tweet) — attributed to the extensive use of the symbol in Muslim tweets — had become the third most popular on Twitter, that the apps were first discussed outside the Muslim community.

My exploration of the phenomenon indicates the presence of at least 10 sites with business models similar to Du3a's. Some of the competitors offer more advanced options. For instance, Athantweets.com offers a premium version that, for 100 Saudi Riyals (roughly $27) a year, enables the user to choose specific (as opposed to randomly generated) supplications, and for the tweets to be synchronised to the user's local prayer times. Tweets sent via this premium package also hide the Athantweets URL, making them virtually indistinguishable from any other tweets with Quranic content.

This casts light on an important characteristic of the phenomenon as a whole, the fact that a majority of the traffic appears to be organic; that is, derived from ordinary accounts of real people, as opposed to "bots", understood as accounts with a fake identity set up purely for the purpose of disseminating content. A qualitative close-reading of a few dozen Twitter accounts using Du3a shows that, whereas some of the accounts appeared to be created specifically to use these prayer services, most appeared to be ordinary users, who tweeted everyday messages, photos, and commentary interspersed with the automated messages. In other words, much of the traffic appears to be created by authentic accounts, operated by legitimate users, who creatively automate a facet of their online activity while also using the service as they would do ordinarily.

4.3 RELIGIOUS CONTEXT

It is too soon to try to explain the specific role of Islamic Prayer Apps in the everyday life of their users. Much more work on both the qualitative properties of the phenomenon (such as that of Bell, 2006) as well as further analysis of the quantitative ones is needed. "Even though there is

almost 1.2 billion Muslims …" as Ahmad & Abdul Razak (2013, p. 6) point out, "… there is too little research done on the techno-spiritual application from the Islamic perspective".

Judging from the way the apps frame their services, a key function is tied to their explicit promise to continue posting even after the user's death. For instance, the slogan of Zad-Muslim.com reads "Register now so your account would tweet now and after you die". Similarly, Dur3a.org promises that "your account will tweet in your life and in your death". This is more than a mere detail. While the posthumous prayer apps resonate with traditions in many different religions, it is notable that such features have emerged within Islam. According to the Quran, one does not receive one's final judgement immediately upon death. Instead, those who pass away must wait in their graves for Allah to end Earth and make His final judgment of each respective individual. In order to be eventually sent to paradise, a Muslim's sins must be outweighed by his or her good deeds. But in between the time of death and the final judgement day, a number of factors may posthumously increase their standing in the eyes of Allah. The Prophet Muhammed specifically mentioned three things that can improve one's afterlife reward this way: the continuous effects of charity; the provision of knowledge used by future generations; and virtuous descendants who pray for you (Sahih Muslim 1330, 42: 7064).

Islamic scholars debate about how this should be interpreted (see for instance Al-Halbali, 2016). However, most interpreters agree that the reward of the afterlife, at least to some degree, is subject to posthumous improvement. Because contributing to the dissemination of Islam is considered an inherent good, it is less important whether this activity is performed by someone personally, or through knowledge that one helps disseminating. So, the hypothesis is that putting in motion an app to post supplications on one's behalf after one's death could help increase one's chances of a good afterlife.

With few exceptions, the Islamic community has thus far accepted the incorporation of new technologies into religious practice, especially when it comes to realising their missionary potential. In her book *When religion meets new media*, Campbell (2010, p. 96) describes this new emphasis on technology, noting that "Engagement with media is a religious imperative, one which Muslims will be held accountable for in the afterlife". Thus, it seems that the dissemination of Islam through media may have profound implications in both life and death. Yet, little is known about the attitudes of the larger Islamic community when it comes to Islamic Prayer Apps, which

undoubtedly ties religious practice closer to online technologies. And research is needed to study the specific role that these apps may play within the lives and religious practices of their users. Likewise, little, if anything, is known about the stance of social media platforms themselves on this widespread phenomenon.

Unlike a platform such as Facebook, which now has a "memorialisation" feature, Twitter handles deceased users by permanently taking down their accounts after some months of inactivity (Twitter n.d.). However, an account that has subscribed to an Islamic Prayer App will not go inactive after the user's death. It will keep tweeting, and will therefore not be identified as inactive or abandoned. This means that the huge presence of the Islamic Twitter supplications will likely continue to grow long after the account holders have died.

4.4 BROADER IMPLICATIONS

Religion has always been one of the most significant aspects of human life, individually, socially, as well as technologically. It should not be surprising if it is now emerging as a possible key driver for the mainstream adoption of social technology. Islam is not the only religion incorporating creative automation technologies into worship. The iTunes App Store contains more than 6000 applications related to spirituality and religion (Buie & Blythe 2013, p. 2315). In early 2019, Pope Francis launched a new app called "Click to Pray",[10] with which Catholics may participate in the Pope's prayers and share them on social media. Similarly, the Church of England's new voice activation feature for Amazon's Alexa allows owners of the device to ask it to read daily prayers (BBC, 2018). In a narrow capacity, technological services can even substitute for priests, answering religious questions like "Who is God?" or what it means to believe in Jesus. Similarly, Jewish communities have started employing new technologies to automate home facilities during the Sabbath (Woodruf, Augustin, & Foucault, 2007), and members of diverse religious communities can now chat and make prayer requests to religious chatbots, such as those created by the Californian start-up Prayerbot. These examples, alongside the scale of the Islamic Prayer Apps, show that religion is far from a small or marginal force in contemporary social automation.

The case of the Islamic Prayer Apps also provides valuable insights into the complex, fast-evolving discourse on Twitter bots and online automation policy. Much recent literature on social bots

[10] https://clicktopray.org/.

focuses on false accounts set up during elections, and other political events, to inflate engagement metrics and help spread problematic political content (Ferrara, Varol, Davis, Menczer, & Flammini, 2016). In contrast, Islamic Prayer Apps share no hashtags, and do not appear to try and influence the social network, instead remaining unobtrusively out of view. As well, because many of the observed accounts appear to be ordinary users who have partially "botified" or automated their accounts, they complicate the existing discourse, which is often methodologically and conceptually predicated on the assumption that "bots" and "not bots" exist as two distinct categories that can be easily separated (Gorwa & Guilbeault, 2018; Stieglitz, Brachten, Ross, & Jung, 2017). Many Twitter users rely on a variety of publicly available services, from Twitter's own platform "Tweetdeck" to "If This Then That" to automate parts of their online activity.

There have been many positive uses of automated social media accounts, which have been deployed creatively by journalists (Lokot & Diakopoulos, 2016), activists fighting corruption (Savage, Monroy-Hernandez, & Höllerer, 2016), and those promoting institutional transparency (Ford, Dubois, & Puschmann, 2016), but religious uses have been largely unexplored. The Islamic Prayer Apps analysed in this chapter arguably represent one of the largest examples to date of Twitter automation being deployed organically in a creative and culturally significant way. The fact that a phenomenon of these unprecedented proportions has gone unnoticed by researchers shows the limitations of our current scope. To quote Bell (2006, p. 155): "We appear to be stubbornly secular in our imaginings of home and leisure contexts of computing". Indeed, now is the time to broaden the conversation.

To summarise, this short chapter — it may be seen as an add-on to Chapter 3 — has shed light on a hitherto unexplored phenomenon within the research literature; Islamic Prayer Apps. The activity from these apps indicates that there is good reason for a significant broadening of the scope of current research on social automation. More importantly for the purposes of this thesis, however, it also indicates that digital afterlife services have a much broader cultural application than previously thought. As we saw in the previous chapter, an array of similar applications, albeit with a secular framing of "immortalising one's social media presence", have been launched mainly targeting secular Western audiences (Öhman & Floridi, 2017). However, such social media immortalisation still remains fringe in comparison to the Islamic Prayer Apps. Considering their popularity, it may, even within only a few decades, become increasingly difficult to differentiate

between traffic generated by living and deceased users — and not because of the futurist community in Silicon Valley, but because of Islamic worshipers in the Middle East.

In relation to the broader scope of this thesis — to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains — this chapter highlights the challenge for social media firms to manage the large, and *culturally diverse*, posthumous presence of their users. How should Twitter deal with the fact that, in the future, millions of tweets daily will be generated by deceased users? What are their responsibilities towards these new expressions of religious worship? In the following chapter, similar quantitative aspects of online death shall be explored further.

CHAPTER 5: ARE THE DEAD TAKING OVER SOCIAL MEDIA?

Abstract: Popular and scholarly discourse often claim that social media is turning into a "digital cemetery". But to what extent are such assertions true? To answer this, this chapter uses statistical analysis to project the future accumulation of profiles belonging to deceased users on two major social networks: Facebook and Instagram. The analysis suggests that a minimum of 1.4 billion users on Facebook, and 767 million on Instagram, will pass away before 2100 if the networks cease to attract new users as of 2018. If the networks continue expanding at current rates, however, this number will exceed 4.9 billion for Facebook and 4.2 billion for Instagram. In both cases, a majority of the profiles will belong to non-Western users. In discussing these findings, I draw on the emerging scholarship on digital preservation and stress the challenges arising from curating the profiles of the deceased. I argue that an exclusively commercial approach to data preservation poses important ethical and political risks that demand urgent consideration, and call for a scalable, sustainable, and dignified curation model that incorporates the interests of multiple stakeholders.

Note: This chapter is based on two publications, (Öhman & Watson, 2019) and (Öhman & Watson, 2020), both co-authored with my colleague David Watson, who has conducted a majority of the statistical analysis for the former study, and assisted me in the latter. For a more detailed account of David's contributions see Appendix 3. I would also like to express a special thanks to Patrick Gildersleve for helping David and me with the Python script that scraped data from the Facebook API. Patrick's Python tool can be accessed at https://github.com/pgilders/Social-Media-Census.

"We, the Party, control all records, and we control all memories. Then we control the past, do we not?" (Orwell, 1949, p. 313)

5.1 INTRODUCTION

Internet users leave vast volumes of online data behind when passing away, commonly referred to as digital remains (Lingel, 2013). The phenomenon is gaining increasing traction within the

academic community (Gotved, 2014). Scholars of law and related areas are investigating new dilemmas arising from inheritance of digital estates (Banta, 2015; Bellamy et al., 2013) and issues of posthumous online privacy (Harbinja, 2014). Sociologists and anthropologists are increasingly turning their gaze towards the new types of "para-social relationships" (Sherlock, 2013), and the "continuing bonds" (Bell et al., 2015) that we shape with the online dead. And in philosophy, there has been a rising interest for the ontological (Steinhart, 2007; Stokes, 2012; Swan & Howard, 2012) and ethical (Öhman & Floridi, 2018; Stokes, 2015) status of digital remains. In short, online death has rapidly become a booming and diverse research area.

Despite this breadth of perspectives, few studies have thus far explored the macroscopic and quantitative aspects of online death. While research on philosophical micro- and meso-level aspects are illuminating, the global spread of the phenomenon, as well as its future development, remain uncertain. The absence of thorough empirical investigation on the macro-level makes it difficult to formulate a critical analysis of the global impact of online death from either long and/or short-term perspectives. This is problematic, not only because researchers (including myself) often motivate the significance of the subject by alluding to its presumed size and growth (Acker & Brubaker, 2014, p. 10; Harbinja, 2014, p. 21; Öhman & Floridi, 2017, p. 640), but also because there is reason to believe that online death will increase in significance as more people around the world become connected and mortality numbers rise. It is important to get the picture straight. Is social media, as occasionally claimed (Ambrosino, 2016; Brown, 2016), turning into a "digital graveyard"? If so, how is the phenomenon geographically distributed? And perhaps more importantly, what ethical and political challenges would emerge from such development? Despite the somewhat alarming nature of these questions, there have hitherto been few attempts to provide rigorous answers.

To address this lacuna and lay the groundwork for further macro-level analysis, this chapter sets out to estimate the growth of digital remains over the course of the 21st century, using two case studies: Facebook and Instagram. These networks are chosen partly because of the accessibility of data on audience volumes in various countries, but also because of their size. Facebook is today undisputedly the largest social network in the world, and has a global reach, which makes it an obvious starting point for a macro-level study of death on social media. Although owned by Facebook, Instagram provides an illuminating contrast to the main Facebook platform. Unlike Facebook, which has now become more of a multi-purpose environment than a social network,

Instagram remains mainly a platform for identity formation, which means that the kind of data left behind by the average user is of a different nature than that left by Facebook users. The demographic breakdown of Instagram is also different in several important respects. Users are generally younger, and more centred to Western countries than Facebook, making it an interesting complement (see for instance report from Hootsuite, 2020).

The two platforms' policies on deceased users differ somewhat. Instagram offers a more rudimentary "memorialisation feature" where a relative of the deceased user can either close their account or turn it into a memorial. Facebook's policy, on the other hand, is more sophisticated. It has developed considerably over the years, but the current approach is to allow users to allocate a "legacy contact", another user who will steward the account upon their death. The legacy contact has a number of liberties in changing the deceased's profile, such as profile picture, status updates and so forth. The focus of this chapter, however, is not merely on the memorialised profiles, but on *all* profiles belonging to deceased users, be they memorialised or not.

Two research questions guide the study:

> RQ1: *How will the number of profiles belonging to dead users on each network develop over the course of the 21st century?*
>
> RQ2: *What will be the geographical distribution of the deceased users?*

For each network, the analysis is conducted in two stages, henceforth referred to as Scenarios A and B. Scenario A assumes a global freeze on new users joining the networks as of 2018 and predict the resulting accumulation of dead profiles for each nation in the world. This effectively sets a "floor" on the possible growth of dead profiles on the networks. To carry out the analysis, a public dataset of projected mortality from 2000 to 2100 is used, distributed by age group and nationality (United Nations, Department of Economic and Social Affairs, 2017). These data are matched with current user totals, scraped from Facebook's and Instagram's audience insights application programming interface (API) for each country and age group. This allows one to estimate the number of users expected to die in any given country-year. In Scenario B, the analysis is expanded to a hypothetical scenario for the networks' future growth, assuming that they will continue to grow at a pace of 13% per year (Facebook, 2018) until they reach a penetration rate of 100% for

each country-year-age group. While unlikely, this estimate provides a "ceiling" for the accumulation of dead profiles. In conjunction with the "floor" defined in Scenario A, this ceiling defines the window within which we can expect the true number of dead profiles to fall.

In concluding the chapter, I situate the findings within the larger context of digital preservation (Whitt, 2017). I raise concerns over the current dominance of commercial data management, and warn that it may limit future generations' access to historical data. I argue that profiles of the deceased are valuable in ways that cannot be quantified in purely economic terms, which is why I advocate an explicitly multi-stakeholder approach. If data are preserved solely on the basis of corporate profitability, I warn that non-economic considerations — e.g. the ethical, religious, scientific, and historical value of digital remains — may be neglected. In short, our digital heritage is difficult to measure in dollars and cents.

5.2 DATA

Three types of data were used to carry out the analysis: projected mortality over the 21st century, distributed by age and nationality; projected population data over the 21st century, also distributed by age and nationality; and current user totals for each age group and country on both networks.

Mortality rates were calculated based on UN data, which provide the expected number of mortalities and total populations for every country in the world (United Nations, Department of Economic and Social Affairs, 2017). Numbers are available for each age group — 0 to 100, divided into five-year intervals — and all years from 2000 to 2100, likewise divided into five-year intervals. The estimates are based on official data from each country's government, and in some cases external sources (esa.un.org/unpd/wpp/DataSources/). It is unclear from the data how precision varies by country and year. All projections are reported as point estimates, with no standard errors or confidence intervals. For a more detailed account of the UN data, see esa.un.org/unpd/wpp/.

Facebook and Instagram data were scraped from the platforms' ads manager page (facebook.com/adsmanager/creation) using a custom Python script that extracts the estimated potential reach by country and age (for code and raw data see Gildersleve, 2020). These estimates are based on the self-reported age of users. Facebook provides lower and upper bounds for user totals across all ages and nationalities. For example, there are between 15 and 20 million 25-year-old Indians on the network. Variability increases with user counts, both of which are reported in

round numbers divisible by 5 or 10, suggesting that they are not meant as serious estimates of standard errors or confidence intervals. For Facebook, the midpoint of each country-age window is used in the analysis. Instagram, on the other hand, provides only an aggregate number.

Both false negatives — some users presumably use the site less than once a month — as well as false positives, due to duplicate and fake profiles, are expected. Facebook (2017) estimates that roughly 10 percent of active users are duplicates or fake. Unfortunately, it is impossible to say exactly how this affects results without more fine-grained detail on the distribution of errors. Likewise, on Instagram, many profiles are set up not by individual users but by firms and organisations. Again, it is unfortunately impossible to identify these from the data provided by the audience insights feature.

It should also be noted that there are reasonable doubts about the accuracy of both sites' reported monthly active users. Facebook was recently sued for allegedly inflating these numbers with the intent of overcharging advertisers (Todd, 2018), and the site explicitly requests that researchers not match their numbers with population data. In fact, monthly active users for both Facebook and Instagram exceeded the UN's estimated population for those market segments in numerous country-age groups, especially among younger demographics. When penetration rates appear to exceed 100%, the inconsistency is resolved by simply equating user totals and population estimates.

It should also be noted that the Instagram data were collected in 2019, whereas the Facebook data were collected 2018, making the first years of projection slightly more accurate. Moreover, the Facebook data excludes users under 18, which prevented evaluation of network activity among 13-17-year-olds (Facebook requires all users to be at least 13). Although the Instagram data does include 13-17-year-olds, I have chosen to omit these data subjects for two reasons. First, as a matter of research ethics, the threshold for informed consent is harder to meet for children under 18, and there is no reasonable means of securing such consent from these subjects or their legal guardians. Second, this omission allows more straightforward comparison between the two networks. The decision is not especially consequential in any case, as data subjects born after 2001 are unlikely to make up a substantial portion of dead profiles in the 21st century. Users aged 65+ are all put into the same age category, which results in less detailed data on penetration rates among the elderly. But as shown in the following section, this problem can be mitigated by extrapolating from a smooth curve fit to data from younger users.

Finally, I wish to emphasise that the model is devoted to the *future* development of death on Facebook and Instagram, and therefore leaves out users who have already died and left profiles behind. Estimating the current number of dead profiles would require historical data on the age distribution of users in various countries, which are currently inaccessible through the sites' APIs. Furthermore, the aim of the study is to depict a larger, long-term trend, in which the current numbers play only an illustrative role.

5.3 METHODOLOGY

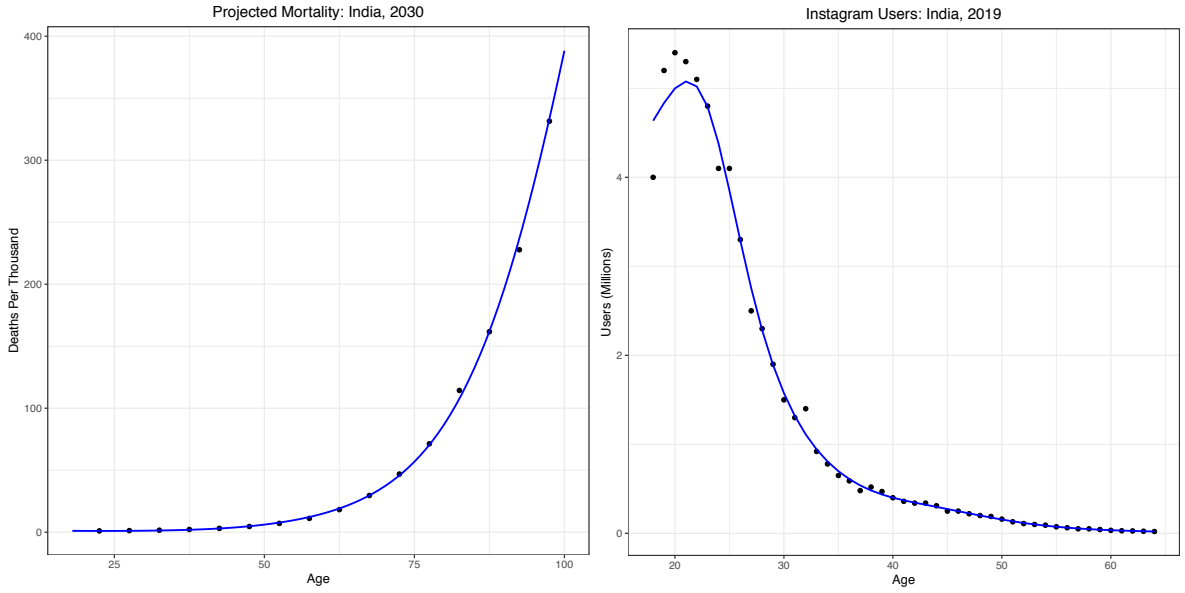
The methodological approach for each network and country can be summarised by the following procedure:

(1) estimate a function *f* mapping age and year to expected mortality rates (see Figure 1A);
(2) estimate a function *g* mapping age to expected number of users (see Figure 1B);
(3) extend *g* across time under two alternative scenarios (details below);
(4) multiply the outputs of *f* and *g* to estimate the number of profiles belonging to dead users of a given age in a given year (see Figure 1C); and
(5) integrate this product across all age groups to estimate the number of dead profiles in a given year.

This pipeline is repeated for each country and network to get a global estimate. Projections are integrated over several years to get national or global estimates over time.

It should be noted that this approach makes a substantive and potentially problematic assumption, namely that each country's Facebook and Instagram users constitute a representative sample of the population, at least with respect to life expectancy. It is well established that internet usage, especially in developing economies, is strongly correlated with education and income (PEW Research Centre, 2018, p.15). These two variables are in turn correlated with life expectancy, which means there is reason to believe that current users will live slightly longer than non-users on average. The model does not account for this potential bias, which may result in an overestimation of dead users in developing countries.

However, a recent PEW research report (2018, p.15) indicates that the divide is rapidly shrinking. Between 2015 and 2017, social media penetration in countries such as Lebanon, Jordan, and the Philippines rose by more than 20 percentage points, suggesting that connectivity is fast becoming increasingly accessible. This trend is expected to continue throughout the 21st century, mitigating any potential confounding effects on projections years or decades out. Furthermore, the closer we get to full market saturation, the smaller the bias becomes since people with high and low life expectancies are both joining the network in large numbers. In the face of this, it is important to stress that the value of the present study lies in the larger trends it identifies, not in the details of the immediate future development. This should be kept in mind when assessing very short-term scenarios.



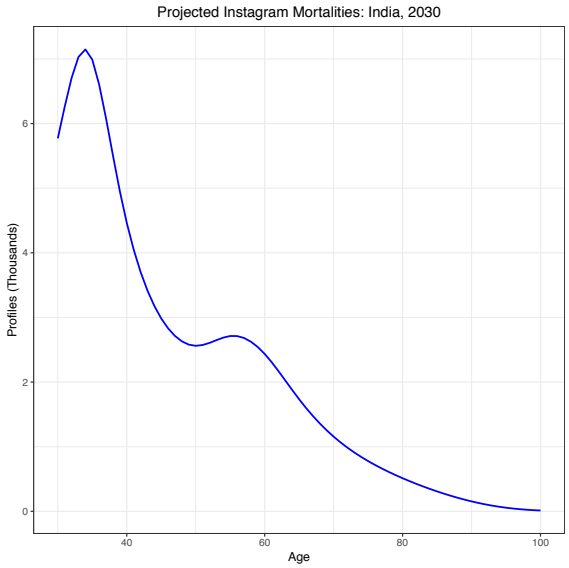


Figure 5. The analysis pipeline under Scenario A. (A) Mortality rate is modelled as a function of age. (B) Facebook user totals as a function of age. (C) Predicted values for both functions are multiplied to estimate the number of dead Indian users. The area under this curve is our projected number of Indians on Facebook who will die in 2030.

The model described in step (2) was trained on 2019 data. Projections for future network growth vary according to two scenarios: (A) *Shrinking*. No new users join the network. All current users remain until their death. (B) *Growing*. In contrast to Facebook, which releases quarterly reports on user growth, it is difficult to attain reliable statistics on Instagram's user growth. Moreover, there are indications that future user growth will vary greatly depending on market. For this reason, and to keep assumptions consistent, it is assumed that Instagram grows at the same rate as Facebook: 13% per year across all markets until usership reaches 100%. To help extrapolate beyond the age of 64 — the final age for which the networks provides monthly active user totals — all regressions were anchored with an extra data point of zero users aged 100. This is almost certainly true in all markets, at least to a first approximation. Alternative anchor points may be justified, but do not have a major impact on results.

All statistical analysis was conducted in R, version 3.6.2 (R Core Team, 2020). Predictive functions were estimated using generalised additive models (GAMs), which provide a remarkably flexible framework for learning nonlinear smooths under a wide range of settings (Hastie & Tibshirani, 1990). Regressions were implemented using the mgcv package (Wood, 2017). Data and code for reproducing all figures and results can be found online at: https://github.com/Cohman/Deaths_on_IN.

Three separate models were fitted for each country:

Mortality_Rate = f_C(Time, Age)
IN_Users_2019 = g_C(Time = 2019, Age)
Population = h_C(Time, Age)

The subscript *C* indicates that each model is country-specific. Moving forward the subscript for notational convenience are omitted.

The mortality and population models provide nonlinear interpolations to allow predictions for any age-year in the data without the limitations imposed by the UN's binning strategy.

Under Scenario A, model *g* is extrapolated beyond 2019 by assuming that no new users join the networks and current users leave the network if and only if they die. This means we see zero 18-year-olds on the network in 2020, zero 18- or 19-year-olds in 2021, and so on. Attrition from current users can be calculated recursively. For each year *t* and age *a*:

Scenario A (Instagram example):
IN_Users = g(Time = t, Age = a) =
g(Time = t – 1, Age = a – 1) * (1 – f(Time = t – 1, Age = a – 1))

Scenario B extrapolates beyond *g* by assuming that the networks will see constant growth of 13% per year in all markets until reaching a cap of 100% penetration. For each year *t* and age *a*:

Scenario B (Instagram example):
upper_bound = h(Time = t, Age = a)
IN_proj = g(Time = t – 1, Age = a – 1) * 1.13^{t-2019}
IN_Users = g(Time = t, Age = a) = min(upper_bound, IN_proj)

In both cases, the true target is:

$$y = \int_{18}^{100} \int_{2019}^{2100} f(\text{Age}, \text{Time}) g(\text{Age}, \text{Time})\, d(\text{Age}) d(\text{Time})$$

A beta regression with a logit link function, a common choice for rate data, was used for the mortality rate model *f*. We (David Watson and I) experimented with several alternatives for both the Instagram model *g* and the population model *h*, ultimately getting the best results for both using Gaussian regression with a log link function. Parametric specifications for each model were evaluated using the Akaike information criterion (Akaike, 1974), a penalised likelihood measure. Age and time were incorporated as both main effects and interacting variables in models *f* and *h*, which were fit with tensor product interactions in a functional ANOVA structure (Wood, 2006). Cubic regression splines was used for all smooths, with a maximum basis dimension of 10. Parameters were estimated using generalised cross-validation.

5.4 UNCERTAINTY

While there remains no good way to evaluate the precision of the underlying data — as noted above, neither the UN nor Facebook provides confidence intervals — one may quantify the uncertainty of the model using nonparametric techniques. GAMs provide straightforward standard errors for their predictions, but under both scenarios our true target y is a double integral of a product of two vectors. Unfortunately, there is no analytic method for calculating y's variance as a function of those variables without making strong assumptions that almost certainly fail in this case.

For that reason, uncertainty is measured using a Bayesian bootstrap (Rubin, 1981). To implement this algorithm, n weights are sampled from a flat Dirichlet prior and fit the models using these random weights. This procedure is repeated 500 times for each country and scenario, providing an approximate posterior distribution for all predictions, from which standard errors are computed. These numbers are reported in parentheses next to point estimates in the text, and in their own column in all table summaries.

5.5 FINDINGS

As previously noted, the findings presented in this chapter concern only the future accumulation of dead profiles (i.e., those who will die between 2018 and 2100 for Facebook and 2019 and 2100 for Instagram). Naturally, many users have already left profiles behind when they passed away. This number, however, is unknown, but should (whatever it is) be added to the plots presented in Scenarios A and B below. It is important to note that neither of the scenarios are meant as serious

predictions. They illustrate the window wherein the phenomenon can possibly take place. That is, the true number for both networks almost certainly falls somewhere between Scenarios A and B, but one can only speculate as to where.

5.5.1 Scenario A

The first scenario assumes that users will cease joining the networks as of 2018/2019. While unlikely, this defines the minimum of the possible development, what is referred to as the *floor* (see Figure 2 and Figure 3). Below, the findings for Scenario A is presented first for Facebook and then for Instagram.

5.5.1.1 Facebook

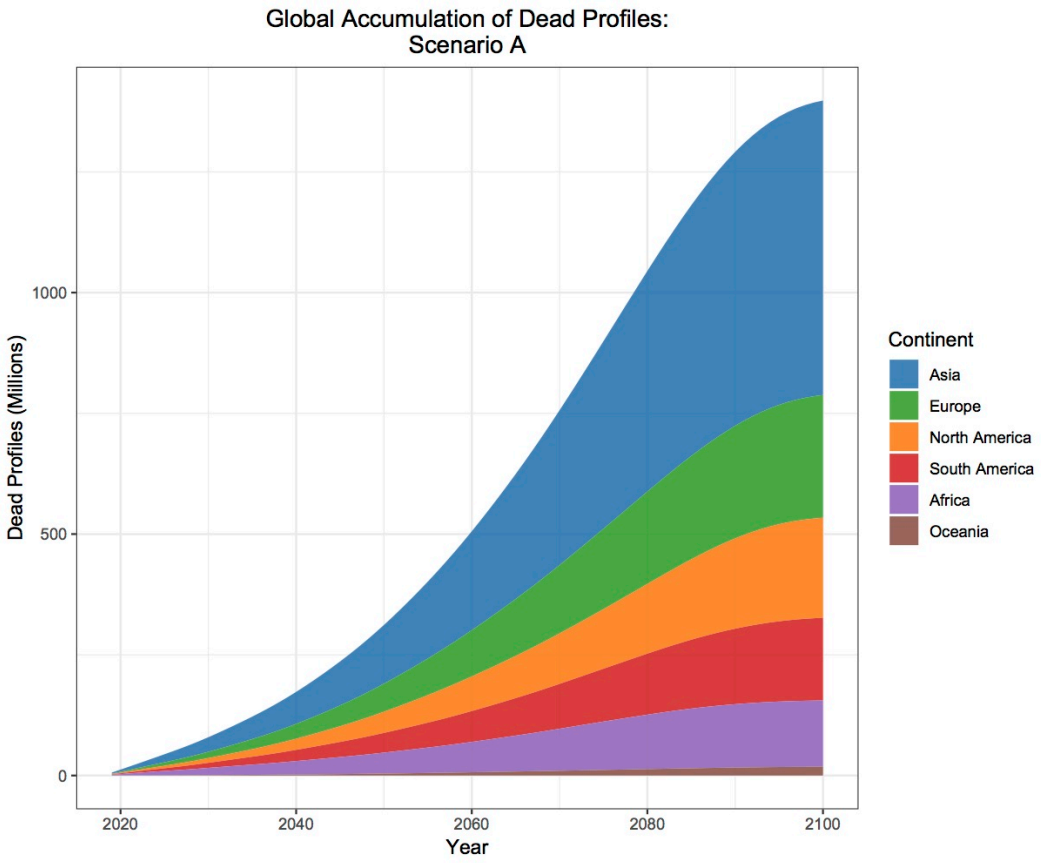


Figure 6. Accumulation of dead Facebook users under Scenario A

Table 2. Geographical distribution of dead Facebook profiles under Scenario A

Time	Continent	CumSum	SE	Percentage
2100	Africa	137.3577	1.0876	9.8273
2100	Asia	609.7714	10.1823	43.6261
2100	Europe	254.3236	1.1467	18.1956
2100	North America	206.9839	2.3485	14.8087
2100	Oceania	18.1326	0.1467	1.2973
2100	South America	171.1529	3.3918	12.2451

Under the assumptions of Scenario A, it is estimated that some 1.4 billion (±11.15 million) Facebook users will die between 2018 and 2100 — fully 98% of the 1.43 billion users in the dataset. Under this scenario, the number of deaths per year on Facebook grows steadily for the next five decades, peaking at over 29 million (±0.31 million) in 2077 before decelerating through the rest of the century. The global sum of dead profiles exceeds 500 million (±3.86 million) in 2060 and 1 billion (±8.67 million) in 2079. Note that under these conservative assumptions, the dead will in fact overtake the living on Facebook in about 50 years. This corroborates popular claims in media (Ambrosino, 2016; Brown, 2016) about living profiles becoming a minority on the network within the (relatively) near future.

The plot further shows that Asia contains a growing plurality of deceased users for every year in the dataset, culminating with nearly 44% of the total by the end of the century. Nearly half of those profiles come from just two countries, India and Indonesia, which account for a cumulative 278.8 million (±9.8 million) Facebook mortalities by 2100 (see Table 2).

Table 3. Geographical distribution of dead Facebook profiles (by Country) Scenario A

Time	Country	CumSum	SE	Percent
2100	India	207.6545	8.3233	14.8527
2100	United States	115.7516	2.0561	8.2793
2100	Indonesia	71.1468	5.2658	5.0889
2100	Brazil	65.3675	3.3203	4.6755
2100	Mexico	42.9421	1.0875	3.0715
2100	Philippines	34.6779	0.7469	2.4804

2100	United Kingdom	31.7917	0.3797	2.2739
2100	France	29.7236	0.2221	2.1260
2100	Thailand	28.9506	0.8205	2.0707
2100	Vietnam	28.5697	0.6811	2.0435
2100	World	741.5138	2.3780	53.0376

5.5.1.2 Instagram

For Instagram it is estimated that, under Scenario A, some 767 million (±1.7) users will die between 2019 and 2100 — slightly more than half the profiles for the same scenario on Facebook (see Figure 3). Under this scenario, the number of deaths per year on the network grows steadily for the next five decades before decelerating through the rest of the century. Note that under these conservative assumptions, the dead will overtake the living on Instagram in 2074.

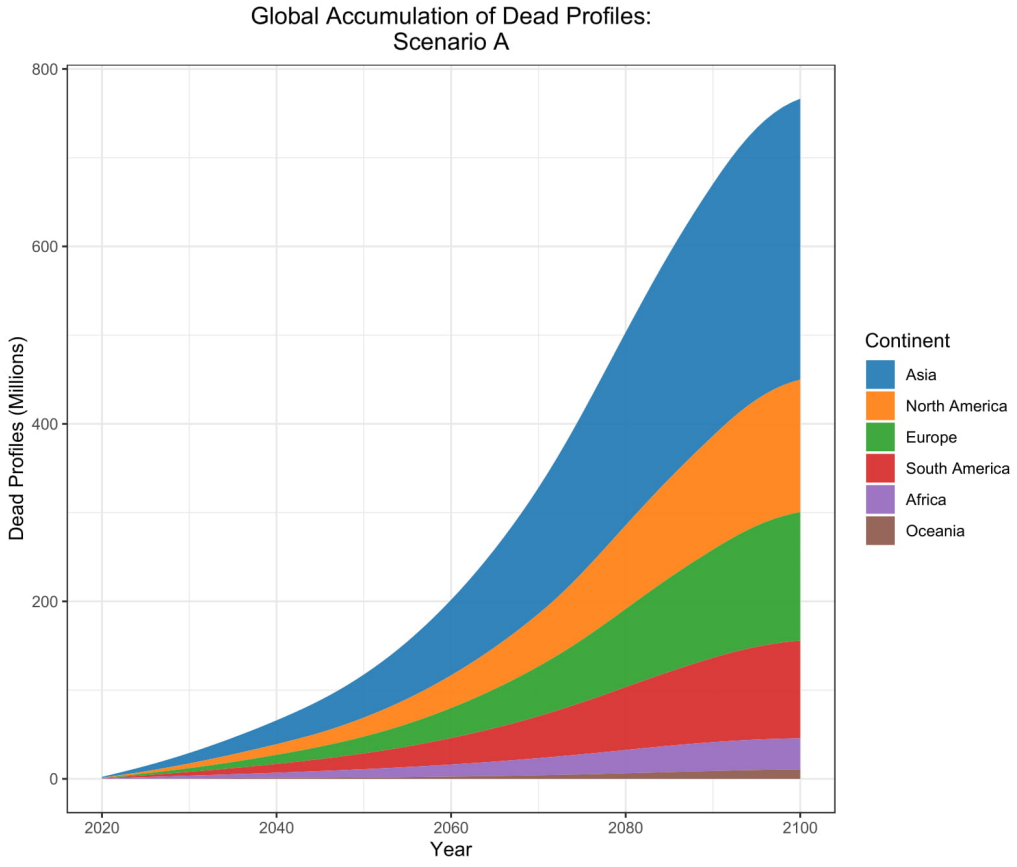


Figure 7. Accumulation of dead profiles under Scenario A

Table 4. Geographical distribution of dead Instagram profiles (in millions) under Scenario A. Percentages may not exactly sum to 100 due to rounding

Time	Continent	Profiles	SE	Percentage
2100	Asia	316.6512	1.5239	41.3111%
2100	North America	149.2730	0.5844	19.4746%
2100	Europe	144.7743	0.2990	18.8876%
2100	South America	110.0137	0.5347	14.3527%
2100	Africa	35.1774	0.2134	4.5893%
2100	Oceania	10.6133	0.0469	1.3846%

Like for Facebook, the plot further shows that Asia contains a growing plurality of deceased users for every year in the dataset, culminating with slightly over 41% of the total by the end of the century. In contrast to Facebook, however, where nearly half of the Asian profiles come from just two countries (India and Indonesia), Instagram has a more even distribution across Asia. Indeed, despite their large population, India and Indonesia account for "only" a little over 14 percent of the global total. Meanwhile, Africa remains notably small compared to Scenario A for Facebook, accounting for under 5 percent of all dead profiles on the network (compared to almost 10 percent for Facebook).

Table 5. Geographical distribution of dead Instagram profiles (in millions) by country under Scenario A. Percentages may not exactly sum to 100 due to rounding. Results for top ten countries are shown.

Time	Continent	Profiles	SE	Percentage
2100	United States	107.9611	0.5383	14.0849%
2100	Brazil	62.9019	0.5124	8.2063%
2100	India	60.1402	0.9597	7.8461%
2100	Indonesia	49.7947	0.8152	6.4964%
2100	Russia	38.3835	0.5388	5.0076%
2100	Turkey	33.6930	0.2390	4.3957%
2100	Japan	24.7844	0.3090	3.2334%
2100	United Kingdom	20.1251	0.0974	2.6253%
2100	Mexico	19.6034	0.2380	2.5576%
2100	Italy	17.1695	0.0850	2.2400%

5.5.2 Scenario B

Scenario A is highly unlikely. For any of the networks to see zero global growth as of 2019 would require some cataclysmic event(s) far more ruinous than the Cambridge Analytica scandal (Cadwalladr & Graham-Harrison, 2018), which revealed serious issues regarding the security and privacy of Facebook user data. To estimate how much higher the growth can possibly be, the second scenario sets a "ceiling" on the development. As explained, it is presumed that the networks will continue to see global growth of 13% per year (based on Facebook's current growth rate) until they reach 100% penetration in all markets. As illustrated by Figure 4 and Figure 5, this assumption drastically changes the total number of dead users by the end of the century.

5.5.2.1 Facebook

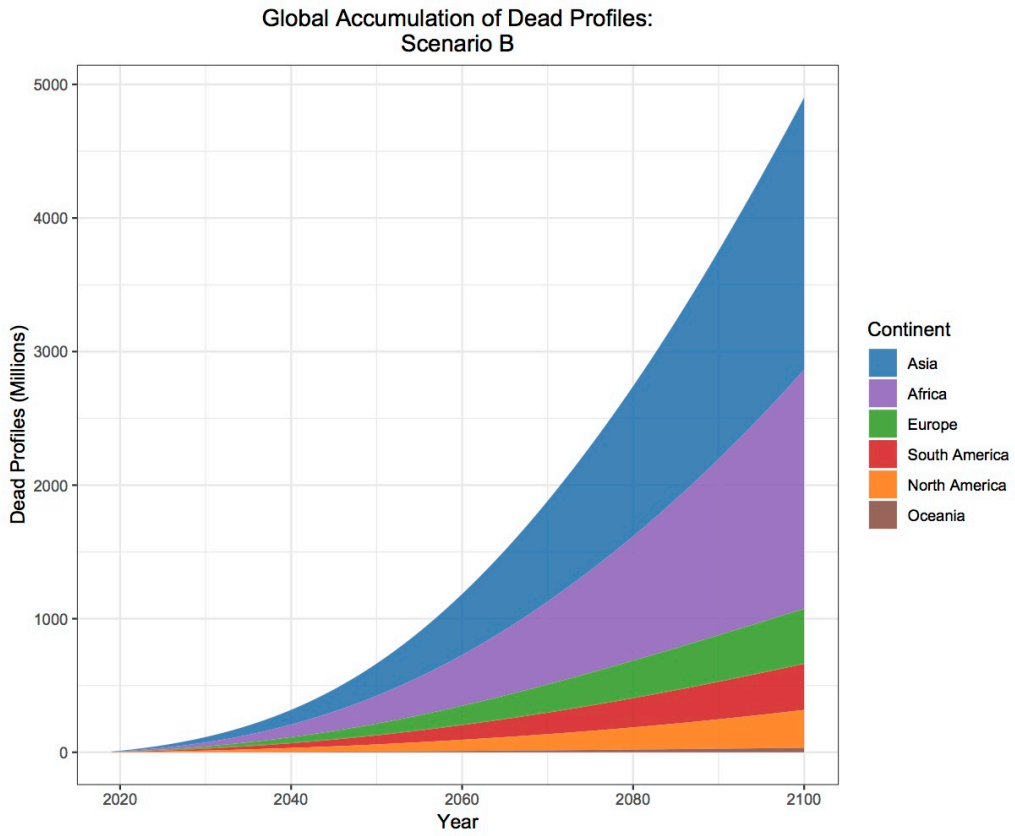


Figure 8. Accumulation of dead Facebook profiles under Scenario B

Table 6. Geographical distribution of dead Facebook profiles under Scenario B

Time	Continent	CumSum	SE	Percentage
2100	Africa	1786.4705	73.2377	36.4435
2100	Asia	2039.0000	40.5229	41.5951
2100	Europe	414.7771	9.3840	8.4613
2100	North America	283.6859	33.2734	5.7871
2100	Oceania	33.6563	1.1270	0.6866
2100	South America	344.4356	31.8269	7.0264

A continuous growth rate of 13% per year increases the expected number of dead profiles on Facebook by a factor of 3.5, for a total sum of 4.9 billion (±97.23 million). Unlike Scenario A, the dead profiles do not show any signs of exceeding the living within this century. However, the proportion is still substantial, and the dead are likely to reach parity with the living in the first decades of the 22nd century.

A continuous 13% growth rate would change not just the total number of dead users, but also their geographical distribution (see Table 3 and Table 4). The most notable shift is the considerably increased share of global Facebook mortalities contributed by African nations. Nigeria in particular becomes a major hub of Facebook user deaths under Scenario B, in fact, the second largest in the world, accounting for over 6% of the global total. Niger, Mali, and Burkina Faso also appear in the top ten countries by dead profile count, while the United States is the only Western nation to crack the list. In other words, a minority of dead profiles will belong to Western users.

Table 7. Geographical distribution of Facebook dead profiles (by Country) Scenario B

Time	Country	CumSum	SE	Percent
2100	India	783.7010	30.6525	15.9852
2100	Nigeria	315.5320	39.8116	6.4359
2100	Indonesia	221.0466	21.1954	4.5087
2100	Pakistan	177.0034	3.3463	3.6104
2100	Brazil	144.7937	31.7306	2.9534
2100	Niger	126.7529	29.0875	2.5854

2100	United States	112.4368	28.9811	2.2934
2100	Philippines	102.4860	2.8522	2.0904
2100	Mali	100.0100	17.3816	2.0399
2100	Burkina Faso	93.5536	26.9056	1.9082
2100	World	2725.3420	56.1275	55.5891

5.5.2.2 Instagram

As discussed above, it is difficult to calculate Instagram growth rate, and thus, to enable easy comparison, the same growth rate as for Facebook (13% per year) is used.

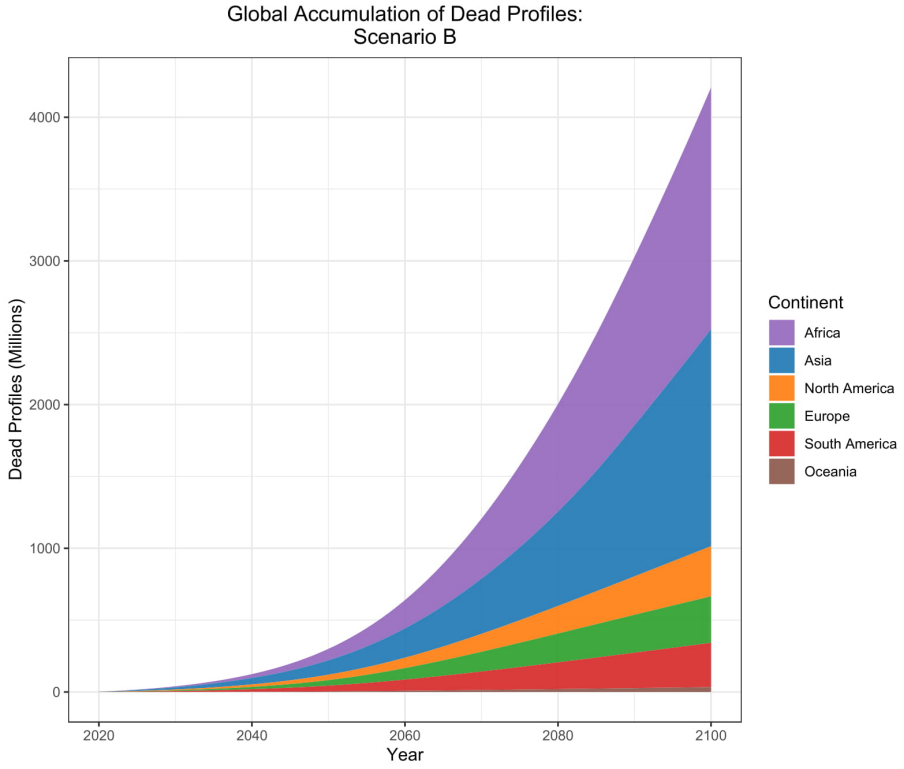


Figure 9. Accumulation of dead Instagram profiles under Scenario B

Table 8. Geographical distribution of dead Instagram profiles (in millions) under Scenario B. Percentages may not exactly sum to 100 due to rounding.

Time	Continent	Profiles	SE	Percentage
2100	Africa	1682.8807	68.6705	39.9931%
2100	Asia	1510.0965	18.1502	35.8870%
2100	North America	349.2289	5.1188	8.2993%
2100	Europe	323.5293	2.1445	7.6886%
2100	South America	308.0758	1.7237	7.3213%
2100	Oceania	34.1126	0.5152	0.8107%

As illustrated by Figure 3, the assumption of continuous growth drastically changes the total number of dead users by the end of the century. It increases the expected number of dead profiles by a factor of nearly 5.5 (compared to 3.5 for Facebook), for a total sum of 4.2 billion (±71.2 million). Unlike Scenario A, the dead profiles do not show any signs of exceeding the living within this century. However, the proportion is still substantial, and like Facebook the dead on Instagram are likely to reach parity with the living in the first decades of the 22nd century.

In terms of distribution, the most notable shift is, again, the increase of Instagram mortalities contributed by African nations. In fact, under Scenario B Africa becomes the largest continent in the model, outpacing Asia by more than 150 million profiles. However, note the obvious heteroskedasticity in this dataset — standard errors are strongly correlated with cumulative totals, and are especially high in Africa due to volatility in population projections there. Just as in the Facebook model, Nigeria becomes a major hub of Instagram user deaths under Scenario B, accounting for over 6% of the global total (a similar proportion to that observed in the Facebook models). Niger, Mali, and Burkina Faso also reappear in the top ten countries by dead profile count, while the United States is again the only Western nation to crack the list. Only around roughly 17 percent of the dead user total will belong to Western users.

Table 9. Geographical distribution of dead Instagram profiles (in millions) by country under Scenario B. Percentages may not exactly sum to 100 due to rounding. Results for top ten countries are shown.

Time	Continent	Profiles	SE	Percentage
2100	India	526.9596	9.6315	12.5230%
2100	Nigeria	279.7620	25.2631	6.6485%
2100	United States	199.5974	4.9180	4.7434%
2100	Indonesia	170.0253	3.6881	4.0406%
2100	Brazil	137.2903	1.3345	3.2627%
2100	Niger	132.1374	29.6803	3.1402%
2100	Pakistan	103.6233	5.1846	2.4626%
2100	Burkina Faso	91.1822	23.9312	2.1669%
2100	Mali	89.1692	16.7996	2.1190%
2100	Russia	82.9897	1.7136	1.9722%

5.5.3 Summary and comparison

It is difficult to compare the findings for Facebook and Instagram in a single plot or table without reducing the interesting data. Their significance cannot be illustrated by any particular detail, but emerges out of the combination of graphs and tables.

From the bigger picture that emerges from the above findings, it is clear that assumptions regarding growth rates have a major impact on both absolute numbers and geographical distributions of dead profiles for both networks. While richer data sources may help produce more accurate projections, an exact estimate is almost beside the point. With regards to the geographical distribution, it can be noted that for both networks and scenarios, a handful of countries make up a large proportion of the total — mainly India (due to its large population) and the US (due to its high penetration rates), but also other countries like Nigeria and Brazil will be important stakeholders in this development.

It is also striking that Instagram's accumulation of dead profiles is considerably less than Facebook's under either scenario. This can be explained not only by Instagram's smaller user base, but also the relative youth of its users. Indeed, the curve of the development in both Scenarios A

and B illustrates a rather slow accumulation of mortalities for the next couple of decades compared to Facebook. It takes several decades for Instagram to reach the quantities of deceased profiles that Facebook accumulates within the next two decades alone. We see this also in Figure 4, which is heavily skewed compared to the same figure for Facebook. The fact that Instagram, under Scenario B, reaches as high as 4.2 billion is therefore very uncertain. It assumes an enormous, sustained, and uniform growth throughout the 21st century. Hence, compared to Facebook, the future of death on Instagram is highly dependent on the network's future development, which is in turn unpredictable.

There is one conclusion, though, which may be drawn regardless of which scenario turns out to be more accurate: Within the next couple of decades, there will be a considerable accumulation of digital remains on social media, and this accumulation will be particularly strong in Asia and Africa. Next, I turn to discuss the challenges posed by this development.

5.6 DISCUSSION

The above projection of growth in dead users' profiles marks the first step toward empirically exploring the macroscopic and quantitative aspects of death on social media. It is important to note however, that the results should be interpreted not as a *prediction* of the future, but as a commentary on the present, and an opportunity to respond with thoughtful and effective policy interventions.

Undoubtedly, projections of this kind come with a great degree of uncertainty. In addition to the predictive variance discussed above, there is also uncertainty regarding the data underlying the model. For instance, it is impossible to know if there will be a significant cultural shift among users towards deleting profiles (either one's own or deceased relatives', a possibility given to the appointed legacy contact). It is also possible that Facebook or Instagram will unexpectedly go bankrupt or close in the foreseeable future, thus invalidating the assumptions underlying the models. As stressed by boyd (2006) among others, the longevity of social media sites depends on their ability to evolve, and despite the success of the past decade, we do not yet know how or if Facebook will manage to do this in the future. Moreover, this very topic itself opens up an entirely new set of questions which, if discussed properly, would require the better part of this chapter. For this reason, I am leaving the question of longevity, and the consequences of social media bankruptcy, to the next chapter where it shall be discussed in depth.

For the remainder of this chapter, I shall instead focus on one key point, namely that the accumulation of deceased profiles amounts to something more than merely a collection of individual user histories. In aggregate, I claim, these individual user histories are constitutive also of our *collective* history as a society. Historians who work with large data sets often employ the concept of "macroscope". As explained by Hitchcock (n.d.), this concept was first coined by sci-fi novelist Piers Anthony in his 1969 novel "Macroscope" where it refers to a fictional device (or rather, a crystal) which, like a telescope with infinite resolution, can zoom into any given instance in space-time. The parallels to big-data history are obvious. While some historians (Guldi & Armitage, 2014, p. 112) seem to equate the macroscope with macro-history, others (Graham, Weingart, & Milligan, 2016, p. 2) have pointed out that it is just as compatible with detailed and focused analyses:

> A macroscope, by studying large quantities of data, could fit into microhistory; imagine parcing hundreds of thousands of tweets around a single American trial for example. Yet it also helps us understand macrohistory: tracing fluctuating words or topic frequency over decades, or even centuries. Macroscopes are not bound by time, but rather quantity.

Adopting the latter view, I argue that social media data provide an unprecedented (and often overlooked) basis for such a macroscopic history for the future, both on the micro- and macro-historical level. Because Facebook and its subsidiaries now effectively encompass the entire globe, their archives hold the history of an entire generation. As such, the personal digital heritage left by the online dead are, or will at least become, part of our *digital cultural heritage* as a species (Cameron & Kenderdine, 2007), which may prove invaluable not only to future historians (Brügger & Schroeder, 2017; Pitsillides, Jeffries, & Conreen, 2012; Roland & Bawden, 2012), but to the overall self-understanding of future generations. "Individually tweets might seem insignificant" as stated by Matt Raymond, the former director of communications at the American Library of Congress, "but viewed in the aggregate, they can be a resource for future generations to understand life in the 21st century" (Raymond, 2010). In short, our aggregated social media records can be thought of as a form of future public good (Waters, 2002: 83), without which society risks falling into a "digital dark age" (Kuny, 1998; Smit, van der Hoeven, & Giaretta, 2011), a state of oblivion of our digital past.

Several relevant counterarguments can be raised against this point. For example, it is sometimes claimed that social media content is mundane "trash", which says very little about our "real" culture. I acknowledge that, figuratively speaking, social media data may well be a form of "trash" — but this does not make it worthless. On the contrary, archaeologists often find trash piles and sewers to be among the richest sites for scientific insight about the past (Rathje & Murphy, 2003). To quote Richard Meadow, Director of the Peabody Museum's Zooarchaeology Laboratory and Senior Lecturer on Anthropology at Harvard University in an interview with CNN (Allsop, 2011) "much of what archaeology knows about the past comes from trash […] Trash is a proxy for human behaviour". Temples and monuments may tell us much about ancient civilisations, yet disclose very little about the everyday lives of ordinary people. That which a civilisation considers mundane, by contrast, is often rich with information about their day-to-day lives. This is to say that, if social media data appear like "trash" to us now, it does not mean that they will remain trash to future generations. Rather, precisely because we *do* consider them mundane now, they may become significant for those who come after.

A second line of critique holds that social media provide an *unreliable representation* of reality. Online self-portrayal, it is argued, presents a polished and ultimately false image of real life. To this I have two responses. First, while it is true that one's self-portrayal necessarily provides only a selective image, it may still be valuable for scientific purposes. How people wish to be perceived is just as important as how they are actually perceived by others, and it is often by comparing the hard facts of a population and its self-image, that the truly interesting insight lies. Second, I believe it is a mistake to view social media data as merely a representation of what goes on in society. On the contrary, society is increasingly taking place *within* online social networks. Historically significant events and movements such as Black Lives Matter, #MeToo, and the Arab spring uprisings were, to a large extent, born digital. They are not merely representations of events taking place "in real life" but do, from the very beginning, take place online (I shall elaborate on this point in Chapter 7). And as such, the objection that social media data do not represent society does not make sense, because society increasingly takes place *within* social media.

The final, and certainly the most on-point, objection is that not *all* of society takes place online. Although 21st century life to a large degree is and will be lived "onlife" as Floridi (2015) has it, this experience is by no means universally shared. According to Internetwordstats.com (2020), only 58 percent of the world's population are currently connected to the internet. Even in some developed

countries, like Greece, more than 17 percent of the population lack access (Internetwordstats.com, 2020). Whereas this number will likely rise rapidly in the coming decade, there is still evidence to suggest that access alone is not sufficient to make people use the internet. In the UK, for example, which has an internet penetration rate of about 95 percent, roughly one in every ten persons lack even basic skills in using the internet (Office for National Statistics, 2019). When we speak of the historical value of social media data, it is therefore important to avoid illusions of a "complete" record of the past, at least until all digital divides are bridged.

Nevertheless, the very fact that it is now possible to speak of historical records of entire populations and social groups marks a major shift in how we conceive of historical data. The accumulation of digital remains illustrated in the previous section is therefore to be regarded as an unprecedented historical treasure. Consequently, I hold that it is reasonable to assign to the archives held by Facebook (and Instagram) what I have elsewhere referred to as a *cosmopolitan value* (Öhman & Aggarwal, n.d.) above and beyond its utility to individual users — indeed, a value to the entire species. It is an artefact that tells part of our collective story. Moreover, unlike almost every other historical record to date, the data created on social media does not merely reflect the history of the rich and the powerful. In the age of information, recording is becoming the default (Floridi, 2014), so that instead of asking "is this important enough to preserve" we ask, "is this unimportant enough to destroy". For the first time in history, we have, as a society, an opportunity to leave behind a more just and representative record to future generations.

Contrary to common belief, however, digital artefacts are very fragile. File formats change, hardware must be updated, and data need to be continuously stewarded and organised in order to remain useful. As Jeff Rothenberg (1995) says, "Digital information lasts forever — or five years, whichever comes first". Thus, future access to the global heritage held by social media platforms is far from guaranteed (Whitt, 2017), even for the companies themselves.

The difficulty of preserving digital heritage is not primarily due to storage costs. "The real cost of storage", as Palm (2006, p. 5) puts it, "is management". To maintain data utility, firms must routinely upgrade systems and tend to their contents, a costly and tedious undertaking for which most social media platforms' current curation model was not designed. As such, it is highly plausible that social media companies will soon be forced to make some form of selection as to

what is worth preserving. Lavoie & Dempsey (2004, p. 229), who focus on digital preservation in a more general sense, put it well:

> Preserving our digital heritage is more than just a technical process of perpetuating digital signals over long periods of time. It is also a social and cultural process, in the sense of selecting what materials should be preserved, and in what form; it is an economic process, in the sense of matching limited means with ambitious objectives; it is a legal process, in the sense of defining what rights and privileges are needed to support maintenance of a permanent scholarship and cultural record … And perhaps most importantly, it is an ongoing, long-term commitment, often shared, and cooperatively met, by many stakeholders.

The point is that the cultural/ethical process of selecting whose data are worth preserving, and *how* to preserve them, is inseparable from the economic constraints that induce the question. But how is one to determine what is worth preserving? This requires a normative framework, one or several guiding principles that help us determine the value of data. There are many possible candidates for such a principle. An object can be appreciated for its sentimental, scientific, religious, or aesthetic values, to list just a few considerations of note. Furthermore, it is plausible that different regions, nations and other interest groups will appreciate different values in Facebook's mounting historical record.

Nevertheless, it is neither users nor their political representatives or religious groups who determine how their data is collectively managed — it is the corporate interests of the firm that holds the data, in this case Facebook. For a for-profit firm, what makes data "worth preserving" is ultimately their ability to directly or indirectly contribute to the company's profit. As we saw in Chapter 3, data belonging to deceased users may prove valuable for such purposes. For example, the memorialised profiles may still serve the function of attracting living users who visit the profile to mourn (Karppi, 2013). Indeed, time spent on Facebook can even be understood as a type of labour (Fuchs & Sevignani, 2013). While the (indirect) traffic generated by mourning relatives may not single-handedly result in enough clicks and exposure to cover the costs of curating the dead, it could still serve the indirect function of appropriating central social functions such as mourning and love (Öhman & Floridi, 2017). What is more, datasets of digital remains may also be used for training new models (Leaver, 2013) and extracting historical insight, which may provide a valuable

market advantage. Few legal obstacles stand in the way of such experimentation, as deceased users are not, at least according to current legislation, protected the way living users are (see, for instance, the latest GDPR, which lacks any clear guidelines for handling digital remains).

While both the traffic generated by the bereaved and the internal training of new models are possible uses of digital remains, they do not guarantee long-term profitability. If the economic value of dead profiles were ever to become negative, market forces would compel a rationally self-interested firm to delete them. This seems to be the preferred option for many other social media including Twitter (Twitter.com, n.d.), and is also advocated on a normative basis by some scholars, perhaps most notably Mayer-Schönberger (2009). The problem is that, if Facebook were only to keep the data they consider profitable — perhaps by allowing the descendants of the deceased pay a fee (like on a cemetery) to keep their profile on the network — this would likely feed into already existing power asymmetries of who gets to be part of the historical record. As noted above, the part of the population using the internet is itself economically correlated. A selection process based on profitability is likely to exacerbate this and feed into what Alinda Assman (quoted in Assman, 2011, p. 56) calls "structural amnesia", a systemic erasure of certain aspects of the past. Instead of realising the vision of a "just history" for the future, we thus risk to once again (as in previous centuries) be left with a "history of the rich".

This is not to say that Facebook, nor any other platform, only appreciates the commercial value of digital remains as a source of financial exploitation. In fact, at least at the level of individual users, Facebook has carefully considered the ethical implications of their policy (Brubaker and Callison-Burch, 2016), and has removed advertisements from the deceased profiles, thus virtually de-commercializing the space. But, as noted in Chapter 3, the de-commercialization itself may be interpreted as a response to market incentives, in so much as it is rational for firms to maintain the good will of their customers. Curating a deceased relative's profile could keep some users on the platform, even if it is not the main source of revenue generated by them.

As explained in Chapter 3 — recall for instance the hypothetical case of firm A and firm B — commercial interest must not necessarily contradict other ethical or cultural values. In fact, market incentives often overlap with the interests of researchers, consumers and future generations. But this does *not* mean that they are identical. Consider for instance Lavoie's (2003: 15) three ideal type-roles in the economics of digital preservation: Right holder, Archive and Beneficiary.

Sometimes, these roles are held by a single entity, sometimes by separate ones. Lavoie stresses that in so-called supply-side models, where the Right holder and the Archive are represented by the same entity but the Beneficiary is external, there is a risk that the market alone does not create sufficient incentives for preservation. This is indeed a risk in the case of Facebook. The platform has both the rights to the information stored and is the archiving entity. Moreover, they have little incentive to share (to say nothing of the complexity of posthumous privacy rights). The beneficiaries — in this case future generations and historians — can neither speak for themselves nor create any current incentives, which makes a purely free-market model inappropriate.

If the market alone if insufficient to safeguard the preservation of the digital cultural heritage of social media, it is incumbent on society to develop a curation model that encompasses and appreciates the various kinds of values involved. In line with Lavoie and Dempsey's argument, I thus propose that a multi-stakeholder approach is taken into consideration. This is not in itself a novel proposal. Indeed, the pioneering Task Force on Archiving of Digital Information (1996) was composed of a collection of individuals representing industry, museums, archives and libraries, publishers, scholarly societies and government. And newer initiatives, such as UNESCO's strategic plan for software heritage (Di Cosmo & Zacchiroli, 2017, p. 4), have continued to stress the value of diversity in digital preservation:

> We believe that, for Software Heritage, it is essential to build a not-for-profit foundation that has as its explicit objective the collection, preservation and sharing of our software commons. In order to minimize the risk of having a single point of failure at the institutional level, this foundation needs to be supported by various partners from civil society, academia, industry, and governments, and must provide value to all areas that may take advantage of the existence of the archive, ranging from the preservation of cultural heritage to research, from industry to education.

While Di Cosmo & Zacchiroli deal mainly with software, the same can be said about the vast datasets accumulated by social media firms. It is important that historically significant data are preserved in a way that serves all of humanity, and this cannot be done by allocating the curation of historical social records to any one agent operating in its rational self-interest. Rather, it must be the responsibility of a plurality of stakeholders, including states, NGOs, universities, libraries,

museums, and any other kind of institution that provides unique perspectives on the value of our digital heritage.

Decentralising control over digital heritage is also important from a political point of view. As has been argued elsewhere (Lor & Britz, 2012; Öhman, 2018), concentration of historical data in private hands may prove problematic insofar as it risks "monopolising" access to the past. While it is true that one's digital remains are often distributed over multiple platforms and media (Cann, 2013; Pitsillides et al., 2012: 19), it seems that control of personal data (and hence digital remains) are increasingly concentrated in a small number of global actors (many of which are owned by Facebook, e.g. Whatsapp, Messenger, and Instagram). In the future, it is not unlikely that these data will constitute our only access to historical information, especially when it comes to information about private individuals.

As Orwell (1949) so adroitly observed in *1984*, those who control our access to the past also control how we perceive the present. If Facebook, and a handful of similar actors, are allowed to singlehandedly control what data from the past is preserved, and in what format, it is not unlikely that they would do so in a way that supports their political interests. This need not involve straight up manipulation, but it does inevitably shift the power balance of who gets to tell the narrative of our civilisation. So, in order to prevent a possibly dystopian future of power asymmetries and distorted historical narratives, the task before us is to design a sustainable, dignified solution that takes into account multiple stakeholders and values, a task which inevitably requires a decentralisation of control and ownership of our collective digital heritage.

Academic knowledge and critical perspectives will be key in this process. Researchers are charged not just with providing macro-level analyses like this one, but also with providing qualitative knowledge of how individuals in different cultures and social settings make sense of death and the digital. When it comes to qualitative research, there is — as stressed in Chapter 2 — already a rich literature upon which to draw (Bell et al., 2015; Brubaker et al., 2016; Kasket, 2012a). However, researchers have hitherto mainly focused on North American and European settings, with some notable exceptions (Choudhary, 2018; Hussain, et al., 2017). If the goal is to contribute to a fair and flexible system for curating digital remains, researchers must increasingly turn also to non-Western contexts, where the phenomenon is going to have the largest presence. While survey data from previous studies do not indicate any radical differences in attitudes toward online death

across cultures (Grimm & Chiasson, 2014), a qualitative, nuanced understanding of this fast-evolving subject is urgently needed. I therefore encourage scholars of online death to widen the geographical scope of their research, and focus particularly on South Asia and Africa, where the models suggest the phenomenon will be most prevalent in the coming decades.

5.7 CONCLUDING REMARKS

This chapter provided the first rigorous projection of the accumulation of social media profiles belonging to the deceased. Will the dead then, "take over" Facebook and Instagram? It can at least be concluded that hundreds of millions of dead profiles will be added to the networks in the next few decades alone, and that the dead may well outnumber the living before the end of the century, depending on how global user penetration rates evolve. And irrespective of how the networks grow in the years to come, the vast majority of dead profiles will belong to users from non-Western countries.

Considering its global reach, I have argued that the totality of deceased user profiles amounts to something beyond the sum of its parts: They are becoming part of our collective record as a species, and may prove an invaluable asset to future generations. I believe that a multi-stakeholder approach is the best way to curate such a vast archive, and have stressed that in crafting a future curation model, qualitative understanding of how different cultures make sense of death and the digital will be key. Likewise, the development poses difficult ethical problems that require careful consideration. The onus is now on policymakers and industry to rise to these challenges. I look forward to taking part in the debates to come.

CHAPTER 6: WHAT IF FACEBOOK GOES BUST?

Abstract: An obvious objection to the former chapter is: How do I know that Facebook will even be around in the next few decades let alone the rest of the century? In view of this question, this chapter looks at the ethical implications of a scenario where Facebook actually closes down or goes insolvent. Society is becoming increasingly dependent on data-rich, Big Tech platforms and social networks, such as Facebook and Google. But what happens to our data when these companies close or fail? Despite the high stakes involved, this topic has received only limited attention to date. The chapter is based on an article co-authored with Nikita Aggarwal in which we use the hypothetical failure of Facebook as a case study to analyse legal and ethical risks related to the closure of data-rich, Big Tech platforms. Focusing on the EU, it is argued that existing governance frameworks are inadequate for addressing these risks, and preliminary recommendations are made with a view to setting an agenda for future research and policymaking on the demise of Big Tech platforms and data-rich companies more broadly.

Note: This study is based on a manuscript which has been accepted (with major revisions) in the journal *Internet Policy Review*. This is the revised version. The manuscript is co-authored with my colleague Nikita Aggarwal, who has conducted a majority of the judicial analysis. For a more detailed account of Nikita's contributions see Appendix 4.

6.1 INTRODUCTION

Facebook has,[11] in large parts of the world, become the de facto online platform for communication and social interaction. In 2017, the main platform reached the milestone of two billion monthly active users (Facebook, 2017), and global user growth since then has continued, reaching 2.6 billion in April 2020 (Facebook, 2020). Moreover, in many countries Facebook has become an essential infrastructure for maintaining social relations (Fife et al., 2013), commerce

[11] Unless otherwise stated, references to "Facebook" are to the main platform (comprising News Feed, Groups and Pages, *inter alia*, both on the mobile app as well as the website), and do not include the wider group of companies that comprise Facebook Inc, namely WhatsApp, Messenger, Instagram, Oculus (Facebook, 2018b), and Calibra (Facebook, 2019b).

(Aguilar, 2015) and political organisation (Howard & Hussain, 2013). However, recent changes in Facebook's regulatory and user landscape stand to challenge its pre-eminent position, making its future demise if not plausible, then at least less implausible over the long-term.

Indeed, the closure of an online social network would not in itself be unprecedented. Over the last two decades, we have seen a number of social networks come and go — including Friendster, Yik Yak and, more recently, Google+ and Yahoo Groups. Others, such as MySpace, continue to languish in a state of decline. Although Facebook is arguably more resilient to the kind of user flight that brought down Friendster (Garcia, Mavrodiev, & Schweitzer, 2013; Seki & Nakamura, 2016; York & Turcotte, 2015) and MySpace (boyd, 2013), it is not immune to it. Indeed, these past precedents are important for understanding Facebook's possible decline. Critically, they demonstrate that the closure of Facebook's main platform does not depend on the exit of all users; Friendster, Google+ and others continued to have users when they were sold or shut down.

These precedents suggest that changing user demographics and preferences, and competition from other social networks such as Snapchat or a new platform (discussed further below) could be key drivers of Facebook's decline. However, given Facebook's pre-eminence as the world's largest social networking platform, the ethical, legal and social repercussions of its closure would have far graver consequences than past precedents. Rather, the demise of a global online communication platform such as Facebook could have catastrophic social and economic consequences for innumerable communities that rely on the platform on a daily basis (Kovach, 2018), as well as the users whose personal data Facebook collects and stores.

Despite the high stakes involved in Facebook's demise, there is little research or public discourse addressing the legal and ethical consequences of such a scenario. The aim of this chapter is therefore to foster dialogue on the subject. Pursuing this goal, the chapter provides an overview of the main ethical and legal concerns that would arise from Facebook's demise and sets out an agenda for future research in this area. First, the headwinds buffeting Facebook are identified, and the most plausible scenarios in which the company — specifically, its main platform — might close down are outlined. Second, four key ethical stakeholders in Facebook's demise are identified based on the types of harm to which they are susceptible: Dependent communities, Existing Users, Non-users (especially deceased users), and Future generations. I further examine how various scenarios might lead to these harms, and whether existing legal frameworks are adequate to

mitigate them. Finally, I provide a set of recommendations for future research and policy intervention.

It should be noted that the legal and ethical considerations discussed in this chapter are by no means limited to the demise of Facebook, social media, or even Big Tech. In particular, to the extent that most sectors in today's economy are already, or will soon become, data-driven and data-rich, these considerations, many of which relate to the handling of Facebook's user data, are ultimately relevant to the failure or closure of any company handling large volumes of personal data. Likewise, as human interaction becomes increasingly mediated by social networks and Big Tech platforms, the legal and ethical considerations addressed in the chapter are also relevant to the potential demise of other social networks, such as Google or Twitter. However, focusing on the demise of Facebook — one of the most data rich, social networks in today's economy — offers a fertile case study for the analysis of these critical legal and ethical questions.

6.2 WHY AND HOW COULD FACEBOOK CLOSE DOWN?

This chapter necessarily adopts a long-term perspective, responding to issues that could significantly harm society in the long run if we do not begin to address them today. As outlined in the previous section, Facebook is currently in robust health: Aggregate user growth on the main platform is increasing, and it continues to be highly profitable, with annual revenue and income increasing year-over-year (Facebook, 2017; 2018b). As such, it is unlikely that Facebook would shut down anytime soon. However, as anticipated, the rapidly changing economic and regulatory landscape in which Facebook operates could lead to a reversal in its priorities and fortunes over the long term.

Facebook faces two major headwinds. First, the platform is coming under increasing pressure from regulators across the world (Gorwa, 2019). In particular, tighter data privacy regulation in various jurisdictions (notably, the EU General Data Protection Regulation [GDPR][12] and the

[12] Regulation (EU) 2016/679 < https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=uriserv:OJ.L_.2016.119.01.0001.01.ENG>.

California Consumer Privacy Act [CCPA])[13] could severely inhibit the company's ability to collect and analyse user data. This in turn could significantly reduce the value of the Facebook platform to advertisers, who are drawn to its granular, data-driven insights about user behaviour and thus higher ad-to-sales conversion rates for targeted advertising. In turn, this would undermine Facebook's existing business model, whereby advertising generates over 98.5% of Facebook's revenue (Facebook, 2018b), the vast majority of which on its main platform. More boldly, regulators in several countries are attempting to break up the company on antitrust grounds (Facebook, 2020, p. 64), which could lead, inter alia, to the reversal of its acquisitions of Instagram and WhatsApp — key assets, the loss of which could adversely affect Facebook's future growth prospects.

Secondly, the longevity of the main Facebook platform is under threat from shifting social media trends. Social media usage is gradually moving away from public, Web-based platforms in favour of mobile-based messaging apps, particularly within younger demographics. Indeed, in more saturated markets, such as the US and Canada, Facebook's penetration rate has declined (Facebook, 2020, pp. 31-33), particularly amongst teenagers who tend to favour mobile-only apps such as Snapchat and Instagram (Piper Jaffray, 2019). Although Facebook and Instagram still have the largest share of the market in terms of time spent on social media, this has declined since 2015 in favour of Snapchat (Digital Competition Expert Panel, 2019, p. 26). They also face growing competition from international players such as WeChat with over 1 billion users (Tencent, 2019).

A sustained movement of active users away from the main Facebook platform would inevitably impact the preferences of advertisers, who rely on active users to generate engagement for their clients. Due to reverse network effects, any such exodus of users and/or advertisers could occur suddenly and escalate rapidly (Cannarella & Spechler, 2014; Garcia et al., 2013; Seki & Nakamura, 2016), especially if Facebook's popularity continues to decline in North America and Europe, which remain by far its most lucrative markets. Collectively, these socio-technical and regulatory developments may force Facebook to shift its strategic priorities away from being a public

[13] California Legislature Assembly Bill No. 375
<https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB375>

networking platform (and monetising user data through advertising on the platform), to a company focused on private, ephemeral messaging, monetised through commerce and payment transactions. Indeed, recent statements from Facebook point in this direction (Zuckerberg, 2019):

> I believe the future of communication will increasingly shift to private, encrypted services where people can be confident what they say to each other stays secure and their messages and content won't stick around forever. This is the future I hope we will help bring about. We plan to build this the way we've developed WhatsApp: focus on the most fundamental and private use case -- messaging -- make it as secure as possible, and then build more ways for people to interact on top of that.

Of course, it does not automatically follow that Facebook would shut down its main platform, particularly if it still has sufficient active users remaining on it, and it bears little cost from keeping it open. On the other hand, closure becomes more likely once a sufficient number of active users and advertisers (but, importantly, not necessarily all) have also left the platform, especially in its most profitable regions.[14] In this latter scenario, it is conceivable that Facebook would consider shutting down the main platform's developer API, (Application Programming Interface — the interface between Facebook and client software) instead of leaving it open and vulnerable to a security breach. Indeed, it was in similar circumstances that Google recently closed the consumer version of its social network, Google+ (Google, 2018).

In a more extreme scenario, Facebook Inc. could fail altogether and enter into a legal process such as corporate bankruptcy (insolvency): either a reorganisation that seeks to rescue the company as a going concern, typically by restructuring and selling off some of its assets; or liquidation, in which the company is wound down and dissolved entirely. Such a scenario, however, should be regarded as highly unlikely for the foreseeable future. Although some of the legal and ethical considerations arising from a Facebook insolvency scenario are highlighted, the non-insolvent discontinuation or closure of the main platform shall be our main focus henceforth. It should be noted that, as a technical matter, this closure could take various forms. For example, Facebook could close the platform but preserve users' profiles; alternatively, it could close the platform and destroy, or sell

[14] See Facebook 2019a, at 13 (Revenue disaggregated by geography).

parts or all of its user data etc. Whilst focus is on the ethical and legal consequences of Facebook's closure at the aggregate level, technical variations in the specific form that this closure could take are addressed to the extent that it impacts upon the analysis.

6.3 KEY ETHICAL STAKEHOLDERS AND POTENTIAL HARMS

This section identifies four key ethical stakeholders who could be harmed by Facebook's closure.[15] These stakeholders are: dependent communities, in particular the socio-economic and media ecosystems that depend on Facebook to flourish; existing users, (active and passive) individuals, as well as groups, whose data are collected, analysed and monetised by Facebook, and stored on the company's servers; non-users, particularly deceased users whose data continues to be stored and used by Facebook, and who will represent hundreds of millions of Facebook profiles in only a few decades; and future generations, who, as we saw in Chapter 5, may have a scientific interest in the Facebook archive as a historical resource and cultural heritage.

These categories are referred to as ethical stakeholders, rather than user types, because the categorisation is based on the unique types of harm that each would face in a Facebook closure, not their way of using the platform. That is, the categorisation is a tool to conduct our ethical analysis, rather than corresponding to some already existing groups of users. A single individual may for instance have mutually conflicting interests in her capacity as an existing Facebook user, a member of a dependent community, and as a future non-user. Thus, treating her as a single unit, or part of a particular user group, would reduce the ethical complexity of the analysis. As such, the interests of the stakeholders are by no means entirely compatible with one another, and there will unquestionably be conflicts of interest between them.

Furthermore, for the purposes of the present discussion, I do not intend to rank the relative value of the various interests; there is no internal priority to the analysis, although this may become an important question for future research. It should also be noted that the list is by no means exhaustive. The focus is on the most significant ethical stakeholders who have an interest in Facebook's closure and would experience unique harms due to the closure of a company that is

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[15] I adopt an inclusive definition of ethical harm (henceforth just "harm") as any encroachment upon personal or collective and legitimate interests such as dignity, privacy, personal welfare, and freedom.

both a global repository of personal data, and the world's main communication and social networking infrastructure. As such, traditional, economic stakeholders such as employees, directors, shareholders and creditors are excluded from the analysis. While these groups certainly have stakes in Facebook's potential closure, there is nothing that significantly distinguishes their interests in the closure of a company like Facebook from the closure of any other (multinational) corporation. This also means that stakeholders that could benefit from Facebook's closure, such as commercial competitors, or governments struggling with Facebook's influence on elections and other democratic processes are excluded. Likewise, I refrain from assessing the relative overall (un)desirability of Facebook's closure.

6.3.1 Dependent Communities

The first key ethical stakeholders are the "dependent communities", that is, societies and industries that have developed around the Facebook platform and now (semi-)depend on its existence to flourish.[16]

Over the last decade, Facebook has become a critical economic engine and a key gateway to the internet as such (Digital Competition Expert Panel, 2019). The growing industry of digitally native content providers, from major news outlets such as Huffington Post and Buzzfeed, to small independent agencies, is sometimes entirely dependent on exposure through Facebook. For example, the most recent change in Facebook's News Feed algorithm had devastating consequences for this part of the media industry — some news outlets allegedly lost over 50% of their traffic overnight (Nicholls, Shabbir, Graves, & Nielsen, 2018, p. 15). If such a small change in its algorithms could lead to the economic disruption of an entire industry, the wholesale closure of the main Facebook platform would likely cause significant economic and societal damage on a global scale, particularly where it occurs rapidly and/or unexpectedly, such that news outlets and other dependent communities do not have sufficient time to migrate to other Web platforms.

[16] Naturally, not all communities with a Facebook presence can be included in this category. For example, the lost marketing opportunities for large multinational corporations such as Coca Cola Inc, due to the sudden demise of Facebook, cannot be equated with the harm to a small-scale collective of sole traders in a remote area (e.g. a local craft or farmers' market) whose only exposure to customers is through the platform. "Dependent communities" thus refers only to communities whose ability to *flourish* and *survive* may be threatened by Facebook's sudden demise.

To be clear, our main concern here is not with the individual media outlets, but with communities that are dependent on a functioning Facebook-based media ecosystem. While the sudden closure of one, or even several media outlets may not pose a threat to this ecosystem, a sudden breakdown of the entire ecosystem would have severe consequences. For instance, many of the content providers reliant on exposure through Facebook are located in developing countries, in which Facebook has become almost synonymous with the internet, acting as the primary source of news (Nicholls et al., 2018), amongst other functions. Surveys (Mirani, 2015) from countries such as Thailand, Laos and the Philippines, report that for large parts of the population, Facebook essentially is the Web. Given the primacy of the internet to public discourse in today's world, it goes without saying that, for these communities, Facebook effectively is the digital public sphere, and hence a central part of the public sphere overall. A notable example is Laos, a country which has so recently been digitised, that its language (Lao) has not yet been properly indexed by Google (Kittikhoun, 2019). This lacuna is filled by Facebook, which has established itself not only as the main messaging service and social network in Laos, but effectively also as the Web as such.

The launch of Facebook's Free Basics platform, which provides free access to Facebook services in less developed countries, has further increased the number of communities that depend solely on Facebook. According to the Free Basics website,[17] 100 million people who would not otherwise have been connected are now using the services offered by the platform. As such, there are many areas and communities that now depend on Facebook in order to function and are thus susceptible to considerable harm were the platform to shut down. Note that this harm is not reducible to the individuals using free basics, but is a concern for the entire community, including members not using Facebook. As an illustrative example, consider the vital role played by Facebook and other social media platforms in disseminating information about and keeping many communities connected during the COVID-19 pandemic. In a time of crisis, communities with a large dependency on a single platform become particularly vulnerable.

Of course, whether the closure of Facebook's main platform harms these communities depends on the reasons for closure and the manner in which it closes down (sudden death vs slow decline). If closure is accompanied by the voluntary exodus of these communities, for example to a different part of the Facebook Inc. group (e.g. Messenger or Instagram), or a third-party social network,

[17] See https://info.internet.org/en/impact/

they would arguably incur limited social or economic costs. On the other hand, it is entirely possible to imagine a scenario in which the main Facebook platform is shut down because it is unprofitable to the company as a whole, or does not align with the company's strategic priorities, yet remains systemically important for a number of dependent communities. These communities could still use and depend on the platform however may simply not be valuable or lucrative enough for Facebook Inc. to justify keeping the platform open. Indeed, many of the dependent communities described above are located in regions of the world that are the least profitable for the company (certainly under an advertising-driven revenue model).

The question arises how these dependent communities should be protected in the event of Facebook's demise. Indeed, existing legal frameworks governing Facebook do not make special provision for its systemically important functions. As such, it is proposed that the concept of "systemically important technological institutions" ("SITIs") — by way of analogy to "systemically important financial institutions" ("SIFIs") — be given more serious consideration in managing the life and death of global communications platforms, such as Facebook, that provide a critical societal infrastructure. This proposal is examined further in 6.4.

6.3.2 Existing Users

The category "Existing users" refers broadly to any living person or group of people who uses or has used the main Facebook platform, and continues to maintain a Facebook profile or page. That is, both daily and monthly active users, as well as users who are not actively using the platform however still have a profile where their information is stored (including "de-activated" profiles). Invariably, there is an overlap between this set of stakeholders and "dependent communities": the latter includes the former. The main focus here is on ethical harms that arise at the level of the individual user, by virtue of their individual profiles or group pages, rather than the systemic and societal harms outlined above.

It is tempting to think that the harm to these users in the event of Facebook's closure is limited to the loss of the value that they place on having access to Facebook's services. However, this would be an incomplete conclusion. Everything a user does on the network is recorded and becomes part of Facebook's data archive, which is where the true potential for harm lies. That is, the danger stems not only from losing access to the Facebook platform and the various services it offers, but from future harms that users (active and passive) are exposed to as they lose control over their

personal data. Any violation of the trust that these users place in Facebook with respect to the use of their personal data threatens to compromise user privacy, dignity and self-identity (Floridi, 2011). Naturally, these threats also exist today. However, as long as the platform remains operational, users have a clear idea of who they can hold accountable for the processing of their data. Should the platform be forced to close, or worse still, sell off user data to a third party, this accountability will likely vanish.

The scope for harm to existing users upon Facebook's closure depends on how Facebook continues to process user data. If the data are deleted (as occurred, for example, in the closure of Yahoo! Groups),[18] users could lose access to information — particularly, photos and conversations — that are part of their identity, personal history and memory. Although Facebook does allow users to download much of their intentionally provided data to a hard drive — in the EU, implementing users' rights to data portability — this does not encompass users' conversations and other forms of interactive data.[19] For example, Facebook photos in which a user has been tagged, but which were uploaded by another user, are not portable, even though these photos arguably contain the first user's personal data. Downloading data is also an impractical option for the hundreds of millions of users accessing the platform only via mobile devices (Datareportal, 2019) that lack adequate storage and processing capacity. Personal archiving is an increasingly constitutive part of a person's sense of self, but, as noted by Acker and Brubaker (2014), there is a tension between how users conceive of their online personal archives, and the corporate, institutional reality of these archives.

On the other hand, it is highly plausible that Facebook would instead want to retain these data to train its machine learning models and to provide insights on users of other Facebook products, such as Instagram and Messenger. In this scenario, the risk to existing users is that they lose control over how their information is used, or at least fail to understand how and where it is being processed (especially where these users are not active on other Facebook products, such as Instagram). Naturally, involuntary user profiling is a major concern with Facebook as it stands. The difference in the case of closure is that many users will likely not even be aware of the possibility of being profiled. If Facebook goes down, these users would no longer be able to view

[18] https://help.yahoo.com/kb/understand-data-downloaded-yahoo-groups-sln35066.html

[19] See Art 20 GDPR.

their data, leading many to believe that it in fact is destroyed. Yet, a hypothetical user may for instance create an Instagram profile in 2030 and still be profiled by her lingering Facebook data, despite Facebook (the main platform) being long gone by then. Or worse still, her old Facebook data may be used to profile other users who are demographically similar to her, without her (let alone their) informed consent or knowledge.

Existing laws in the EU offer limited protection for users' data in these scenarios. If Facebook intended to delete the data, under EU data protection law it would likely need to notify as well as seek the consent of users for the further processing of their data, [20] offering them the opportunity to retrieve their data before deletion (cf. the closure of Google+ and Yahoo! Groups). [21] On the other hand, if Facebook opted to retain and continue processing user data in order to provide the (other) services set out under its terms and conditions, it is unlikely that it would be legally required to obtain fresh consent from users — although, in reality, the company would likely still offer users the option to retrieve their data. Independently, users in the EU could also exercise their rights to data portability and erasure to retrieve or delete their data.

In practice, however, the enforcement and realisation of these rights is challenging. Given that user data are commingled across the Facebook group of companies, and moreover have "velocity" — an individual user's data will likely have been repurposed and reused multiple times, together with the data of other users — it is unlikely that all of the data relating to an individual user can or will be identified and permanently "returned". Likewise, given that user data are commingled, objection by an individual user to the transfer of their data is unlikely to be effective — their data will still be transferred with the data of other users who consent to the transfer. As previously mentioned, the data portability function currently offered by Facebook is also limited in scope.

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[20] See Art 4(2) GDPR (defining 'processing' to include, *inter alia*, 'erasure or destruction' of personal data).

[21] See Google Help, (2019) 'Shutting down Google+ for consumer (personal) accounts on April 2, 2019' https://support.google.com/plus/answer/9195133?hl=en-GB. Facebook states in its data policy that "We store data until it is no longer necessary to provide our services and Facebook Products or until your account is deleted — whichever comes first", which might suggest that users provide their consent to future deletion of their data when they first sign up to Facebook. However, it is unlikely that this clause substitutes for the requirement to obtain specific and unambiguous consent to data processing, for specific purposes — including deletion of data — under the GDPR (see Articles 4(11) and 6(1)(a).

Notwithstanding these practical challenges, a broader problem with the existing legal framework governing user data is that it is almost entirely focused on the rights of individual users. It offers little recognition or protection for the right of groups — for example, Facebook groups formed around sports, travel, music or other shared interests — and thus limited protection against group-level ethical harm within the Facebook platform (i.e., when the ethical patient is a multi-agent-system, not necessarily reducible to its individual parts [Floridi, 2012; Simon, 1995]).

This problem is further exacerbated by so called "ad hoc groups" (i.e. groups that are formed only algorithmically [Mittelstadt, 2017]), which may not necessarily correspond to any organic communities. For example, "dog owners living in Wales aged 38–40 that exercise regularly" (Mittelstadt 2017, p. 477) is a hypothetical algorithmically formed group. Whereas many organically formed groups are already acknowledged by privacy and discrimination laws, or at least have the organisational means to defend their interests (e.g. people with a certain disability, sexual orientation etc.), ad hoc algorithmic groups often lack organisational means of resistance.

6.3.3 Non-Users

The third key ethical stakeholders are those who never, or no longer, use Facebook, yet are still susceptible to harms resulting from its demise. This category includes a range of disparate sub-groups, including individuals who do not have an account, but whose data Facebook nevertheless collects and tracks from apps or websites that embed its services (Hern, 2018). Facebook uses these data, inter alia, to target the individual with ads encouraging them to join the platform (Facebook, 2018a). Similarly, the non-user category includes individuals who may be tracked by proxy, for example by analysing data from their relatives or close network (more on this below). A third sub-group is minors who may feature in photos and other types of data uploaded to Facebook by their parents (so-called "sharenting").

The most significant type of non-users, however, are deceased users, i.e. those who have used the platform in the past but have since passed away. Although this may currently seem a rather niche concern, the deceased user group is expected to grow rapidly over the next couple of decades. As

shown in Chapter 5,[22] Facebook will soon host hundreds of millions of deceased profiles on their servers. This sub-group is of special interest since, unlike living non-users who generally enjoy at least some legal rights to privacy and data protection (as outlined above), the deceased do not qualify for protection under existing data privacy laws. The lack of protection for deceased data subjects is a pressing concern even without Facebook closing. [23] Facebook does not have any legal obligation to seek their consent (nor that of their representatives) before deleting, or otherwise further processing, users' data after death (although Denmark, Spain and Italy are exceptions).[24] Moreover, even if Facebook tried to seek the consent of their representatives, it would have a difficult time given that users do not always appoint a "legacy contact" to represent them posthumously.

The closure of the platform, however, opens an entirely new level of ethical harm, particularly in the (unlikely but not impossible) case of bankruptcy or insolvency. Such a scenario would likely force Facebook to sell off its assets to the highest bidder. However, unlike the sale or transfer of data of living users, which under the GDPR and EU insolvency law requires users' informed consent, there is no corresponding protection for the sale of deceased users' data in insolvency, such as requiring the consent of their next of kin. Moreover, there are no limitations on who could purchase these data and for what purposes. For example, a deceased person's adversaries could acquire their Facebook data in order to compromise their privacy or tarnish their reputation

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[22] Facebook's policy on deceased users has changed somewhat over the years, but the current approach is to allow next of kin to either memorialize or permanently delete the account of a confirmed deceased user (Facebook, n.d.). Users are also encouraged to select a 'legacy contact', that is, a second Facebook user who will act as a custodian in the event of their demise. Although these technical solutions have proven to be successful on an individual, short-term level, several long-term problems remain unsolved. In particular, what happens when the legacy contact themselves dies? For how long will it be economically viable to store hundreds of millions of deceased profiles on the servers?

[23] Several philosophers and legal scholars have recently argued for the concept of posthumous privacy to be recognised (see Scarre [2014, p.1], Stokes [2015] and Öhman & Floridi [2018]).

[24] Recital 27 of the GDPR clearly states that '[t]his Regulation does not apply to the personal data of deceased persons', however does at the same time allow Member States to make additional provision for this purpose. Accordingly, a few European countries have included privacy rights for deceased data subjects in their implementing laws (for instance, Denmark, Spain and Italy — see https://www.twobirds.com/en/in-focus/general-data-protection-regulation/gdpr-tracker/deceased-persons.) However, aside from these limited cases, existing data protection for the deceased is alarmingly sparse across the world.

posthumously. Incidents of this kind have already been reported on Twitter, where the profiles of deceased celebrities have been hacked and used to spread propaganda.[25] The profiles of deceased users may also remain commercially valuable and attractive to third party purchasers — for instance, by providing insights on living associates of the deceased, such as their friends and relatives. As in genealogy — where one individual's DNA also contains information about their children, siblings and parents — one person's data may similarly be used to predict another's behaviour or dispositions (see Creet [2019] on the relationship between genealogy websites and big pharma).

In sum, the demise of a platform with Facebook's global and societal significance is not only a concern for those who use, or have used, it directly, but also for individuals who are indirectly affected by its omnipresence in society.

6.3.4 Future Generations

It is also important to consider indirect harms arising from Facebook's potential closure due to missed opportunities. The most important stakeholders to consider in this respect are future generations, which, much like deceased users, are seldom directly protected in law. By "future generations" I refer mainly to future historians and sociologists studying the origins and dynamics of digital society, but also to the general public and their ability to access their shared digital cultural heritage.

It is widely accepted that the open Web holds great cultural and historical value (Rosenzweig, 2003). It provides a macropscope (Graham et al., 2016) which allows historians to analyse large social patterns over time, while at the same time allowing them to zoom in on the particular (see Chapter 5 on this). Thus several organisations — perhaps most notably the Internet Archive's Way Back Machine — as well as researchers (Brügger & Schroeder, 2017) are working to preserve it.[26] Personal data, however, have received less attention. Although (most) individual user data may

[25] See https://www.alaraby.co.uk/english/indepth/2019/2/25/saudi-trolls-hacking-dead-peoples-twitter-to-spread-propaganda

[26] See https://archive.org/web/

be relatively inconsequential for historical, scientific and cultural purposes, the aggregate Facebook data archive amounts to a digital artefact of considerable significance. The personal digital heritage of each Facebook user is, or will become, part of our shared cultural digital heritage (Cameron & Kenderdine, 2007). As Varnado (2014, p. 744) writes:

> Many people save various things in digital format, and if they fail to alert others of and provide access to those things, certain memories and stories of their lives could be lost forever. This is a loss not only for a descendant's legacy and successors but also for society as a whole. […] This is especially true of social networking accounts, which may be the principal—and eventually only—source for future generations to learn about their predecessors.

Not only is Facebook becoming a significant digital cultural artefact, it is arguably the first such artefact to have truly global proportions. Indeed, Facebook is by far the largest archive of human behaviour in history. As such, it can legitimately be said to hold what Appiah (2006) calls "cosmopolitan value" — that is, something that is significant enough to be part of the narrative of our species. Given its global reach, and thus its interest to all of human kind (present and future), this record can even be thought of as a form of future public good (Waters, 2002, p. 83), without which we risk falling into a "digital dark age" (Kuny, 1998; Smit et al., 2011) — a state of ignorance of our digital past.

The concentration of digital cultural heritage in a single (privately controlled and corporate) platform is in and of itself problematic, especially in view of the risk of Facebook monopolising private and collective history (see Chapter 5). These socio-political concerns are magnified in the context of the platform's demise. For such a scenario poses a threat not only to the control or appraisal of digital cultural heritage, but also to its very existence — by compartmentalising the archive, thus destroying its global significance, and/or by destroying it entirely due to lack of commercial or other interest in preserving it.

These risks are most acute in an insolvency scenario, where, as discussed above, the data are more likely to be deleted or sold to third parties, including by being split up among a number of different data controllers. Although such an outcome may be viewed as a positive development in terms of decentralising Facebook's power (Öhman & Watson, 2019), it also risks dividing and therefore

diluting the global heritage and cosmopolitan value held within the platform. Worse still would be a scenario in which cosmopolitan value is destroyed due to a lack of, or divergent, commercial interests in purchasing Facebook's data archives, or indeed the inability to put a price on these data due to the absence of agreed accounting rules regarding a company's (big) data assets (Lyford-Smith, 2017). The recent auction of Cambridge Analytica's assets in administration, where the highest bid received for the company's business and intellectual property rights (assumed to include the personal data of Facebook users) was a mere £1, is a sobering illustration of these challenges.[27]

However, the concerns are not limited to an insolvency scenario. In the more plausible scenario of Facebook closing the shutters on one of its products, such as the main platform website and app, the archive assembled by the product would no longer be accessible as such to either the public or future generations, even though the data and insights would likely continue to exist and be utilised within the Facebook Inc. group of companies (inter alia, to provide insights on users of other products such as Instagram and Messenger).

6.4 RECOMMENDATIONS

The stakeholders presented above, and the harms to which they are exposed, occupy the ethical landscape in which legal and policy measures to manage Facebook's closure must be shaped. Although it is premature to propose definitive solutions, this section offers four broad recommendations for future policy and research in this area. These recommendations are by no means meant to be coherent solutions to "the" problem of big tech insolvency, but rather are posed as a starting point for further debate.

1. Develop a regulatory framework for Systemically Important Technological Institutions.

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[27] See Administrator's Progress Report https://beta.companieshouse.gov.uk/company/09375920/filing-history. However, consumer data (for example, in the form of customer loyalty schemes) has been valued more highly in other corporate insolvencies (see for example, the Chapter 11 reorganisation of the Caesar's Entertainment Group <https://digital.hbs.edu/platform-digit/submission/caesars-entertainment-what-happens-in-vegas-ends-up-in-a-1billion-database/>).

The concept of SIFIs, which has taken hold since the 2008 financial crisis, refers to domestic or global financial institutions whose failure is anticipated to have adverse consequences for the rest of the financial system and the wider economy. As such, internationally agreed best practice is for SIFIs to be subject to a special regulatory regime, both in life and in death. Importantly, the overriding objective of this regime is not to immunise systemically important institutions from failure, but rather to avert the "too big to fail" problem (where troubled financial institutions are bailed out using taxpayers' money for lack of an orderly way to reorganise them).

As discussed in 6.3.3, many societies around the world have become ever-more dependent on digital communication and commerce through Big Tech platforms such as Facebook and would be harmed by its (disorderly) demise. Consider, for instance, the implications of a sudden breakdown of these platforms in times of crisis like the COVID-19 pandemic. As such, there are compelling reasons to regulate these platforms in a similar way to SIFIs, as systemically important institutions. By way of analogy to the SIFI concept, it is thus proposed that a new concept of systemically important technological institution, or "SITI", be given more serious consideration.

The regulatory framework for SITIs should build on the existing regulation of large infrastructure companies, such as water and electricity providers, as public utilities. Indeed, researchers (boyd, 2012; Rahman, 2018) have made similar calls, on the basis that online platforms provide a critical social infrastructure and are natural monopolies that benefit from strong network effects and economies of scale.[28] Whilst the fine print of this regulatory regime requires further deliberation — indeed, the analogy with SIFIs and public utilities has evident limitations — it should reflect the need for SITIs to continue to provide "essential services" to dependent communities — for example, access to user groups or messaging apps — or else facilitate the transfer of these services to an alternative provider. Hopefully, this chapter will help incite discussions to this end.

2. Strengthen the legal mechanisms for users to control their own data in cases of platform insolvency or closure.

[28] Similarly, US Presidential candidate Senator Elizabeth Warren has called for Big Tech platforms to be regulated as "platform utilities" (Warren, 2019).

Existing data protection laws are insufficient to protect Facebook users from the ethical harms that could arise from the handling of their data in the event of the platform's closure. As highlighted above, the nature of "Big Data" is such that even if users object to the deletion or sale of their data, and request their return, Facebook would be unable as a practical matter to fully satisfy that request. As a result, users face ethical harm where their data is used against their will, in ways that could undermine their privacy, dignity and self-identity.

This calls for new data protection mechanisms that give Facebook users better control over their data. Potential solutions include creating new regulatory obligations for data controllers to segregate user data, in particular as between different Facebook subsidiaries (e.g. the main platform and Instagram), where data are currently commingled.[29] This would allow users to more effectively retrieve their data were Facebook to shut down and could offer a more effective way of protecting the interests of ad hoc "algorithmic" groups (Mittelstadt, 2017). However, to the extent that segregating data in this way undermines the economies of scale that facilitate Big Data analysis, it could have the unintended effect of reducing the benefits that users gain from the Facebook platform, inter alia through personalised recommendations.

Additionally, or alternatively, further consideration should be given to the concept of "data trusts", as a bottom-up form of data governance and control by users (Delacroix & Lawrence, 2018). Under a data trust structure, Facebook would act as a trustee for user data, holding them on trust for the user(s) — as the settlor(s) and beneficiary(ies) of the trust — and managing and sharing the data in accordance with their instructions. Moreover, a plurality of trusts can be developed, for example, designed around specified groups of aggregated data (in order to leverage the economies of scope and scale of large, combined datasets). As a trustee, Facebook would be subject to a fiduciary duty to only use the data in ways that serve the best interests of the user. As such, a data trust structure could provide a stronger legal mechanism for safeguarding the wishes of users with respect to their data as compared to the existing standard of "informed consent". Another possible

[29] Facebook has stated that financial data collected by Calibra, via the Libra wallet, will not be shared with Facebook or third parties without user consent (Facebook 2019b). The segregation of user data is the subject of a ruling by the German Competition Authority, however this was overturned on appeal by Facebook (and is now being appealed by the competition authority —the original decision is here: https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html).

solution involves decentralising the ownership and control of user data, for example using distributed ledger technology.[31]

3. Strengthen legal protection for the data and privacy of deceased users.

Although the interests of non-users as a group need to be given serious consideration, I highlight the privacy of deceased users as an area in particular need of protection. Specifically, it is recommended that more countries follow the lead of Denmark in implementing legislation that, at least to some degree, protects the profiles of deceased users from being arbitrarily sold, mined and disseminated in the case of Facebook's closure. Such legislation could follow several different models. Perhaps the most intuitive option is to simply enshrine the privacy rights of deceased users in data protection law, such as (in the EU) the GDPR. This can either be designed as a personal (but time-limited) right (as in Denmark), or a right bestowed upon next of kin (as in Spain and Italy). It could be shaped by extending copyright law protection (Harbinja, 2017) or take place within what Harbinja (2013, p. 20) calls a "human rights-based regime", i.e. as a universal and inviolable right.

The risk of ethical harm to deceased users or customers in the event of corporate demise is not limited to the closure of Facebook, or Big Tech (platforms). Although Facebook will likely be the single largest holder of deceased profiles in the 21st century, other social networks (LinkedIn, WeChat, YouTube etc.) are also likely to host hundreds of millions of deceased profiles within only a few decades. And as more sectors of the economy become digitised, any company holding customer data will eventually hold a large volume of data relating to deceased subjects. As such, developing more robust legal protection for the data privacy rights of the deceased is important for mitigating the ethical harms due to corporate demise, broadly defined.

4. Create stronger incentives for Facebook to share insights and preserve historically significant data for future generations.

[31] As discussed in Section III, a related imperative is to clarify the financial accounting rules for the valuation of (Big) data assets, including in an insolvency context.

Future generations cannot directly safeguard their interests and thus it is incumbent on us to do so. Given the societal, historical and cultural interest in preserving, or at least averting the complete destruction of, Facebook's cultural heritage, stronger incentives need to be created for Facebook to take responsibility and begin acknowledging the global historical value of its data archives.

A promising strategy would be to protect Facebook's archive as a site of digital world heritage, drawing inspiration from the protection of physical sites of global cultural heritage, such as through UNESCO World Heritage protected status. Pursuant to Article 6.1 of the Convention Concerning the Protection of World Cultural and Natural Heritage (UNESCO, 1972), State Parties acknowledge that, while respecting the sovereignty of the state territory, their national heritage may also constitute world heritage, which falls within the interests and duties of the "international community" to preserve. Meanwhile, Article 4 stipulates that:

> Each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage […] situated on its territory, belongs primarily to that State. It will do all it can to this end, to the utmost of its own resources and, where appropriate, with any international assistance and co-operation, in particular, financial, artistic, scientific and technical, which it may be able to obtain.

A digital version of this label may similarly entail acknowledgement by data controllers of, and a pledge to preserve, the cosmopolitan value of their data archive, while allowing them to continue using the archive. However, in contrast to physical sites and material artefacts, which fall under the control of sovereign states, the most significant digital artefacts in today's world are under the control of Big Tech companies, like Facebook. As such, there is reason to consider a new international agreement between corporate entities, in which they pledge to protect and conserve the global cultural heritage on their platforms.[32]

[32] This could be formal or informal, for example in the vein of the 'Giving Pledge' — a philanthropic initiative to encourage billionaires to give away the majority of their wealth in their lifetimes (see < https://givingpledge.org/>).

However, bestowing the label of world digital heritage does not resolve the question of access. Unlike Twitter, which in 2010 attempted to donate its entire archive to the Library of Congress,[33] Facebook's archive arguably contains more sensitive, personal information about its users. Moreover, these data offer the company more of a competitive advantage compared to Twitter (the latter's user accounts are public, in contrast to Facebook, where many of the profiles are visible only to friends of the user). These considerations could reduce Facebook's readiness to grant public access to its archives. Nevertheless, safeguarding the existence of Facebook's records and its historical significance remains an important first step in making it accessible to future generations.

It goes without saying that the interests of future generations will at times conflict with the interests of the other three identified ethical stakeholders. As Mazzone (2012, p. 1660) points out "the societal interest in preserving postings to social networking sites for future historical study can be in tension with the privacy interests of individual users". Indeed, Facebook's data are proprietary, and any interventions must respect its rights in the data as well as the privacy rights of users. Yet, the mere fact that there are conflicts of interests and complexities does not mean that the interests of future generations ought to be neglected altogether.

6.5 CONCLUDING REMARKS

The objective of this thesis is to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. As shown in this chapter, one such challenge is mitigating the ethically undesirable consequences of the potential demise of a global social media platform like Facebook. Indeed, the analysis shows that, even if Facebook closes before it accumulates the hundreds of millions, or billions, of deceased profiles projected in Chapter 5, the ethical consequences will be serious.

[33] Although the initiative has ceased to operate as originally planned, it remains one of the best examples of large scale social media archiving (see https://www.npr.org/sections/thetwo-way/2017/12/26/573609499/library-of-congress-will-no-longer-archive-every-tweet).

For the foreseeable future, Facebook's demise remains a high risk, low probability event. However, mapping out the legal and ethical landscape for such an eventuality, as done in this chapter, allows society to better manage the fallout should this scenario materialise. Moreover, the above analysis helps to shed light on lower risk but higher probability scenarios. Companies regularly fail and disappear — increasingly taking with them troves of customer-user data that receive only limited protection and attention under existing law. The legal and ethical harms identified in this chapter, many of which flow from the use of data following Facebook's closure, are thus equally relevant to the closure of other companies, albeit on a smaller scale. Regardless of which data-rich company is the next to go, we must make sure that an adequate governance framework is in place to minimise the systemic and individual damage. Hopefully this chapter will help kickstart a debate and further research on these important issues.

CHAPTER 7: A THEORY OF TEMPORAL TELEPRESENCE

Abstract: The concept of *presence* is central to this thesis. But what exactly does it mean to say that dead people are present online? To answer this we must look closer at the relationship between information technology and temporal experience, often conceptualised within the literature in terms of a "collapsing time". Despite its intuitive appeal, I claim that the notion of a collapsed time leaves considerable room for conceptual ambiguity, which in turn hampers a deeper ethical analysis of the topic. In view of this ambiguity, the present chapter sets out to provide analytical rigour to, and thus unpack the ethical dimensions of, the notion of time collapse. Pursuing this goal, I introduce the concept of temporal friction, denoting informational resistance that makes moments of time perceivable as separate for an embodied epistemic agent. I argue that the concept of temporal friction offers a more flexible and precise interpretation of collapsed time, and draw on two examples — search warrants and so called digital remains — to illustrate its ethical significance.

Since your years never come to an end, for you they are simply 'today'... But you yourself are eternally the same. In your 'today' you will make all that is to exist tomorrow and thereafter, and in your 'today' you have made all that existed yesterday and for ever before.

Augustine

7.1 INTRODUCTION

What does it mean to say that the dead are "present on the web"? Or more broadly, how is it that the past, in general, appears to remain *there* for us in the present on social media? In response to such questions, scholars of digital memory often employ the concept of "time collapse", i.e. the common notion that the past and the present somehow become indistinguishable in online environments.

Some scholars, especially within the literature on digital memory, use this term explicitly. Hoskins (2004, p. 113), for instance, refers specifically to "collapsing times" in the modern media landscape. Similarly, Pogačar, (2017), as well as Brandtzaeg & Lüders (2018), who draw on Marwick & boyd's

(2010) collapse of context, refer also to a "time collapse". In other cases, references to the notion of a collapsed time are instead implicit. Castells (2010a, p. 494), for instance, understands time in information society as a form of "timeless time", a "systematic perturbation in the sequential order of phenomena". Lagerkvist (2015) speaks of a specifically "digital time", Kaun & Stiernstedt (2014) of "social media time", and Mitchell et al. (2014, p. 428) of an "a-temporal space" of the internet. While terminology may vary across these and other related works (indeed, countless further examples can be named), they are all premised on some notion relating to a collapse.

Given its recurrence in scholarly literature, the concept of "time collapse" clearly captures a central feature of online media. The problem, however, is that it remains unclear what exactly it means. Formulations such as "collapse of time" and "timeless time" may have an intuitive appeal, but from a philosophical standpoint, they leave considerable room for conceptual ambiguity. What exactly do, and can, we mean by saying that time has collapsed? And how exactly is such a collapse related to information and communication technology (ICT)? It is important that we answer such questions in an analytically sharp and conceptually clear manner, not only because it enables better sociological analysis, but because the way we speak about time has implications for how we deal with the ethical aspects of the topic. As we have seen through several of the previous chapters (especially 3 and 5), the continuous presence of past individuals online raises serious ethical challenges, and our ability to properly identify and understand these challenges (as well as our subsequent decision making) hinges upon the sharpness of the concepts we use to unpack them.

The goal of this chapter, therefore, is to provide a theoretical analysis that brings clarity and analytical rigour to the notion of "time collapse" and its relationship to ICT, and thereby to further unpack its ethical dimensions. I begin by focusing only on the concept of presence itself — what it means for something to be *there* — and outline how an informational theory of spatial telepresence can be translated into a temporal context. Second, I introduce the concept of *temporal friction*, which I define as *the informational resistance that makes moments of time perceivable as separate for an epistemic agent*, i.e. the process that "encapsulates" the past from the present. I argue that, just as walls create separate rooms by limiting flows of information (e.g., light, sound etc.), our distinction between moments in time is also an informational process, and that, consequently, it is shaped by the technologies mediating it. Finally, I shall point to the ethical utility of the concept of temporal friction, using two examples — search warrants and so called digital human remains — to illustrate how it can be employed in ethical analysis of emerging ICT.

It should be noted that despite its focus on temporality, this chapter does not intend to make any claims about the absolute nature of time as understood in physics. Although employing an analytical methodology, it does not engage with the classical debates within philosophy of time (McTaggart, 1908; Prior, 2002), nor with contemporary literature on the philosophy of persistence (Callender & Balashov, 2011). Neither should this chapter be read as a mere commentary on human memory in the cognitive, nor in a merely social, sense.[34] Although the individual's experience of time is deeply connected to cognition and to social practice, the focus of this chapter is placed rather on the conceptual level that underpins sociologically (Esposito, 1997; Nowotny, 1992) and psychologically oriented research on time (Heersmink & Carter, 2017). My subject is *the conceptual preconditions of the phenomenal experience of time as lived by a collective of data subjects in an information society* (that is, a society completely embedded within information technologies). Thus, I shall henceforth use the term "time" only in a human sense, that is, as something we experience and relate to. With these caveats in place, let us begin by considering the general concept of telepresence — what it means for a mediated object to be *there* — and its relationship to technology.

7.2 TELEPRESENCE

On a trivial level, telepresence merely refers to the presence of technologically mediated objects. But, as stressed by Lombard and Jones, (2015) among others, there is still little consensus as to what exactly telepresence means on a philosophical level. Indeed, as Slater (2003, p. 1) claimed some 15 years ago "[w]hen people talk about presence they are often not talking about the same underlying concept at all". Since this study is concerned specifically with the conceptual link between information technology and (temporal) telepresence, I shall, however, refrain from reviewing the various definitions used across the literature. Instead I will draw directly on Floridi's (2006) Successful Observability (SO) approach, a framework which places information at the very centre of discourse on presence, and which can rather easily be converted into a theory of temporal telepresence.

An alert reader may note that Floridi's non-anthropocentric philosophy contradicts some of the tenets of phenomenology, especially Heidegger: While phenomenology explicitly places the human

[34] For an extensive overview of the former see instead (Heersmink and Carter, 2017).

experience at the centre of ontological discourse, Floridi's philosophy generally seeks to remove the human. In fact, the relationship between Information Ethics and Phenomenology is a topic for extensive debate. However, in the current context I do not see any reason why these traditions could not be combined. Though my object of study is the phenomenal experience of time, the particular argument does not require an endorsement nor a denunciation of Heideggerian metaphysics in that does not use any explicitly phenomenological language. Thus I will refrain from further comparison between the philosophy of information and phenomenology. While the conflict can be circumvented in the context of this chapter, the relationship between phenomenology and Information Ethics will undoubtedly require closer scrutiny as the theory continues to develop in the future.

Let me now describe in closer detail the SO approach. To Floridi, an object A can be simultaneously present in a Local Space of Observation (LSO) and a Remote Space of Observation (RSO), if some of A's properties (constitutive information *i*) are at least hypothetically observable in both spaces (see Figure 1). Note that the information *i* in the RSO is not just a representation of A's "real" presence in the LSO — the presence of A in the LSO is just as contingent on the observability of *i* as it is in the RSO. A file you download to a computer is not just a representation of the original — it is that file; a status update on social media is not a representation of some "real" event taking place at a particular location, but is the event. Thus, unless they are completely uniform, the relationship between a LSO and a RSO, is that of reduction — not representation. What is present, in other words, is that which can be successfully observed.

Insofar as it transmits observable information from a LSO to a RSO, the function of ICT is thus to expand the horizon of presence.[36] When Alice participates in a meeting via a video call, she is present in that meeting insofar as her constitutive information *i* can be observed by an epistemic agent at the meeting in question. The other participants in the meeting are not merely interacting with a computer convincingly replicating Alice's voice and appearance, but with a reduced version of the informational object itself (in this case Alice).

[36] Following up on the previous footnote, "horizon" is here used in a trivial sense, but could possibly also be interpreted in the phenomenological sense of the word initiated by Husserl (1928/1964) and developed by Heidegger (1962) among others. As shown by Geniusas (2014) however, this concept comes with major theoretical complexities that need not be discussed within this chapter.

Nevertheless, successful observation requires some criteria for what type of information is deemed relevant, e.g. what is to be redacted, which Floridi describes as a Level of Abstraction (LoA) (2008). The method of LoA is a philosophical mode of inquiry developed by Floridi (2008) with inspiration from Formal Methods in Computer Science. A LoA refers to the extent to which an entity has been "abstracted" from its natural unique context, i.e. the totality of its information. A person, with her almost infinite complexity, can for instance be reduced to her physical attributes. A LoA can thus be described as a *collection of observables,* that is a set of "possible values and outcomes" (Floridi 2013, p. 31) that enables comparison between entities, be it technologically, morally or logically.

This is basically just to say that without a common frame of reference, a specification as to what information is relevant for a given purpose, it is impossible to make a comparison between two objects or instances. Since most entities consist of an enormous number of possible data — Alice can be a mother, a waitress, an American and a human, and depending on the LoA — some of these will be relevant and others will not. On the LoA of Family Relations, "mother" becomes a relevant observable; on the LoA of Career it is more relevant that she is a waitress. It follows that higher LoAs allow for broader generalisation, since the particularities of the analysed system have been reduced. On lower levels, however, generalisation is much more difficult since each case has its unique properties. This means that two entities may be the same or different, depending on the LoA we apply. On the LoA of Species, there is no difference between Alice and Bob. On the LoA of Career (lower than species), on the other hand, they may differ. Consider for instance the following example given by Floridi (2011, p. 553):

> Whether a hospital transformed now into a school is still the same building seems a very idle question to ask, if one does not specify in which context and for which purpose the question is formulated, and therefore what the required observables are that would constitute the right LoA at which the relevant answer may be correctly provided. If the question is asked in order to get there, for example, then the relevant observable is "location" and the answer is yes, they are the same building. If the question is asked in order to understand what happens inside, then "social function" is the relevant observable and therefore the answer is obviously no, they are very different.

The difference between any two things thus depends on which observables we choose to focus on. Note, however, that the method of LoA is in no way a relativist approach. A question is always asked for a purpose — a request for some specific information — and for that specific purpose, there are more or less appropriate LoAs. For instance, the true answer to the question "Is this the hospital?" is very different for someone in need of a doctor than for someone interested in nineteenth century architecture. This is because a different LoA is required in order to generate a proper response, i.e. different observables come into question.

So, in the case of "presence", we may say that, on an auditory LoA, Alice can be telepresent in a remote location by making a simple phone call. If we would consider Alice's presence from an auditory *and* a visual LoA, on the other hand, the phone call will not successfully transmit her presence (a video call, however, would suffice).

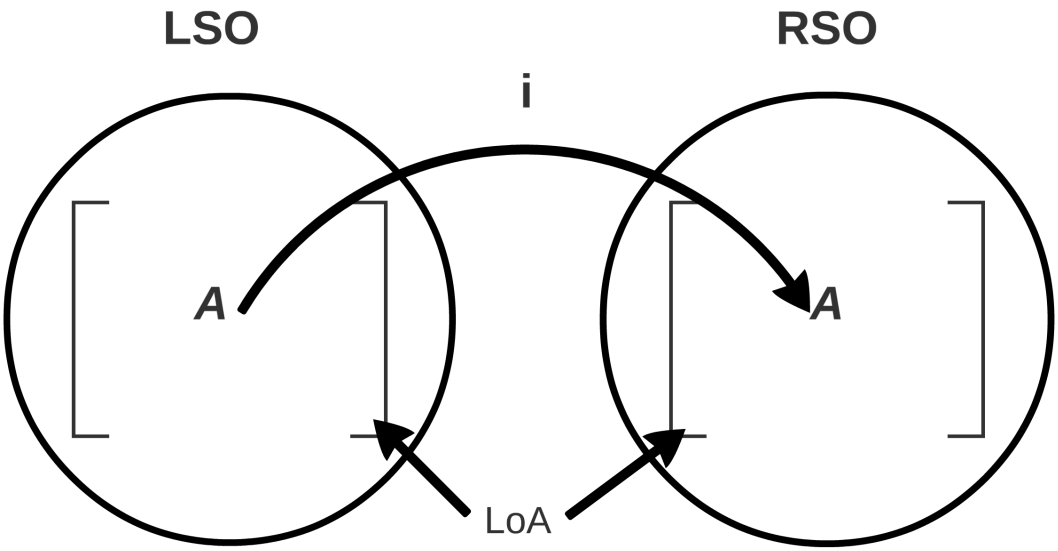


Figure 10. Floridi's model of telepresence

Although designed to conceptualise spatial telepresence, the SO approach operates on a sufficiently deep level, and provides a sufficiently detailed specification of the role of information, to also serve as a basis for a theory of temporal telepresence. To translate the SO approach to a temporal context, let us therefore replace the LSO and RSO with a Local Moment of Observation (LMO) (e.g., me observing these words as I type), and a Remote Moment of Observation (RMO)

(e.g., you reading those same words) which denote different moments in time (i.e., LMO ≠ RMO). Note that, while separate in time, the LMO and RMO can take place in the same space (e.g., you may read this in the same library where I am writing). Note also that, just like the spaces in the previous model, the moments in time are defined in relationship to a hypothetical epistemic agent (the observer). In other words, by transmitting information i from the LMO, A can be present in the RMO, regardless of the temporal distance between these moments.

For the sake of clarity, let us consider the following example: If we define the criterion for Alice's presence on an auditory and visual LoA, Alice can, insofar as she can spatially transmit her presence through a video call, also transmit it temporally through a recorded video for the future (RMO). Although Alice will not experience being present in the RMO, some of the properties (*i*) that define her will be at least hypothetically observable for an epistemic agent, which implies that she will be present in that RMO. It is tempting to say that Alice will be "simultaneously" present in two different moments in time (a LMO and a RMO). However, as illustrated by the complex debates on synchronisation (Brose, 2004; Nowotny, 1994; Spurk, 2004) and non-simultaneity, simultaneity is itself a temporal concept (with a large theoretical baggage), which denotes events in separate locations appearing at the same time. By contrast, the point made in the current argument is that *i* is present in moments that are separate, while its spatial location may remain unchanged. Hence, we cannot say that Alice is simultaneously present in a LMO and a RMO. However, more adequately, we could say that the LMO and RMO are *coincident* of her presence.

All this is to say that when we interact with an informational object from the past, we are interacting with the presence of that object itself — not merely a representation. The letter A that I write in this file is the same informational object as the one you are now looking at. Consider online political movements as a more applied example. The blogposts, videos and online petitions of say, the Black Lives Matter movement, or better, the #MeToo movement, are not merely representations of "real" events taking place offline, but constitute part of the movement as such. When accessing the content today, our access to it is just as direct as it would have been the very moment it was posted. The object A (the movement in this case) is present in the LMO as well as in the RMO. This view can be contrasted to van Loon (1996, p. 62), among others, who argue that "no event is ever present as itself but is always "enpresented" and that there is "no event without mediation". Inversely, the SO approach to temporal telepresence holds that, insofar as any informational object can ever be present, mediated objects should (at some LoA) be regarded as

directly present too. As I elaborate further below, the medium is not a representation of objects past, but a temporal extension of their presence.

However, the information transmitted from the LMO to the RMO is never, or at least very rarely, complete. Much like any form of transportation or communication, there is always friction. We have long been highly effective in reducing friction in physical communications (trains, boats, airplanes) and spatial transmission of information (letters, newspapers, electronic communication), i.e. what would amount to a collapse of space, or what (Castells, 2010b, p.19) calls a "space of flows". It has been significantly more difficult, however, to transmit large amounts of information over temporal borders. When observing the sky on her way to the office, Alice has full access to detailed information about it. When she observes the weather from memory, on the other hand, she may only be able to recall vague generalisations (i.e., high LoAs). Although she may be able to transmit some of the visual information from her walk to work to a RMO using say, a camera, most information (smell, temperature, humidity etc.) will inevitably be lost. The same goes for collective memory and communication. Parts of what we try to communicate from one generation to another are always lost in the process of transmitting it.

Yet, friction in information transmittance, I argue, is more than a mere failure of efficiency of information systems — it also has a key role in shaping our individual and collective experience of the relationship between the present and the past, for without informational friction we would not be able to distinguish between a LMO from a RMO. They would, as it were, collapse into one another and become indistinguishable. As such, it seems that the concept of friction deserves closer scrutiny.

7.3 TEMPORAL FRICTION

The concept of friction in information transmittance is most commonly used in the intuitive sense described above. But it can also be understood ontologically, as a lack of uniformity that makes objects distinguishable. One can only tell A from B if they are different in some respect; would A be identical to each letter in the alphabet, there would be no alphabet. Any knowledge, as Lyre (1997, p.82) points out, is thus "based on the possibility of distinction".

Moreover, the ontological role of difference (lack of uniformity) has often been interpreted in informational terms. According to the General Definition of Information (GDI), used across a

wide range of academic disciplines, information is defined as data + meaning, where meaning refers to hypothetical interpretability and data refers to lack of uniformity or "a difference which makes a difference" (Bateson, 1972, p. 271). Friction, in other words, can be understood as a lack of informational uniformity that allows individuation.

Due to its ontological significance, lack of informational uniformity is often referred to as *ontological friction* (Floridi, 2005). This is what Figure 2 illustrates. The reason A, B, and C can have individual identities is because they are not uniform, but separated from one another, and from the rest of the world. The (conceptual) walls, the friction between them is the resistance to information flowing freely in and out. We can tell one entity from the other, just like we can tell one room from another only if there are walls stopping information flowing between them.

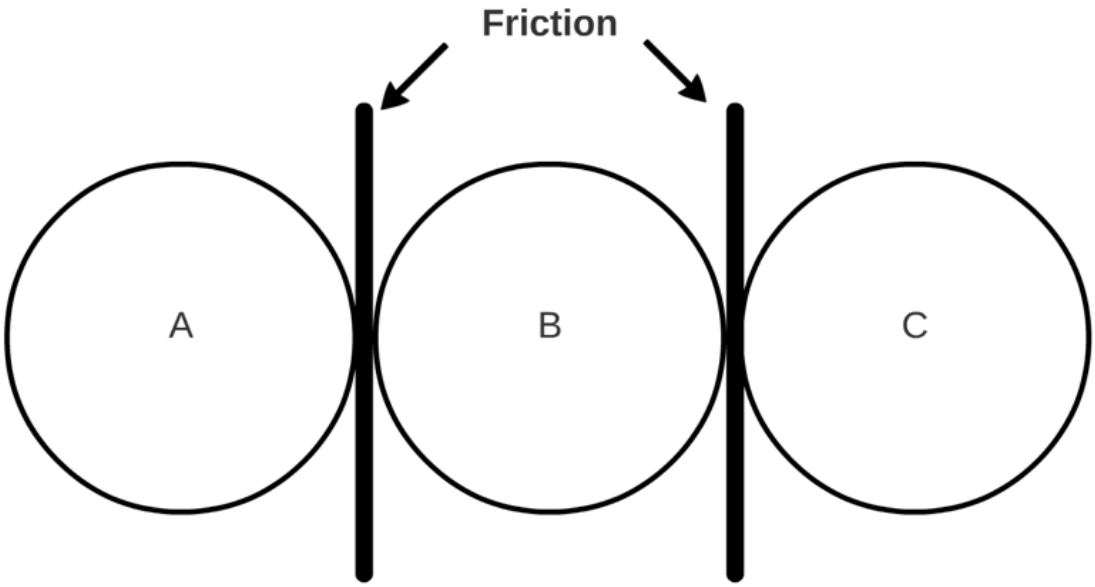


Figure 11. Ontological friction

Indeed, a house is a good metaphor for this concept (see for example Floridi, 2005, p. 186). For walls do not merely separate the interior of a house from its exterior — they constitute the house as an individual entity. The same goes for the walls separating spaces within the house. Were the walls sufficiently thin or porous, the ontological friction between the rooms would be reduced,

and eventually there would be no individual rooms to speak of. As shall be stressed in greater detail below, ICTs are designed to store and transport information, and can thus also erode the conceptual walls separating A, B, and C in Figure 2, which undermines the distinguishability of each.

Thus we have established that the friction in transmittance of information is a necessary condition for individuation, and consequently also a condition for things to be perceived as different. Even if one does not accept the former, it is difficult to see how any experience of entities as separate would be possible without at least a conceptual (informational) friction between them. This epistemic quality of ontological friction is what matters for the following analysis.

If all possible experience of individual entities is premised on ontological friction, this must also be true for our experience of individual moments in time. In order to distinguish between two moments, like a LMO and a RMO, they cannot be uniform. In fact, a datum (data in singular), which as we saw means "lack of uniformity", is even the etymological root of the word date.[37] It appears, in other words, that the experience of time's passage stems from a friction between moments.

In and of itself, this is not a revolutionary argument. Friction can rightly be interpreted as a condition for succession, which is held to be a key element to the experience of time. Although arguments about its exact role and nature vary, most philosophers — from Plato via the scholastic theologians to Locke, Hume, Kant and beyond — appear to agree that for time's passage to be perceivable, there needs to be some form of succession of (i.e., friction between) things. Although Kant (1781/1997, A215/B262) offers a refined analysis of succession as one of the three "modes of time" (alongside duration and simultaneity) that together form "the determination of the existence of appearances in time",[38] its centrality is perhaps most concisely expressed by Hume (1739/2019, p. 35), who claims that "time cannot make its appearance to the mind, either alone, or attended with a steady unchangeable object, but is always discovered by some perceivable succession of changeable objects".

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[37] Indeed, "datum" is still the word for date in many European languages.

[38] Note that to Kant (1781/1997) time's passage is not something to be perceivable in itself, but is rather a *form* of perception.

The advantage of the present analysis is that it reinterprets succession arguments in explicitly informational terms. It offers an interpretation similar to the one sketched by Lyre, (1997) whereby "succession of changeable objects" can be seen as ontological friction between moments in time — between a LMO and a RMO. Hence, the precondition for our experience of time's passing emerges more specifically as a form of *temporal friction*. Since this is the chief concept of this study it deserves a clear definition:

> *Temporal Friction* $=_{\text{def.}}$ *informational resistance that makes moments of time perceivable as separate for an epistemic agent.*

"Resistance" here denotes loss or destruction of information, e.g. the decay or incompleteness of documentation. The phrasing "moments of time" on the other hand, should be understood phenomenologically,[39] such as tenses like present and past. When something is telepresent for an observer at a given RMO, the temporal friction between this moment and the LMO from which it was transmitted has been slightly reduced, since some information *i* has penetrated the conceptual "wall" separating them. Thus, erosion of temporal friction is synonymous to information flow that constitutes moments in time, where the maximal degree represents a complete transmission of information observable in the LMO to a RMO, i.e. complete uniformity.[40] When the informational flow reaches this unmitigated level, it no longer makes sense to speak of "telepresence", since the object A is completely present in the two moments (i.e., $A_{LMO} = A_{RMO}$).

Different moments, and objects observable within them, are distinguishable precisely because of the resistance to informational flow between them. Or rather, as phenomena they are constituted by such resistance. Consider Floridi's (2006, p. 16) analogy for (spatial) telepresence: "Suppose you are in a room. You are just present in that room. Pull down the wall between that room and the

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[39] Note also that the epistemic agent to which the phenomenon appears need not be an individual, but may as well represent a collective of data subjects.

[40] An alert reader will note that temporal friction can be interpreted as analogous to entropy in physics. Although this is certainly a valid reading on some levels, and potentially a rich path for further research, the current discussion is limited to the *phenomenal* experience of time.

next, and you will not say that you are now telepresent in the next room; you are merely present in a larger room". Now, suppose instead that these "rooms" were temporal, not spatial. The same mechanism applies. Tearing down the metaphorical walls between different moments in time — that is, letting information flow freely between them so that eventually LMO = RMO — does indeed implode the sense of "then" and "now", just as tearing down the walls of a room implodes the distinction between "this room" and "that room". The experience of a past separated from the present and the future thus hinges on a resistance to informational flow that constitute such separate entities. Thus the metaphor suggests that technologies that carry information are to be interpreted as *windows* into the past, holes in the walls of friction, which, albeit tinted or stained, let objects past extend into the present rather than being represented (as for van Loon, 1998).

Here, it is important to note that, as far as we are aware, there is no way of transmitting information from a present LMO to a past RMO, e.g. sending information from the present into the past. Although some (Price, 1997) argue that backwards causation is in fact a feature, and even a necessity, of the laws of nature, such arguments still remain controversial. For now, we shall therefore interpret information flow backwards in time as accurate prediction or simply as anticipation — what Augustine (1998, Book 11, Chapter 20, Heading 26) calls "time present of things future". If we can "observe" future events, such as very precise prediction of a mechanical or natural event — the fact that the sun will rise tomorrow may be an example — this counts as a form of presence of the future event in question. We may also make a connection here to what Nowotny (1994, p. 8) calls "the extended present", i.e. the process in modern society by which the future is succumbed by the present, although this would require an elaborate discussion on culture, which lies outside the scope of this investigation.

To further illustrate the meaning of the concept of temporal friction, and its relationship to ICT, let us now consider two extremes: maximal and minimal temporal friction. Since both extremes are practically impossible (for the human mind in any case), we must turn to fictional examples that illustrate at least an extremely high, and low, degree of erosion. We begin with the former.

Whereas maximal temporal friction is infeasible on a practical level, real life examples like a new-born baby who has yet not achieved full capacity to memorise, or alternatively a person with extreme dementia or amnesia, do come close. For individuals with such conditions — that is, absence of short- and long-term memory — different moments in time are entirely separated since

any informational flow between them has been blocked. All that exists for the subject is the present moment. Consider, for instance, the hypothetical case of Otto, discussed by Clark and Chalmers (1998). In Clark and Chalmers' example, Otto suffers from Alzheimer's disease, meaning that everything he learns in one instance is gone in the next. This represents an extreme level of temporal friction. However, Otto cunningly uses a notebook to communicate with future versions of himself. Whenever he obtains relevant information, he writes it down. From a temporal point of view, the book thus erodes the walls separating the past from the present, letting relevant parts of the former leak into the latter, thereby reducing the degree of temporal friction.

For Clark and Chalmers, the case of Otto and his notebook is mainly an illustration of the relationship between the human mind and its external environment. But when considered through the lens of temporality, the example is illuminating in two new respects. First, Otto's use of his notebook can be interpreted as an illustration of the crucial role of technology in reducing temporal friction. Indeed, were it not for the amazing capacity of the (healthy) human brain to store information, external technologies would be our only means of transporting information through the walls separating moments in time. In fact, some even view technology as an inseparable feature of human memory (see for instance [Stiegler, 2009]). Writing in 1998, however, Clark and Chalmers dismissed the possibility of the internet constituting a sufficiently pivotal source of information to be considered a part of our cognitive systems. This assessment arguably does not hold today, as most people use their smartphones far more frequently than Otto uses his notebook in the example.

Second, on a macro-level, Otto's case can be interpreted as an allegory for intergenerational communication, or what Assman (2011) calls cultural memory. Much like Otto is able to leave messages to future versions of himself, one generation may similarly leave behind important information to their descendants (e.g., information about a devastating genocide, or a scientific discovery). Undoubtedly, the content and format of such messages matters greatly for how we interpret current affairs (more on this in the following section).

Let us now turn to the hypothetical case of minimal temporal friction. Here, there can be no experience of the passing of time since LMO = RMO. Sensory, emotional, and bodily information of the past are all completely present and available. Theologians often imagine the (a)temporal existence of God this way. For instance, Augustine (1960), and later Aquinas (1945) among others,

hold that God cannot experience time's passage. Since God is omniscient, meaning that he is present not only everywhere but also every*when*, God has full access to information about any moment, meaning that the concept of separate moments becomes inadequate to describe his experience.

The same theme has occurred repeatedly in modern fiction. For instance, in Kurt Vonnegut's Slaughterhouse-Five (2003 [1969]), the protagonist Billy Pilgrim famously encounters an alien species called Tralfamadorians, who do not experience the passage of time. To the Tralfamadorians, events taking place millennia ago are as real and present as (what humans call) the present itself. Hence, everything that has ever occurred happens now; everything takes place in the same temporal room so to speak:

> The Tralfamadorians can look at all the different moments just that way we can look at a stretch of the Rocky Mountains, for instance. They can see how permanent all the moments are, and they can look at any moment that interests them. It is just an illusion we have here on Earth that one moment follows another one, like beads on a string, and that once a moment is gone it is gone forever. (1969, p. 16)

In a later passage Vonnegut (p. 42) writes:

> Tralfamadorians don't see human beings as two-legged creatures, […] They see them as great millipedes with babies' legs at one end and old people's legs at the other.

Vonnegut's description of how the Tralfamadorians experience moments of time illustrates a complete reduction of temporal friction. Interestingly, it also has a strikingly similarity to the human experience of informational objects in cyber space. Consider, say, a Facebook timeline — it is certainly true that we can "look at any moment that interests us". Although we cannot see into the future, we can often gaze at the entire development of a life thus far. More or less in a single instance, we see a person's "babies' legs" and their "old people's legs" right next to each other. Moreover, when a digital live performance is "over", it is certainly not gone forever, but stays present and unchanged (until, of course, someone takes it down). Whereas such objects may have a number attached indicating the date of publication, they are nevertheless present to the viewer now. The temporal (ontological) friction between object A_{LMO} (i.e., when something was posted),

and object A_{RMO} (i.e., when someone reads it) is almost completely eradicated because, as Hoskins (2013) has it, the digital is the end of "decay time".

With these two illustrative examples in place, we have finally arrived to a point where we can make a sharper interpretation of what "time collapse" can mean. For example, when scholars write that "temporal borders appear painfully porous" (Pogačar, 2017, p. 113) in the digitally mediated world, and that time has "collapsed" (Brandtzaeg & Lüders, 2018) or become "timeless" (Castells, 2010a), we may interpret these expressions as referring to a (temporal) telepresence of information transmitted from an increasingly indistinguishable LMO and RMO, or more concisely to a reduction of temporal friction.

This is not to say that previous discourses have been mistaken, merely that they have not provided enough clarity. As such, the above analysis highlights an opportunity for improvement of current discourse. Concepts such as "digital time" (Lagerkvist, 2014), "social media time" (Kaun & Stiernstedt, 2014) and the "a-temporal space" of the internet (Mitchell et al.,2014, p. 428) each indicate an exclusivity to digital technology. My analysis shows that, while there is certainly something exceptional about the experience of time in the modern media landscape in general, and in information society in particular, this exceptionality is in fact merely a function of the deeper relationship between time and information, which, as we have seen, may be observed also in primitive ICTs like Otto's notebook. Thus, the experience of time in information society is most properly understood as a reduction of temporal friction, a phenomenon exacerbated by, but not exclusive to, digital technology.

7.4 THE ETHICAL SIGNIFICANCE OF TEMPORAL FRICTION

We have seen that scholars of digital memory have been right in stating that time "collapses" in digital venues but have failed to provide sufficient analytical clarity in defining it. Now that we have arrived at a more robust definition, let us turn to the second goal of this chapter and see how the concept of temporal friction can improve ethical analysis. As an illustration, I will use two cases of "time collapse" caused by emerging ICT: Search warrants in the age of the Internet of Things (IoT), and the accumulation of so called "digital human remains" on social media.

7.4.1 Search Warrants

We have seen that information present in a RMO should not be regarded merely as a representation of a real presence in the LMO, but as a presence of the informational object in its own right. This standpoint has implications for how we interpret and implement norms of informational privacy. Consider, for instance, search warrants, which have long been considered a reasonable exception to citizens' right to privacy. With the expansion of the internet of things (IoT), home environments become digitised, which in turn means that they often hold records that date back years and even decades. One example is (smart) electric meters. As explained in a TechCrunch blog-post highlighting some legal dimensions of the matter (Coldewey, 2018):

> Smart meters […] send exact meter readings at short intervals, perhaps every 15 minutes, and these readings may be kept for years. With that much detail you could not only tell whether someone lives in a house, but whether they're home, whether the fridge has been opened recently, what room they're in, how often they do laundry, and so on.

Given that such data can be stored over long periods of time, the smart meter thus reduces the temporal friction of the home environment, collapsing the recorded past into the present. The same goes for any device collecting and storing information. The information recorded by, say, a CCTV camera, may for example give almost unlimited and direct access to a person's private life over time. As stressed above, there is nothing qualitatively new about this — a home often stores documents such as photo albums, old bills, other digital records etcetera — but the IoT exacerbates the access to the past manifold as the amount of information it can hold grows increasingly larger. Data flows freely between LMOs and RMOs so that an epistemic agent, much like Vonnegut's Trafalmadorian aliens, can "look at any moment that interests her". Consequently, a warrant for a smart home, which may be valid only for a few days, effectively encompasses the entire period for which the technologies have gathered data. A second of spatial access may grant unlimited temporal access to the home environment.

This poses a serious problem for current norms of information privacy in forensics. Investigators are obviously not able to travel back in time and access a home from some years ago, and hence the temporal limits of a house warrant have traditionally been equal to the amount of time investigators spend there. However, if we interpret the emergence of the IoT as an erosion of temporal friction, time travel is no longer necessary since the events that have taken place in the home are *present* in the sense that the (metaphorical) walls that would separate them from the

present moment have been eroded (especially in cases where temporal metadata is lacking, leading not only to a presence of past events, but a complete temporal indistinguishability [Conti, Dehghantanha, Franke, & Watson, 2018]). Needless to say, this involves risks of serious privacy violations, especially if we regard the data accessed not merely as a representation, but as a real presence of past events.

Despite vivid discussions on privacy issues related to IoT (Conti, Dehghantanha, Franke, & Watson, 2018; Dehghantanha & Franke, 2014), the temporal aspect seems under-theorised. Instead, literature in digital forensics generally puts its focus on protection from "malicious actors", situating matters of privacy under the larger heading of security (Berbers et al., 2018; Yaqoob, Hashem, Ahmed, Kazmi, & Hong, 2019). The problem I have pointed to above, by contrast, is prevalent even for actors to whom end users have granted access, as well as investigators with a legal right to access it. It is an issue which cannot be solved solely by regulatory and technical means, but one which requires philosophical investigation.

Perhaps the lack of temporal analysis within forensics can therefore be traced to a larger insufficiency, or at least incompleteness, of current privacy frameworks when it comes to temporality. Consider, for example, two of the dominant metaphors in the debate: the analogy between violations to informational privacy and trespassing (i.e., breaking of contextual norms as promoted by Nissenbaum, [2004] among others), and Floridi's (2006) comparison to abduction (i.e., involuntary presence in a certain space). Both are explicitly spatial metaphors and hence ill equipped to make sense of the temporal dimension of information. Yet, the concept of temporal friction shows us that a full analysis of justified exceptions to norms of informational privacy requires serious consideration of this very aspect. For example, the object of a search warrant is not merely temporarily losing control over her private space, she also permanently loses control over her private time in that space. Just like some spaces and contexts are more private than others, some periods of time (e.g., childhood) also hold a unique ethical status, which is ignored if only considering privacy spatially. Likewise, in regards to Floridi's perspective, illicit access to information in the home environment is not merely to be interpreted as an involuntary abduction, but rather as a form of involuntary time travel, whereby personal information is illicitly transmitted from a LMO to RMO.

7.4.2 Digital Human Remains

In addition to its applicability to specific technologies, like smart meters, the concept of temporal friction can also be employed to unpack macro-level concerns. Consider, for instance, the increasing presence of deceased user profiles on social media, commonly referred to as digital human remains (Stokes, 2015). Within less than 50 years, as shown in Chapter 5, Facebook may host more profiles belonging to deceased than living users, meaning that past individuals now increasingly remain present in the spaces of the living. In scholarly literature, this co-presence has rightly been interpreted in terms of a collapsing time, where the present and the past implode into each other. For example, scholars like Lagerkvist (2014) and Mitchell et al. (2014, p. 428), who study the presence of the online dead, sometimes frame the topic by reference to a specifically "digital time", or an "a-temporal space" of the internet.

By refining and reframing this analysis, temporal friction allows us to better identify some of its ethical implications. As we saw in the section on telepresence, the presence of objects past can be understood by analogy to the presence of spatially distant objects, i.e. not merely as representations but, insofar as they can successfully be observed, as a real presence. This stance thus invites us to compare the emerging presence of the online dead to the process of globalisation, i.e. the emerging presence of spatially distant individuals in everyday life.

It is widely accepted that, by making geographically distant patients morally present to us, globalisation has expanded the boundaries of our ethical responsibilities (Samek & Shultz, 2017). Because information technology collapses space, we can no longer escape moral responsibility merely because those harmed by our actions are located far away, at least insofar as they remain informationally present (Floridi, 2010, p. 7). Likewise, the erosion of temporal friction brings new duties of care toward those temporally distant to us since they too become present in our immediate sphere of ethical consideration (Bevernage, 2008). Metaphorically speaking, past and future generations are now located in the same (temporal) room as the living, or at least the walls between our separate rooms seem significantly thinner, so that the LMO approaches the RMO.

This explains why, in popular discourse, as well as in academic research, there is an increasing concern for future generations (Arrhenius, 2000; Feinberg, 1974; Parfit, 1984), especially in relation to the natural and the synthetic environment we leave behind for them. It also justifies the emerging discussion regarding past generations in ethical discourse. Scholars increasingly debate

the ethical status of individual data subjects' "digital remains" (Lingel, 2013; Stokes, 2015; Öhman & Floridi, 2018), and many law scholars now argue that data protection rights should include also deceased data subjects (Edwards & Harbinja, 2013; Mazzone, 2012). Just like the process of globalisation, the erosion of temporal friction binds dispersed communities closer together. Making new ethical patients observable, it warrants an increasing concern for non-living generations, a macro-ethical/political duty of care also to the presence of past generations.

It would unquestionably be too hyperbolic to say that digital ICT elevates humans to the level of Augustine's God, who has infinite access to information, and for whom the passage of time does not exist. But it would be no exaggeration to claim that the current reduction of temporal friction has enlarged the sphere of moral duty, and introduced new ethical patients (the online dead) to everyday life. Like the Augustinian God, we too have begun to experience the presence and the past as increasingly indistinguishable. My argument is that we do so at the cost of ethical responsibility. Indeed, those who want to see further must also be ready to accept the duties of care that follow from what they see.

Finally, it may be informative to highlight also some of the limitations of the concept of temporal friction. Temporal friction has for instance little applicability to debates regarding the synchronising effects of information technology (Brose, 2004; Esposito, 1997). Synchronisation and simultaneity are some of the most well researched effects of ICT on temporality. Yet, the way I interpret these debates, they refer rather to the collapse of space (e.g. the same event taking place at the same time at multiple locations [Castells, 2000b]) than to the collapse of time (the extension of events from a LMO to a RMO). As such, the concept of temporal friction should have limited applicability to debates on synchronisation.

Relatedly, temporal friction has little to add to debates on speed (Hassan, 2009; Larraín, 2015). The concept should not be interpreted as a slowing down or speeding up of time. Although informational friction is a precondition for the experience of the passage of time, they are not quantitatively related. An epistemic agent with excellent memory capacity does not experience time passing slower than a person with amnesia. For this reason, temporal friction has little explanatory power when it comes to the accelerating effects of ICT. It should also be worth pointing out that the concept of temporal friction says nothing about how our perception of time relates to culture. As illustrated by Assman (2011), Brose (2004) and van Loon, (1996) among others, the way we

perceive time depends on cultural and institutional context. While technology, as I have detailed in this chapter, changes the conditions for our perception of time, it never operates in isolation, but is always embedded within social practice. Future research may investigate this angle further.

7.5 CONCLUDUING REMARKS

This study is certainly not the first to point out how information technology enhances society's access to the past, and not the first to draw attention to its societal consequences. Such work has been carried out before (Hoskins, 2017; Lagerkvist, 2014; Reading, 2014). Nevertheless, the analysis presented here reduces the conceptual ambiguity of the current discourse on the topic.

In response to the question of what we do — and can — mean by the collapse of time, and its relation to information technology, I have introduced the concept of temporal friction. "Collapse of time", "timeless time", and similar concepts, can thus be understood as a function of ICTs reducing the ontological friction between moments in time, which makes things past remain present. This does not necessarily mean that the rhetoric of collapse must be abandoned altogether, but that now when we better understand its meaning, we are able to more carefully unpack the ethical dimensions of ICT's relationship to time, which I have illustrated using two examples: search warrants and the accumulation of digital human remains.

Finally I stressed the limitations of the proposed concept. As illustrated by the debates on synchronisation and acceleration, temporal friction is no multi-purpose tool for debates on ICT and time. It is designed to solve a rather specific problem in the literature on digital memory. Yet, the analysis I have presented in this chapter is not merely a myopic dissection of a theoretical detail. In investigating the concept of time collapse, my analysis has suggested a new way of looking at the role of technology — as windows in the walls of friction, which, albeit stained or tinted, allow the past to be directly observed.

Moreover, and more importantly for this thesis, it suggests that, as ICT becomes ever more ubiquitous, we now increasingly live in the same "temporal room" as previous generations, who suddenly become *there* for us as ethical patients. As we shall see in the following chapter, this idea is crucial for the overarching argument of this thesis.

CHAPTER 8: THE POST-MORTAL CONDITION

The dead seek above all to share our worlds.
Robert Pogue Harrison

8.1 INTRODUCTION

I opened this thesis with a reference to the documentary "Meeting you" as an illustration of a qualitatively new type of presence of deceased individuals, enabled by digital ICT. Meanwhile, and perhaps more importantly, I argued, the presence of the dead is changing also on a quantitative level. Within the next three decades alone, an estimated 2.2 billion people will die (United Nations, 2017), many leaving a considerable volume of data behind. I further showed that, despite an abundant literature exploring this topic, most research has hitherto focused on users' lived experience of dealing with these data (Bell et al., 2015; Kasket, 2012; Lagerkvist, 2015), approaching it from a standpoint of methodological individualism. Critical and macro-level perspectives have therefore largely been left unexplored and under-theorised, making current research unfit to properly identify, let alone respond to, the macro-challenges of digital remains.

The objective of the present thesis, therefore, has been to provide both the empirical and the theoretical knowledge to do so; to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. Pursuing this objective, I posed two broad and exploratory research questions:

RQ1: *What are the macro-ethical challenges that arise from the accumulation of digital remains?*
RQ2: *What ethical principles should guide our collective response to these challenges?*

In this 8th, concluding, chapter I shall briefly summarise how the five studies comprised in this thesis have contributed to answering these questions. Upon doing so, I turn to synthesising the contributions into one overarching argument — a *thesis*. This *thesis* draws from the background outlined in Chapter 2 to proclaim that the hiding of the dead that characterised modernity is coming to an end, and that, in its stead, a *post-mortal condition* is emerging. By "post-mortal", I am

by no means referring to the end of biological or spiritual mortality, but to a technologically driven collapse of the domains of the living with those of the dead. I argue that this condition requires an ethics which goes beyond the interests of the living generation, and that consequently, the challenge before us is to collectively design the systems through which the dead remain present in a way that reflects the good of *all humanity,* not merely the share currently alive. Upon presenting this argument, I discuss its contribution to the target literature and point to some particularly promising avenues for further research and policy work. The final section summarises and concludes the thesis.

8.2 FIVE MACRO-CHALLENGES

Each of the studies comprised in this thesis has contributed in its own way to answering the research questions. The first two chapters did not directly respond to the questions, but provided a detailed analysis of the scientific and historical context within which they should be interpreted. Chapters 3-7, on the other hand, all aimed to identify or provide further definition to ethical or political challenges arising from the accumulation of digital remains and how we should respond to them. What were these challenges?

Chapter 3 provided the basic politico-economic analysis of the thesis. Most importantly, it introduced and defined the concept of the Digital Afterlife Industry (DAI), and catalogued the various types of firms operating within it (i.e., the ways in which digital remains can be utilised for profit). To reiterate the metaphor used in the chapter's conclusion, it identified and constructed a conceptual map of the economics of the DAI, which motivated and contextualised the subsequent ethical analysis, both within and beyond this thesis (see, for instance, Kania-Lundholm, 2019; Kohn et al., 2019; Sas et al., 2019).

Ethically, Chapter 3 conceptualised digital remains by analogy of an *informational corpse,* which, in turn, suggested that the conventions of *human dignity* that guide archaeological museums (ICOM, 1987) may provide the basis for future regulation. Whereas the notion of the informational corpse is not in and of itself a new construct — indeed, both Floridi (2013) and Stokes (2015) suggest similar ones — my analysis tied it explicitly to the metaphysics of production (as conceived by Marx) thus linking the informational body to what Marx refers to as the "inorganic body". In establishing this connection, the chapter thus merged ethical and economic discourse into an "infra-ethical" (Floridi, 2013b) analysis. This connection is not to be underestimated, for it suggests

that the ethical challenges raised by digital remains should not be understood merely as a consequence of new ICTs (as for Mitchell, et al., 2014), or as a matter of individual corporate decisions, but as a function of the economic and social systems within which such technologies and corporate actors operate. This means that the challenge before us must be to design said systems to disincentivize, or make impossible, violations to the human dignity of the online dead.

Chapter 4 focused on a particular branch of the DAI — so called Islamic Prayer Apps, which automatically post Islamic supplications from their subscribers' Twitter accounts and deliberately continue to do so after the death of the user. Based on tweets collected from the Twitter firehose, the study suggested that Islamic Prayer Apps generate millions of posts daily. Subsequently, as subscribers depart, an equally large share of Arabic Twitter traffic will be generated by dead users. In contrast to how popular media and research literature often conceptualise the phenomenon, this study demonstrates how the DAI is far from a mere secular Western phenomenon — it has a broad reach beyond Silicon Valley and is often intertwined with spiritual and religious practices. This, in turn, raises the challenge of how to design systems that can accommodate such a diversity of digital afterlife practices, while still maintaining long-term economic viability for Twitter (or any other platform where the activity takes place).

Chapter 5 focused on the scale of the online death phenomenon, using Facebook and Instagram as cases to illustrate the projected accumulation of profiles belonging to deceased users over the course of the 21st century. Naturally, the number of mortalities on each network depends on their respective future user growth rate. For example, if Facebook ceases to grow as of 2018, it will have amassed around 1.4 billion deceased users by the end of the century. If it continues to grow at current rates, however, it will amass around 4.9 billion. Regardless, the numbers indicate a considerable presence of deceased profiles within the next few decades. The findings also illustrated the global significance of the phenomenon.[43] Not only Europe and North America, but virtually every continent is concerned. Indeed, even without future growth, a majority of the deceased profiles will be of Asian and African nationalities. For deceased users on Facebook, for example, only two Western countries (the UK and the US) are among the top 10 nations under any scenario.

[43] Recall, however, that Facebook penetration remains low in large parts of the world. Most notably perhaps, China is more or less completely absent in the analysis.

Since the data accumulated by social media will contain the personal histories of billions of deceased users worldwide, they are constitutive also of our future *collective history*. Whereas previous historical records have included mainly the rich and powerful, Facebook's archive holds the potential for a history of the masses, a more representative and diverse record. Consequently, I proposed that it holds what Appiah (2006) calls a "cosmopolitan value", constituting a *global digital heritage* which will become an invaluable resource to future generations. However, maintaining vast data archives is a labour intensive and sometimes costly undertaking, and big social media firms like Facebook have little commercial incentives to spend resources on it. Because deceased users have no purchasing power, they cannot make up for their costs, but must either be deleted, or help increase other (living) users' time on the network (either by training new algorithms [Leaver, 2013], or by attracting more traffic in and of themselves), to be economically viable. I argued that profitability provides an insufficient guidance in preserving the cosmopolitan value of social media. Instead, the challenge is to design our regulatory systems so that a *plurality* of values are considered in the appraisal of digital remains.

The most common objection to the findings of Chapter 5 is that Facebook and Instagram are likely to disappear before they accumulate a considerable amount of deceased profiles. In view of this argument, Chapter 6 investigated the legal and ethical implications of what would actually happen if Facebook were to suddenly close or go insolvent. I argued that such a scenario poses several threats both to the dignity of individual deceased users, and to the digital global heritage they constitute in aggregate. Indeed, in a scenario where the platform becomes insolvent, Facebook may need to sell users' data (living and deceased) to a third party, or worse still — destroy these archives completely. In some jurisdictions, living users can object to having their data sold off, but since deceased individuals generally lack any data protection rights, hundreds of millions of profiles belonging to deceased users may, in case of insolvency or closure of the platform, be sold off or traded without any government oversight. As such, the mere possibility of a sudden bankruptcy for a large platform like Facebook poses an urgent challenge in terms of developing a sustainable ecosystem for the long-term curation of data. Concretely, this means that society must develop regulatory means that mitigate disorganised insolvency scenarios to secure global digital heritage and safeguard the privacy of deceased users. The four recommendations posed towards the end of the chapter should be seen as a contribution to this end.

Given the central role of the concept of *presence* in this thesis, Chapter 7 provided a deeper theoretical analysis of what it actually means for deceased people to be present. In so doing, it took as its point of departure the general relationship between information technology and the phenomenal experience of the presence of past individuals and events, often conceptualised in terms of a "time collapse", a technologically driven blurring of the present and the past. Despite its popularity and intuitive appeal, I claimed that the notion of a collapsed time leaves considerable room for conceptual ambiguity, which in turn hampers a deeper ethical analysis of the topic. In view of this ambiguity, I introduced the concept of *temporal friction*, denoting "informational resistance that makes moments of time perceivable as separate for an embodied epistemic agent". Temporal friction can thus be metaphorically understood as the walls that constitute separate rooms (moments) of time. Since ICT reduces informational resistance (in space and in time) it thus reduces the distinguishability of past and present. As such, this concept allows us to make sense of digital remains not merely as representations, but rather as a *reduced*, yet real, and ethically legitimate, presence of deceased individuals. In an information society, the living and the dead are thus present in the same "temporal room", which means that we are faced with the challenge of how it should be designed, and who belongs there.

The above findings provide five different angles to the research questions. In so doing, they each add a piece to the puzzle of a bigger picture of the challenges ahead. But what is this bigger picture? The following section explains.

8.3 SYNTHESISING THE FINDINGS: THE POST-MORTAL CONDITION

In addition to the individual contributions highlighted above, the studies can also be synthesised into an overarching argument — a *thesis*. In correspondence with the research question, this thesis has both an empirical and a normative element. Empirically, it holds that digital ICT has brought to an end the hiding of the dead that characterised modernity, and that in its stead a *post-mortal condition* emerges, where the dead remain informationally present among the living. They remain *there* for us, not just as memories, but as social agents, and more importantly — as ethical patients. The normative element is that this new mode of being with the dead calls for a macro-ethics that acknowledges their status, an ethics which places the interests of *humanity* rather than merely the living, at its centre. Before discussing this in any further detail, however, the very term "post-mortal condition" must first be defined with more rigour, and for this purpose we shall briefly revisit some points made in Chapter 2.

As explained in Chapter 2, a common reference point for scholarship on death is the emergence of the first permanent settlements in the Neolithic age and their transformative impact on the social and political role of the dead (Harrison, 2010; Laqueur, 2017; Spellman, 2015). Unlike nomadic communities, who can just keep walking and leave the dead behind (figuratively and literally speaking), a settled community is inevitably faced with the lingering presence of its departed members (Spellman, 2015). Evidence suggests that many Neolithic cultures dealt with this presence by physically holding on to the dead, often keeping their remains, or parts of them, within their own houses (Pearson, 1999). They were, as it were, *literally* dwelling *with* the dead.

Since the Neolithic age, most societies have instead sought to separate the domains of the dead from those of the living. Whether in graves, mausoleums, cemeteries, books, photo albums or archives, the dead are always *in* something (Harrison, 2010, p. 40), and only rarely have we let these worlds merge with our own. There is certainly no clear progression to this tendency throughout history. However, Western modernity, what Ariès (1975) calls the era of "forbidden death", can reasonably be seen as a peak in the separation of the two domains. Indeed, the entire project of modernity, I argued, can be interpreted as an assault on the presence of the dead in society — on the traditions, the worlds and even the physical bodies they leave behind. Recall, for instance, the words of Thomas Jefferson (1789/1999, p. 593) a key voice in shaping this order: "the earth belongs in usufruct to the living […] the dead have neither powers nor rights over it". Jefferson's words arguably can, and indeed, should, be interpreted literally. The goal of modernity is to eradicate the influence of the dead on society, and to replace it with the rationality of the living. By reference to Burke's (1790/2018) interpretation of the social contract as a "partnership" between the living, the dead and the unborn, modernity can thus be understood as a "tyranny of the present" over the past and the future, where the living excommunicate the non-living members of the human partnership from society. The era of "forbidden death", in other words, emerges also as an era of the hidden *dead*.

I reiterate the above points, because, one way or another, each of the chapters in this thesis illustrates the termination of the hidden-dead-era. They show that, in an information society, the dead can no longer be "hidden", but remain *there* for us, continuously present and available, often to anyone from any location. They populate social media by the hundreds of millions (Chapter 5),

continue to post long after they have died (Chapter 4), and are always available a click away in our smart phones. In short, the role of the dead in modernity has come to a halt.

As we saw in Chapter 2, similar observations have been made by scholars of grief and bereavement, who claim that social media is resolving the "taboo" around the topic of death (Gibson & Jones, 2011; Walter et al, 2011) (I return to these in 8.5). Such arguments, are definitely on point. Yet they generally place their focus on the event of death and the practice of mourning, i.e. on the lived individual experience of the phenomenon. By contrast, the argument I present in this thesis is grounded in *methodological holism* (Samuels, 1972; Zahle, 2016). It concerns not only the accumulated individual experiences of mourners, but rather the societal and systemic consequences of the emerging presence of *the dead as a social group*. In Chapter 3, I discussed the political economy of this presence. Chapter 4 illustrated its religious and spiritual dimensions. Chapter 5 predicted the pace and scale at which it will grow. Chapter 6 discussed some specific legislative implications, and Chapter 7 provided a vocabulary to unpack its ontological and ethical status. All to show that the expulsion of the dead that dominated modernity — the "tyranny of the present" — can no longer be upheld.

What emerges instead of modernity's hiding of the dead is what I refer to as a *post-mortal condition*[44]. By "post-mortal" I am by no means referring to the end of biological mortality (as for instance, Hvid-Jacobsen, 2017). Nor am I referring to some imagined digital immortality (Bell & Gray, 2001) or so called "mind uploading" (Hauskeller, 2012; Steinhart, 2007). What I mean by "post-mortal" is a new mode of being with the dead, whereby deceased persons (but not selves, [Stokes, 2015]) maintain a personal presence within the domain of the living. To use the metaphor of the collapsing house introduced in Chapter 7, the temporal friction — the walls that separated the domain of the dead (the past) from that of the living (the present) — has been eroded, so that past and present generations now are together in the same "room". Unlike most previous ways of containing the dead, the internet is not a site or container that we visit and leave, but something that surrounds us all the time. We live *onlife,* to use Floridi's (2015) expression, meaning that we

[44] Although this concept is obviously related to the notion of "postmortalism" proposed by Hvid-Jacobsen (2017) among others, it is by no means synonymous. Hvid Jacbosen's main interest is with *biological* forms of immortality, such as gene manipulation and advances within medicine. As I hope I have made clear throughout this thesis, I leave any matter relating to immortality of consciousness aside. As the rest of this section shows, the post-mortal condition is an ethical and systemic concept. It relates only to the survival of *information.*

are never purely on- nor offline, but always *within* the network. Like the Neolithic cultures once begun to dwell within structures built for the dead (the first houses) so are we now beginning to live *inside* the spaces where we contain our past — the networked archives of the internet. Just like the Natufians once shared the first houses with the faces of their ancestors, so are we now sharing a new type of dwelling — cyberspace — with the faces of ours.

I describe this new co-dwelling as a *condition* because it is not given *how*, if at all, we as a society choose to live with the dead. Surely, the termination of modernity is not a retreat to some original, more natural, relationship with the dead. On the contrary, we are always free to *choose* how to deal with their presence. To quote Ruin (2019, p. 195) "the ethical and political interaction between the dead and the living will always remain an open challenge, not just a case of being either with or without the dead". My point is that this challenge is never neutrally manifested to us, but is always shaped by technological and material circumstances. That is, although we are free to choose, the conditions of our choice are technologically and historically contingent.

In Chapter 2, I discussed several historical instances of changes in the conditions under which the dead remain present, most notably the emergence of permanent settlements. When nomads first ceased wandering the deserts, society was suddenly faced with the question of how to deal with the lingering presence of the (organic) bodies of deceased community members. Regardless of how they choose to deal with it — burial, mummification, cannibalism, etc. — the material conditions for this choice had changed. In a similar fashion, we are now faced with the question of how to deal with the overwhelming *informational* presence of our deceased community members. Unlike the kingdom of biology, there is no natural mechanism of information decay (although naturally the hard drive where it is stored will eventually break down), and hence, like in the Neolithic age, the conditions for our choices have changed.

This, of course, leaves open the possibility that history will "repeat itself". Although the dead are currently becoming present in everyday life, there is nothing stopping us from once again containing and separating them from society. We may, for example, archive digital remains in some inaccessible and far off server, or destroy them completely in some form of digital cremation. The point is that doing so will require an *active* decision and a massive collective effort. Again, the question of what to do with the remains of the dead is, as stressed above, never neutral.

Our ability to choose is also the reason that the accumulation of digital remains is inevitably an ethical matter. Insofar as we can choose how to deal with the presence of the dead in society, we are also morally responsible for it. As I have stressed repeatedly throughout this thesis, this responsibility manifests itself to us not merely as a concern for businesses and individuals, but as a matter of how we *collectively* design the systems within which the dead remain present. Here I'm not only referring to technological systems — e.g. the networks, apps and platforms which mediate the dead — but also, and perhaps primarily, to the *economic* and *regulatory* systems within which these technologies operate and are shaped; not only particular decisions made by individual firms (e.g., Brubaker & Callison-Burch, 2016) but the systemic environments surrounding them.

The cases addressed in Chapters 3, 5 and 6 are all concrete examples of what I mean by this. The ethical significance of the Digital Afterlife Industry is not just a matter of the moral qualities of the individuals involved in it, but a *collective* responsibility of the incentives we create for them. Likewise, we cannot outsource the responsibility for our digital world heritage to Facebook. If Facebook abuses its power and the market advantage of monopolising our personal and collective history, it is because it responds to political and economic incentives which we, as members of society, have put in place. In the capitalist market within which Facebook and other DAI firms currently operate, those interests are mainly related to profit and thus still reflect a "tyranny of the present".

The chief normative argument of this thesis is that the principle of profit alone is insufficient. Throughout the preceding chapters I have drawn on multiple ethical norms that may be at conflict with profit, but that are important principles in shaping our response to the challenges of digital remains (i.e. RQ2). The first and most thoroughly developed one was the inviolable *right* to *human dignity* held by all humans, whether living or not (proposed in Chapter 3). But I have also pointed to other norms such as *privacy* (Chapter 6)*, fairness* (Chapters 6 and 7), political power-balance (Chapter 5), and the opportunity for future generations to *flourish* (Chapter 6). These moral norms may seem rather diverse — some are part of consequentialist traditions while others are reminiscent of a more deontological approach — but they all point to a single conclusion: That we, the living, have a *moral duty of care,* an obligation to show respect for the right to human dignity held by the dead and the flourishing of the unborn, not only as individuals, but as a collective.

We find ourselves in a historically unique situation in that never before have so many had the opportunity to be part of society's recollection of the past. What happens to the hundreds of millions of deceased user profiles on social media is therefore a concern not only for the living, but also for the dead who constitute it, and the unborn who will inherit and depend on it. In the post-mortal condition, where our techno-social environment is shared by living and non-living individuals alike, it is imperative that we instead make our choices from a standpoint beyond the interests of only the former, indeed, beyond any single principle of value. If society is a "partnership between the living, the dead and the unborn" as Burke (1790/2018, p.) has it, we should shape it in a way that honours and holds that partnership together. The ethical principle to guide the big, overarching challenge before us, is in other words the good of *all humanity,* rather than merely the share currently alive.

This is not as abstract as it may first appear. Indeed, throughout this thesis I have pointed out several concrete precedents from the pre-digital world — organ trade, archaeological museums, world heritage sites, national archives are some — which have been regulated out of respect both for past and future generations. Notably, each such precedent includes some form of exception from market logic. Even if it would please the desires of the living to privatise and commercialise human organs or world heritage sites, we refrain out of respect for non-living humans. Practically, the ethical challenge of the post-mortal condition is to implement similar systemic changes in the digital realm. Implementing something like an ICOM code of ethics for managing digital remains, including dead data subjects in the GDPR, and developing a digital world heritage label with inspiration from UNESCO, are steps in this direction, but only scratch the surface of what remains to be done. Indeed, the current thesis has only provided a sketch of the challenges before us and ethical principles that should guide our response. Now the real work begins.

To summarise, the five preceding chapters all contribute to answering the research questions posed at the outset of this thesis, but together, they can also be read as an overarching *thesis*. To answer the two research questions: The macro-ethical challenges that arise from the accumulation of digital remains should be understood in terms of the emergence of a *post-mortal condition* — a new mode of being with the dead whereby they remain present within the immediate proximity of the living. As a society, we should meet these challenges by collectively shaping our economic, regulatory and technological systems in a way that places *humanity*, rather than merely currently living humans, at its centre. Setting this agenda does to a large degree sum up the integrated

contribution of this thesis. In the next section I explain in closer detail how this agenda relates to existing literature.

8.4 CONTRIBUTIONS AND AVENUES FOR FUTURE RESEARCH

Because the chapters comprised in this thesis follow the format of journal articles rather than traditional monograph chapters, each includes a focused discussion on its specific contribution to the literature. Rather than merely repeating these discussions, this section draws attention to some broader contributions that arise from their integration, that is, from the argument of the post-mortal condition outlined above.

As explained in Chapters 1 and 2 , existing research literature suffers from two overall limitations: (1) a lack of critical perspectives on the phenomenon and (2) a lack of holistic, macro-level ethical analysis. Broadly speaking, the scientific contribution of this thesis has been to address these lacunae, both by providing adequate empirical data, and by introducing the conceptual tools necessary to critically analyse it. In so doing, the thesis has set out a new agenda — to *collectively shape the economic and technological systems through which the dead remain present in society*. This agenda should by no means be seen as an invalidation of research focusing on lived experience. Rather, it situates such research within a bigger context which allows for further exploration, both on the macro and micro levels. To illustrate this, I will use the topical angles introduced in Chapter 2: Immortality and Ethics, Law and Regulation, Grief and Loss, and Design. Below follows a brief note on how the thesis has contributed to each:

As we saw in Chapter 2, a great deal of philosophical and ethical literature on online death has focused on various forms of so called *digital immortality* (Bell & Gray, 2001). While some have dreamt of uploading human minds to machines (Steinhart, 2014; Swan & Howard, 2012), others, such as Stokes' (2012; 2015), have instead focused on the digital survival of *persons* (rather than selves). Stokes' position — that the informational remains of the dead are constitutive of human personal identities, and hence hold an ethical status similar to that of biological human remains — has been a cornerstone in many of the chapters. Meanwhile, the integrated argument of this thesis can be seen as an expansion of Stokes' analysis. By implementing it on a societal and structural level it has integrated Stokes' ethical analysis with a systemic critique. The prospect of digital immortality and what Stokes (2015, p. 368) calls our "moral duties" to the dead is thus not just an individual imperative, but constitutes a new *condition* for how we collectively design the economic

and technological systems through which the dead remain present in society. What remains to be done, however, is to define on a more exact level how the various ethical concepts employed both here and in Stokes (2012; 2015) relate to one another (as noted in 1.7 there is no coherent uniform ethical framework employed throughout the thesis). How, on a conceptual level, does our duty of care towards the dead relate to their dignity? And how, in turn, is that related to the notion of respect? I have made the assessment that such questions have not been central to meet the particular goals of the studies comprised in this thesis, but as the debate progresses, the development of some form of meta-framework will be inevitable.

Although this thesis does not engage much with legal scholarship, its infra-ethical analysis has implications also for how we view matters of inheritance and ownership of digital remains (Banta, et al., 2015; Harbinja, 2013; Varnado, 2014). Like the design community, this literature has often been concerned with legal disputes over the right to inherit or control digital artefacts left by the dead (Banta, 2015), and negotiations between the various stakeholders involved (e.g., the bereaved, the dead, the data controller etc.). In introducing the concept of the post-mortal condition, and calling for an ethics that puts humanity at its centre, this thesis introduces a new stakeholder in such disputes, namely future generations. If we place the good of *humanity*, rather than the interests of merely currently living individuals, at the centre of moral discourse, some digital artefacts (especially when part of an aggregate) may indeed need protection from private interests in the name of their scientific or indeed *cosmopolitan* value (Appiah, 2006) for the future. Just like an archaeological find may hold a value that goes over and beyond the needs of private individuals and current generations, so do some digital archives. In assessing legal claims to intellectual property, regulators may thus soon also need to consider future generations as a stakeholder.

Furthermore, regulatory debates on online death, whether in the research community or in the public, have a tendency to focus either on a very short-term time frame (e.g. 5-10 years) or an overly long-term perspective (e.g., 100-200 years). Only rarely is focus placed on mid-term scenarios, e.g. a couple of decades into the future. The general trend has been to either debate what firms can do *today* in order to facilitate death-related matters (Banta, 2015; Bellamy et al., 2013; Harbinja 2013, etc.), or to discuss distant and sci-fi like scenarios of digital ghosts and mind uploading (Bell & Gray, 2001; Rothblatt, 2014; Steinhardt, 2007). By contrast, this thesis calls for a reallocation of focus to the mid-term perspective, i.e. to challenges that will arise within the next couple of decades. This is important, because in contrast to the long-term perspective, the data

available today can actually give us a rather good idea about the nature of these challenges. Moreover, such challenges will likely require radical institutional responses that may take decades to develop.

As shown in Chapter 2, the overwhelming majority of research on online death relates to grief and bereavement. To a large extent, the contribution of this thesis is widening the scope of the field by directing attention *away* from this angle. Nevertheless, the notion of the post-mortal condition does add a new perspective to at least one aspect. As I noted above, there is a consensus in research on bereavement that digital media has made grief more open. Recall for instance Walter (2015a, p. 285) comparing the role of death in digital society to something like a pre-industrial (i.e. pre-modern) village:

> Content generated and read any time, any place, brings death and mourning out of the closet, weaving it into the warp and woof of everyday life […] Memorials are no longer just a physical grave to be visited on occasion, but digital reminders that can pop up unannounced on one's mobile device at any time. The world comes to feel a bit like a pre-industrial village, in which mourners are visible to all, and tolling bells heard by all.

Church (2013, p. 184) writes along similar lines stating that "The inevitable occurrence of death, once a taboo topic of conversation usually confined to quiet rooms in hospitals, now manifests itself publicly in mediated social spaces in the form of digital memorials". These findings, I argue, should not be interpreted merely through an emotional lens, nor merely as a cultural transition. Instead, the openness of grief on social media should be understood ethically, as evidence of a collapsed time where the dead remain *there* for us. Indeed, Walter's comparison to the pre-industrial village is apt, but not only because mourners are visible to all, but because we are capitulating from the tenets of modernity. Again, this is not meant as an objection to previous literature on bereavement, but as a new angle to it.

Although design has not been a key consideration of this thesis, there are yet some things to say about it. Previous debates on designing for online death (so called thanatosensitive design [Massimi & Charise, 2009]) have often focused on negotiation of tensions between various stakeholders affected by death online (McEwen & Scheaffer, 2013; Massimi & Baecker, 2010). In particular, scholars have emphasised the importance of considering the interests of the dead (e.g., privacy and

dignity) when designing online platforms (Ellis-Gray, 2015). In taking a macro-level, infra-ethical (Floridi, 2013b) approach, this thesis has proposed to widen the scope of such arguments to include also the design of the economic and regulatory *systems* within which the particular platforms operate and are shaped. As noted by Nissenbaum (2001, p. 118), students of a particular technical medium must examine the interplay between the object itself and "those who built it, what they had in mind, its conditions of use, and the natural, cultural, social and political context in which it is embedded", because all those factors, she argues, "may feature in an account of the values embodied in it". Whereas HCI research on digital afterlife has focused mainly on the platforms themselves, their users, and the people designing them, this thesis instead provides a systemic analysis of their political and economic ramifications. In short, design should not be confined to particular platforms, but should also encompass the environment within which they take shape.

In addition to the above topical contributions, I would also like to add something about digital preservation. This field has few overlaps with the literature on online death, but in view of the arguments proposed in this thesis, it appears like a natural antecedent. Understandably, the digital preservation community has thus far been concerned mainly with national archives and libraries (Chowdhury, 2010; Ray, 2009). Though acknowledging the importance of these types of documents, part of the contribution of this thesis is to invite scholars of digital preservation to consider also the preservation of personal data as an urgent matter. Insofar as such data can be mined and used to analyse the behavioural patterns of current populations, they will also be a valuable asset in seeking to gain insight about the behavioural patterns of *past* populations. As such, their survival may be in the interest of both past and future generations. If we are to consider the interests of all of humanity, rather than just those of the present generation, the research community should therefore redirect its focus to also include the preservation and accessibility of social data. This is primarily a systemic and economic task, in that we must shape our institutions to give the right incentives to preserve (Lavoie, 2003). Going forward, researchers, curators and policy makers should focus on how this can be done in practice and how to negotiate potential conflicts with posthumous privacy.

In summary, the contribution of this thesis is by no means an invalidation of research focusing on lived experience. Rather, it situates previous findings within a larger context which allows for further exploration, both on the macro and micro level. It introduces a new agenda for Online Death Studies.

8.5 CONCLUDING REMARKS

Given the lack of critical analyses and the absence of holistic approaches in current research, the objective of the present thesis has been to identify and critically interrogate the macro-ethical challenges that arise from the accumulation of digital remains. Pursuing this objective, I posed two broad and exploratory research questions:

> RQ1: *What are the macro-ethical challenges that arise from the accumulation of digital remains?*
> RQ2: *What ethical principles should guide our collective response to these challenges?*

Each chapter has focused on a particular aspect of these questions. They have uncovered hitherto unexplored areas of research and enabled the formation of new ethical debates — debates which have already started to take shape. As I have argued in this concluding chapter, the individual studies can also be synthesised into a larger argument. This argument proclaims that the advent of digital ICT has brought an end to the era of "forbidden death", and that, in its stead, a *post-mortal condition* is emerging. This new mode of being with the dead, I argued, calls for an ethics which goes beyond what is good merely for the living. Instead, we should collectively design the systems within which the dead remain present in a way that reflects the good of *all humanity*. The fate of digital remains, in other words, is more than merely a private matter for the bereaved. It is ultimately also a concern for both past, present and future generations. It is the concern of humanity.

EPILOGUE: A NEW FATHERLAND

This story began in deep time, at the dawn of the first permanent settlements, when the dead suddenly became inescapably *present* around the living. The phenomena that I have described, analysed and critiqued throughout this thesis, illustrate a similar disruption. Because of its critical approach, the thesis has painted a rather dystopian vision of this disruption. While still taking this vision seriously, I wish to end on a less sombre note. For in the developments I have described lies not only dangers, but also an emancipatory potential.

As Harrison notes, the dead have an exceptional power to turn anonymous places into homelands, to turn a house into a home with a past, a history, and most importantly — a forebearer. Indeed, it is no coincidence that Aeneas's first priority upon reaching the Italian peninsula is to bury his fallen kin in the ground, thus turning a foreign piece of soil into a *fatherland*. Like Aeneas, we too have become a form of settlers, only we lay our dead to rest, not just in soil, but in cyberspace. And as the platforms where we dwell also become resting places for the dead, these "spaces" become new homes, new fatherlands as it were. The continuous traffic on deceased profiles, the public uproar every time a platform tries to change or erase them, and the strong emotional attachment observed among mourners on social media, are testaments to a sense of *belonging*.

As I have observed in this thesis, a sense of belonging can hold great commercial potential. It provides a rare opportunity to consolidate one's societal inevitability as a platform since it appropriates a fundamental human institution and exploits one of our strongest emotions — loss and kinship. Insofar as users value and care for the digital presence of the dead, they will also care for the continuation of the privately owned platforms where they reside.

Meanwhile, a sense of belonging is also closely related to a sense of *entitlement*. "The surest way to take possession of a place and secure it as one's own" as Harrison notes "is to bury one's dead in it". In Rome, Cicero advised against letting people bury their dead on public ground, fearing it would create a sense of sacredness, and thus entitlement to the place. Even today, the tombs of ancient Hebrews in the Holy Land have frequently been mobilised to legitimise Israel's territorial claims.

As we become increasingly digital, does this mean that bereaved families in a similar way will lay claim to the platforms in which the dead are resting? Will people try to "take possession" of these sites? Will they even begin to demand access and control? It is possible. As the dead profiles on social media begin to accumulate by the billions, so that not only individual loved ones, but entire countries and generations are laid to rest there, it is plausible that the public attitude to the platforms will change. Demands for influence, indeed even for control, may gain a new legitimacy as the dead become allies in the advocacy for democratisation.

Our story ends at this fork in the road, at this dual potential. For whether the former or the latter is realised is entirely up to us. Indeed, we are the new Natufians, but we also decide what that is to mean.

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APPENDIX 1: DISCLAIMER LUCIANO FLORIDI

Oxford, 2 July 2020

To whom it may concern,

this letter is to certify that Carl Öhman was the primary author of the following three articles: "The Political Economy of Death in the Age of Information: A Critical Approach to the Digital Afterlife Industry"; "An Ethical Framework for the Digital Afterlife Industry" and "Prayer-Bots and Religious Worship on Twitter: A Call for a Wider Research Agenda". As his supervisor, I gave input to Carl's ideas, gave feedback to the presentation of the arguments, and edited the manuscripts. I am happy for Carl to include each of the manuscripts into his thesis and present the material as his own ideas.

Sincerely

Professor Luciano Floridi

Professor of Philosophy and Ethics of Information
Director, Digital Ethics Lab
Oxford Internet Institute | University of Oxford

Fellow, Exeter College, Oxford

Turing Fellow | Chair of the Data Ethics Group
The Alan Turing Institute, London

PA Danuta Farah | pa.floridi@oii.ox.ac.uk
1 St Giles, Oxford, OX1 3JS, UK
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APPENDIX 2: DISCLAIMER DAVID WATSON

Oxford, 5 June 2020

Subject: Collaboration with Carl Öhman

Dear Oxford Graduate Studies Committee/Examiners,

This letter is to certify that Carl Öhman was the primary author of our article, "Are the dead taking over Facebook? A Big Data approach to the future of death online." Carl conceived of the piece, gathered and cleaned the data, conducted a literature review, and drafted the manuscript. I helped execute an analysis plan that Carl designed, fitting spline models to the data and estimating uncertainty with a Bayesian bootstrap. I also drafted and refined the figures in accordance with Carl's description. A complete version control history of the project's code can be found at our dedicated GitHub repository: https://github.com/dswatson/digital_graveyard.

In summary, the work is substantially his own, and I have no objections to him submitting a lightly revised version of the article as a chapter of his doctoral thesis. Please do not hesitate to reach out if you have any questions.

Sincerely,

David Watson
Doctoral Candidate
Oxford Internet Institute
University of Oxford
41 St. Giles', Oxford OX1 3LW
Telephone: +44 (0)7478 730102
Email: david.watson@oii.ox.ac.uk

APPENDIX 3: DISCLAIMER ROBERT GORWA

Berlin, June 5 2020

Dear Oxford Graduate Studies Committee/Examiners,

I, Robert Gorwa, have co-authored the short article "Prayer-Bots and Religious Worship on Twitter: A Call for a Wider Research Agenda". My main contributions to the paper were providing contextual background on the policy and politics of social media bots as currently seen on major social media platforms. Carl had the initial idea for the study, provided its central framing in the debates around religious worship and death online, and was its lead author. I am happy for Carl to include this paper as part of his DPhil thesis.

Sincerely,

Robert Gorwa
Fellow, Alexander von Humboldt Institut für Internet und Gesellschaft, Berlin
Doctoral Candidate, Department of Politics and International Relations, University of Oxford
gorwa.co.uk<http://gorwa.co.uk> | @rgorwa

APPENDIX 4: DISCLAIMER NIKITA AGGARWAL

London, 5 June 2020

Dear Oxford Graduate Studies Committee/Examiners,

I, Nikita Aggarwal, have co-authored the manuscript "What if Facebook goes down? Ethical and Legal Considerations for Big Tech Demise" with Carl Ohman. My main contributions to the paper are the background i.e. the scenarios of platform demise, the analysis of legal consequences flowing from demise and legal policy recommendations. Carl's principal contributions are the background and the ethical analysis of Big Tech demise, as well as related policy recommendations, particularly with regard to digital death and the use of personal data after a person/company's demise. I am happy for Carl to include this manuscript as part of his DPhil thesis.

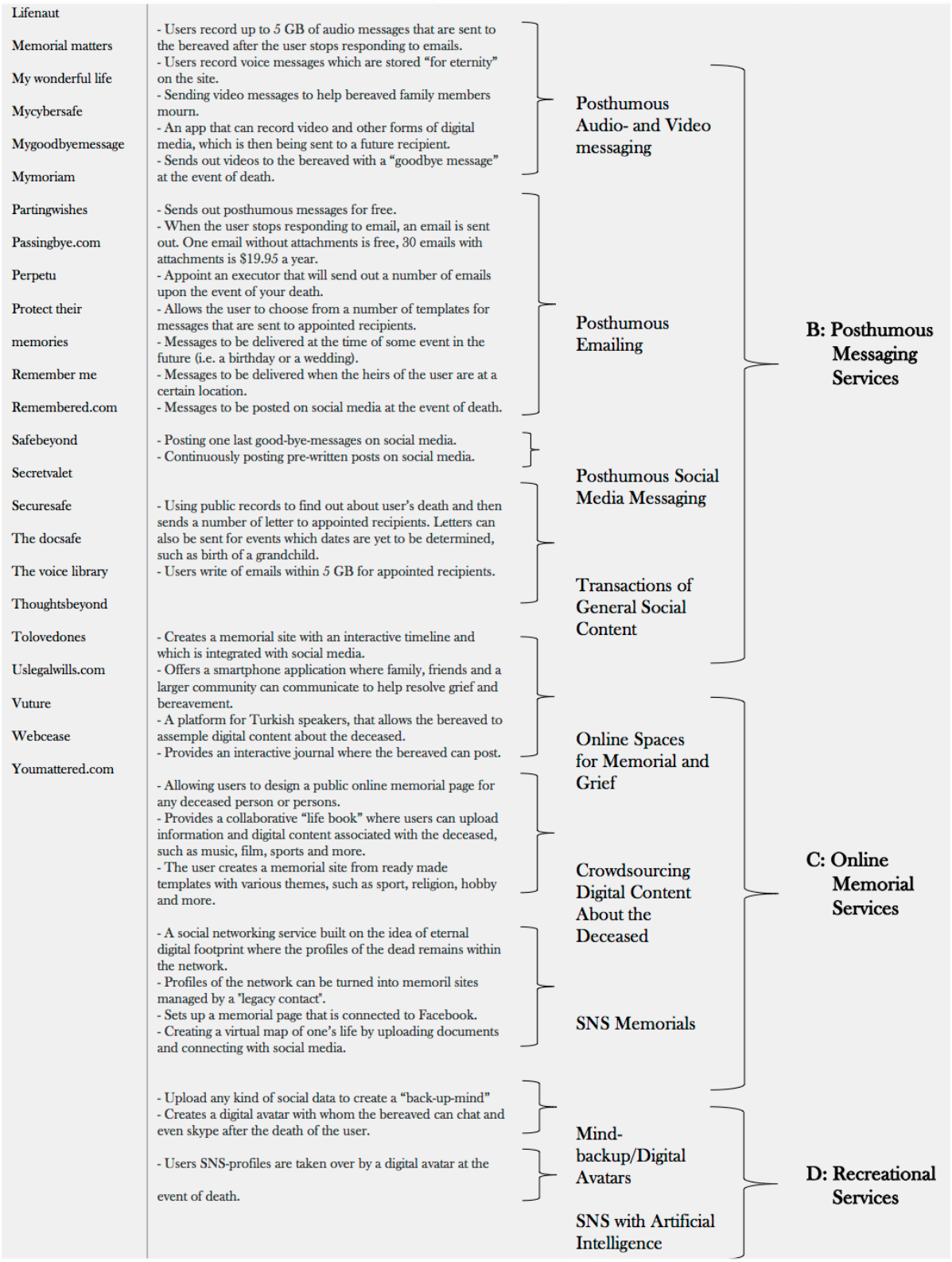
Sincerely,

Nikita Aggarwal,

DPhil Candidate
Faculty of Law, University of Oxford, St. Cross Building, St. Cross Road, Oxford OX1 3UL, United Kingdom.
Research Associate, Digital Ethics Lab, Oxford Internet Institute

APPENDIX 5: CODING OF SERVICES

Initial List Of Firms	Step 1: Compiled Services Provided By The Firms	Step 2: Groups Of Services	Step 3: Types Of Services
1000memories Afternote Aftersteps Afterwords.com B-emortal Bcelebrated Boxego Capsoole	- Providing guides for posthumous social media management. - Allowing the user to collect up to two GB of data (for free) from other sites and allocates them to appointed recipients. - Automatically deletes social media accounts at the event of death. - Passing on files and passwords to appointed heirs upon finding out about the user's death. - Sends passwords to a recipient that is asked to delete social media accounts. - Helps organize what subscriptions and accounts to delete and what to preserve. - After a period of inactivity an heir may get access to certain account emails while other information is destroyed. - Helps executors, trustees and administrators to find online accounts and subscriptions and helps deal with those in accordance with the policies of each site. - Storage for social media and subscription account information.	Social media/ Account Management	A: Information Management Services
Chronicle of life Cirrus legacy Dead man's switch Dead social Deadman Death switch Departing.com	- Provides checklists and guides to help organize digital assets and personal information. - Checklists and guidelines for how to write a digital will. - Provides checklists and guides to help organize digital assets and personal information. - A customized set of planning "to-dos" and helping the user build an custom-tailored end-of-life plan. - Provides a set of important links to websites for management of a digital remains. - Step-by-step guide on how to digitally prepare for death - Puts the user in contact with a solicitor that helps attest the authenticity of the user's digital will when dead. recommendations, resources, and checklists to help the user's passing.	Death and Afterlife Planning	
Digi.me Docubank Estate assist Estate map Estate++ Eterniam Everplans	- Encrypts any form of digital assets, sends out key upon death. - Encryption and storage of digital assets. - Provides bank-level security storage of digital assets. - Safe storage of electronic files. - Safe storage of digital assets which can be passed on to a recipient. - Secure digital asset storage, passing on to heirs upon death. - Secure storage of digital assets and important documents which are delivered to appointed recipients after the event of death. - Provides bank-level security storage of digital assets. - Secure storage of critical financial information.	Digital Asset Management	
Facebook Gen-arc Ghostmemo Google Heart2soul Hepbizimle Infibond	- Secure storage of family history, made to endure future technology changes. - Secure storage of personal information. - Encrypts information that is sent to the bereaved of the deceased, even if they change contact details. The recipients only have to answer a personal question to get access. - Storing a plan and related documents which are transferred at the event of death. - Provides "bank-level security" storage of personal information. - Securely stores the user's personal data, locally or in the "cloud". - Upload DNA sample for future storage. - Safe storage of personal information which can be passed on to a recipient at request. - Provides "bank-level security" storage of personal information. - Secure storage of personal information.	Personal Information Management	
Keep their memory-alive Knotify.me Legacy.com Legacyvault.com Life book	- Saves wishes on what to do with various digital assets that can be carried out by an appointed "Guardian". - Calls the user's phone, emails or text-messages. If no answer is received, any type of electronic file that the user has selected will be sent to any number of recipients. - A space for a digital journal, parts of which can at request be passed on to an heir. - Helps users create online obituaries. - Protecting the deceased's identity from identity theft. - Helps the user create a legally verified online will, deciding what will happen with their digital assets at the event of death.	General Posthumous Instruction	


Lifenaut
Memorial matters
My wonderful life
Mycybersafe
Mygoodbyemessage
Mymoriam
Partingwishes
Passingbye.com
Perpetu
Protect their
memories
Remember me
Remembered.com
Safebeyond
Secretvalet
Securesafe
The docsafe
The voice library
Thoughtsbeyond
Tolovedones
Uslegalwills.com
Vuture
Webcease
Youmattered.com
- Users record up to 5 GB of audio messages that are sent to the bereaved after the user stops responding to emails.
- Users record voice messages which are stored "for eternity" on the site.
- Sending video messages to help bereaved family members mourn.
- An app that can record video and other forms of digital media, which is then being sent to a future recipient.
- Sends out videos to the bereaved with a "goodbye message" at the event of death.
- Sends out posthumous messages for free.
- When the user stops responding to email, an email is sent out. One email without attachments is free, 30 emails with attachments is $19.95 a year.
- Appoint an executor that will send out a number of emails upon the event of your death.
- Allows the user to choose from a number of templates for messages that are sent to appointed recipients.
- Messages to be delivered at the time of some event in the future (i.e. a birthday or a wedding).
- Messages to be delivered when the heirs of the user are at a certain location.
- Messages to be posted on social media at the event of death.
- Posting one last good-bye-messages on social media.
- Continuously posting pre-written posts on social media.
- Using public records to find out about user's death and then sends a number of letter to appointed recipients. Letters can also be sent for events which dates are yet to be determined, such as birth of a grandchild.
- Users write of emails within 5 GB for appointed recipients.
- Creates a memorial site with an interactive timeline and which is integrated with social media.
- Offers a smartphone application where family, friends and a larger community can communicate to help resolve grief and bereavement.
- A platform for Turkish speakers, that allows the bereaved to assemple digital content about the deceased.
- Provides an interactive journal where the bereaved can post.
- Allowing users to design a public online memorial page for any deceased person or persons.
- Provides a collaborative "life book" where users can upload information and digital content associated with the deceased, such as music, film, sports and more.
- The user creates a memorial site from ready made templates with various themes, such as sport, religion, hobby and more.
- A social networking service built on the idea of eternal digital footprint where the profiles of the dead remains within the network.
- Profiles of the network can be turned into memoril sites managed by a 'legacy contact'.
- Sets up a memorial page that is connected to Facebook.
- Creating a virtual map of one's life by uploading documents and connecting with social media.
- Upload any kind of social data to create a "back-up-mind"
- Creates a digital avatar with whom the bereaved can chat and even skype after the death of the user.
- Users SNS-profiles are taken over by a digital avatar at the event of death.
Posthumous Audio- and Video messaging
Posthumous Emailing
Posthumous Social Media Messaging
Transactions of General Social Content
Online Spaces for Memorial and Grief
Crowdsourcing Digital Content About the Deceased
SNS Memorials
Mind-backup/Digital Avatars
SNS with Artificial Intelligence
B: Posthumous Messaging Services
C: Online Memorial Services
D: Recreational Services