‘Worldmaking knowledge’
What the Doctrine of Omniscience Can Help us Understand about Digitization

Hanna Reichel
Princeton Theological Seminary
hanna.reichel@ptsem.edu

Drawing on the doctrinal lens of divine omniscience to conceptualize digital “superhuman knowledges,” Hanna Reichel uncovers common epistemological fallacies in contemporary discussions of digital technologies Consequently call into question the assumption that privacy is the biggest issue raised.

1. Superhuman Knowledges – Convergences Between Divine Omniscience and “the Digital”

Like all looming yet unknown developments, the “digital age,” ushered in by the rise of information and communication technologies as well as momentous advances in computational powers, inspires both utopian hopes and dystopian fears. Tech pessimists paint apocalyptic scenarios of the dependencies, alienations, and incontainable dynamics associated with technological determinism, while tech-optimists herald the salvation of humankind which they see dawning in technological progress. Writers on different sides often invoke “omniscience” or attribute God-like qualities when referring to data-driven technologies.[1] Usually such invocations are rhetorical, dramatizing hyperboles that critique frightening powers that need to be contained.

[1] See recently e.g., Halavais (2018); O’Neil (2016); Zuboff (2019).

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If we leave religious forms of "dataism" aside (which do exist, but that is a topic for a different day), we will presumably not see Big data enabled "knowledge" as divine or that God operates like a super-computer.[2] However, it is not farfetched to postulate that the digital age is an age of superhuman knowledge. While the relationship between data, information, and knowledge is a tricky and contentious one, machine-learning empowered "big data" analytics allows for both "more" and a different kind of knowledge than could every be accumulated (or understood) by human agents, whether individual or collective.[3] In this sense, such "knowledge" may be seen as superhuman – "beyond the human," even if not divine by any means – and even more so if we consider the powerful ways in which the application of such knowledge might augment and threaten human agency and amplify, limit, or transform what we conceive of as human freedom.

It is striking how many of the questions raised around data-based surveillance seem to be variations on themes that Christian theologians have wrestled with for centuries. Today we may ask, to what extent does data-based targeted advertising manipulate our purchasing behavior, desires, even our political choices? Calvin used to ask, how does divine providence guide and steer our actions and fate in mysterious ways according to a divine plan?[4] Today we may ask, can algorithms read our minds and predict our behavior? Boethius would have asked, if God knows everything, can my choices be considered free?[5] Today we may ask, do we want intelligent machines to track all of our movements, purchases, conversations, and behavior? And the Psalmist would have wondered, "you know when I sit down and when I rise up; you discern my thoughts from afar. You search out my path and my lying down and are acquainted with all my ways. Even before a word is on my tongue, behold, O Lord, you know it altogether. [...] Where shall I go from your Spirit? Or where shall I flee from your presence?" (Ps 139:2–7).

That digitization is in some (some!) ways comparable to divine omniscience is my working hypothesis, and the point of comparison, I will argue, is its world-duplicating character. In one of the most recent sociological analyses of digitization, Armin Nassehi defines the digital as "simply the duplication of the world in the form of data with the technical possibility of connecting data with each other, in order to

[2] Although there are interesting literary precendents, see Isaac Asimov, "The Last Question," in Asimov (1993).
[3] Cf. e.g. Taureck (2014).
[4] Cf. Calvin Inst. I,16.
[5] Cf. Boethius (1999), book 5.

re-translate them to particular issues."[6] Nassehi sees its unspecificity, or its universal applicability, to paradoxically be the *particularity* of the digital – a characteristic which, as he states, "up to date had been reserved for the presence of God and the use of writing."[7] Nassehi's comparison may surprise, but the point here is that the digital is less like particular, specific technological innovations (think: steam engine, airplane, or telephone), not even like a technology underlying the widespread development of more technology (think: electricity). Instead, it is more like other translations or duplications of the world into discrete discourses, like money, like language, like the mind of God.

Language, already in its spoken form, has the same property of being ubiquitously applicable and effectively translating the world into text – even more so through writing, which creates a world of its own, an archive in which different independent items "have the properties of being mobile but also immutable, presentable, readable and combinable with one another."[8] In examining the world as text, writing refers to writing, establishes connections between writing and writing in the form of more writing, and generates new textual output which can be re-ascribed to the world. New insights about the world emerge not only through interaction with the world, but in the interaction between writing and writing. In some ways, digitization is but a radicalized form of writing – writing in a rigorously simplified and standardized language.[9]

Money is a similar medium: a formalized language which translates everything (everything!) into values that are commensurable and which therefore allow someone to calculate, aggregate, analyze, and cross-reference things which previously could not be put into a relationship. Money, just like writing, is a rendering technology that is universally applicable to anything in the world, creating a particular kind of shadow text of the world onto the world, on which operations can be performed that in turn

[6] Nassehi (2019), 34–35, transl. HR. Nassehi's broader thesis is that the digital in important ways is the culmination and logical consequence of modernity: Digital technology, which is the "counting, recombining of data, self-observation of initially invisible regularities, patterns and clusters" shows that indeed something like a unified society exists and is remarkably "inert, stable, formed, structured and predictable." In this way, digitization is the fulfillment of modernity's promises: the inclusion of the whole of society into its functional systems, equality with the possibility of individuality. The origin of the digital is not the invention of computers, it begins instead with statistics around "the centralization of rule in national states, the planification and management of cities, the necessity of the provision of goods for an abstract number of businesses, consumers and regions" at the end of the 18th century (62, see also 316).

[7] Nassehi (2019), 35.

[8] Cf. Latour (1986), 7.

[9] Cf. Latour (1986), 16.

are non-neutral to the world itself. It duplicates the world without containing it while having real repercussions in it.

And God? In light of the parallels between digitization, writing, and money, it should be clear that the reference to God is not just a shallow allusion to the often invoked or even aspired ubiquity of digital technology. In traditional Christian thought, God's omnipresence and omniscience create a similar "film" on all of reality, an accompanying presence that pervades all contexts and adds an interpretive layer. In many more analytically inclined theologies, the mind of God is even understood as the perfect representation of all that is, all possible data in all meaningful relationships. It is the very definition of a data double of the world towards which digitization can only aspire. More than money or language, divine omniscience is therefore a strong conceptual parallel for the digital.

That is not to say that theology could comprehensively give an account of emergent technologies and the societal transformations in their wake – that would be absurd. But in the centuries of conversations about divine omniscience, theology may have developed conceptual frameworks which can provide helpful guidance in the interrogation of "the digital" today. On the other hand, examinations of "digital" issues may contribute important corrections for theological reflection. In what follows, I want to offer some *specific* ways in which drawing on theological discursive formations allow us to discern and hone important questions and contentions vis-a-vis digitization. Even if I can only cursorily treat them here, I hope these suggestions – tentative in nature and presumably in need of correction from experts in technology, philosophy of science, and sociology – open routes of conversation.

In a first part, I will sketch how parallels in the discussion of divine omniscience call into question two wide-spread (if not uncontested) assumptions about data-based knowledge: its objectivity and its neutrality. In a second part, I will to build on these theoretical foundations and proceed to demonstrate how thought developed in the discussion of divine omniscience can illuminate why the contemporary focus on privacy is not enough: Privacy is incapable of accounting for deeper structural transformations through digitizations and therefore fails to address issues that emerge from them.

2. The Imperfections of Propositionality: The Objectivity Fallacy

2.1. Divine Perfections and Propositional Knowledge

Contemporary treatments of divine omniscience almost invariably start something like this: "Since omniscience is maximal or complete knowledge, it is typically defined in terms of knowledge of all true propositions."[10] And the propositional model is very powerful, since it devises a universally applicable, abstract, and formalized structure which can be used to formalize truths and truth claims, distill them to the point of almost being able to calculate truth through all possible combinations of true propositions. The propositional approach, however, leads into unsolvable dilemmas when applied to divine knowledge.[11]

Most importantly, it is typically understood to engender a difference between the thing that is known and the knowledge of it. A proposition is a formal entity derived by abstracting a specific property of some thing, rendering it into a specific form which is not the thing itself. The set of true propositions would thus be seen to create a kind of discursive shadow layer of the things it describes. Reality then exists twice: once as it is, and once in the form of true propositions about reality in the mind of God.

This creates a further, and – for the theologian – even more problematic difference: a difference *in* God: between the essence of God and God's knowledge. The essence of God, according to classic[12] theistic conceptions is simple, unchangeable, and eternal – but God's knowledge, if made up of propositions, would be composite. It would also be either temporal or at least temporally indexed, since propositions about future events only acquire a truth status, and therefore only enter into the realm of God's knowledge, with the passing of time.

These issues illustrate why classical theologians have actually typically not understood God's belief to be propositional. If God is thought of as absolute simplicity, then

[10] Examples abound. This one is from Wierenga (2018).

[11] It is impossible to discuss them in the scope of this paper, but some of the issues involved pertain to propositions about future events (given that in most temporal ontologies, the future does not [yet] exist and therefore has no truth value, distinctions between knowledge de dictu [established in the discursive dimension] and de re [as pertaining to the concrete particular objects statements refer to], and distinctions of first and third person knowledge).

[12] This shorthand is problematic for several reasons, but I will use it in this paper for the sake of brevity in order to refer to thinkers who share a certain trajectory of theological thought in which God is understood as perfect being and attributes of God are developed philosophically out of this principle. The canonical formulation of the principle was coined by Anselm of Canterbury, who characterized God as "a being than which nothing greater can be conceived" while Thomas Aquinas may be seen as the most eminent theological systematization along these lines. See Anselm (1962); Aquinas (1964).

there can be no distinction between God, God's knowledge, and the objects of God's knowledge. God's knowledge has to be immediate and intuitional rather than propositional and indirect; there can be no "detour" of propositions or other medial translations/duplications. Brought to its logical conclusion as in Thomas Aquinas, this means that God's knowledge can only be God's own essence and the knowledge of the world simply has to be inscribed into God's knowledge of God's own will.[13]

From the tensions created in the doctrine of God, theologians have inferred more generally: "It seems plausible to suppose that the propositional character of human knowledge stems from our limitations. Why is our knowledge parcelled out in separate facts? [...] First, we cannot grasp any concrete whole in its full concreteness, [...] Second, we need to isolate separate propositions in order to relate them logically, so as to be able to extend our knowledge inferentially."[14] Propositional knowledge can never be *perfect* knowledge and has therefore not traditionally been adopted to conceptualize divine omniscience – it is too indirect, too mediated, and too much reliant on a logical or proto-linguistic structure, and it therefore fails to be comprehensive, unbiased, and objective.

2.2. The Interpretive Character and Epistemological Closure of Digitization

What does this insight from the doctrine of God yield for assessing "the digital"? Well, the digital is the epitome and radicalization of the propositional form – with all its limitations. Working off Nassehi's above mentioned definition, the digital is not so much a new technology as a formalized mediation of the world, a mode of *reading* the world. It renders the world into data, duplicating it, producing a discursive world of its own. This duplication entails both a simplification and a complexification. It is clearly a simplification because in order to produce data, a reduction is necessary, a concentration on certain aspects which are then (re)presented in form of data. It is the divestment of information about the world that makes the incommensurable commensurable, allowing for the computability of the world.[15] The digital form is in

[13] Aquinas (1964), Ia, Q 24, art. 14: "He sees himself through His essence; and He sees other things not in themselves, but in Himself; inasmuch as His essence contains the similitude of things other than Himself." God's knowledge is always knowledge of Godself. And through contemplation of his own substance etc. he has knowledge of us. See also Q2, art 12, reply to obj.11 "It is true that God knows nothing outside Himself if the world outside refers to that by which He knows. However, God does know something outside himself if this refers to what He knows." For further elaboration, see Stump (2003). On the incompatibilities between divine omniscience and the contemporary assumption that knowledge is propositional, see Rogers (2000), esp. 71–76.

[14] Alston (1987); reprinted in Alston (1989).

[15] Nassehi (2019), 84.

fact ingenious in maximally reducing the complexity of information to a binary signal – 0 or 1, off or on – or any combinations of such binary signals which may be long, but remain simple, and are therefore easy to store, transmit, and read. This is the promise of the digital: that because of its reduced and computable form, it is both universally applicable and highly efficient.

This simplification is however an operation which generates complexities. Data – despite what the name might imply – is of course never simply "given" but has to be generated through a process that involves complex hermeneutic operations: "Raw data is an oxymoron."[16] The process of abstraction and reduction that "gives" the world the form of data rests on interpretive processes: what is established as the object of measurement, as what any given instance "counts," when it starts counting, and so forth. Categories and types have to be imagined according to which things are then counted. Seemingly objective data has to be produced through highly subjective processes of observation – regardless of whether the observer is a human being or a sensor – "the perception of the world and the processing of information is primarily discernment of patterns, where the patterns are less inherent in the object itself, and more in the object-ivity (*Gegenstaendlichkeit*) generated through perception."[17]

The resulting data is a construction, a creation: new entities which exist as supposed duplications of reality – the world in the form of data. Information is translated into a homogeneous medium of signals which allows for the drawing of relations between hitherto incommensurable things. In order to derive information from such data, an active process of generation of information out of signals takes place, not a mere passive reception.[18] As is well established in information theory, interpretation is not only irreducibly involved at the sending, but also at the receiving end of communication. Contrary to naive (or programmatic) tech optimist beliefs, data can never "speak for itself"[19]: "working with Big Data is still subjective, and what it quantifies does not necessarily have a closer claim on objective truth."[20]

In this process, belief plays a decisive role. Scholarly definitions see Big Data not only as a technological phenomenon, but as a complex "cultural, technological and scholarly phenomenon that rests on the interplay of 1) Technology: maximizing computa-

[16] Gitelman (2013). Cf. also Niklas Luhmann, "Giving form is a discerning, and discerning is an operation." Luhmann (1993), 199.
[17] Nassehi (2019), 73.
[18] Cf. Shannon (1949).
[19] Anderson (2020).
[20] Boyd and Crawford (2012).

tion power and algorithmic accuracy to gather, analyze, link, and compare large data sets. 2) Analysis: drawing on large data sets to identify patterns in order to make economic, social, technical, and legal claims. 3) Mythology: the widespread belief that large data sets offer a higher form of intelligence and knowledge that can generate insights that were previously impossible, with the aura of truth, objectivity, and accuracy."[21] The mythology is actually instrumental in *making the promise true* as it drives a self-reinforcing cyclical process: The belief in bigger data sets will facilitate the spread of the technology (1) which will enhance the pattern detection in the analysis (2), thus further strengthening the conviction that large data sets generate superior insight.

The theological tradition can prompt us to take any claims of objectivity of data-driven approaches with a grain of suspicion. To be clear: The issue with the digital here is not (primarily) that it is quantifiable or reductionist, but that it is invariably epistemologically closed: "Data duplicates the world, but doesn't contain it."[22] The world outside of data only comes into view *in and through* its representation by data. Data science can only find patterns in the data it recombines, aggregates and cross-references, not in the world itself. Only data-oid things enter the calculation, and the patterns that are produced in this process are properties of the data, not of the world. The digital shares the paradox of all signals, which come to stand at the same time for themselves and for that which they signify. Just like perception, data is not the world nor does it objectively represent the world, its function is rather the "testing of hypotheses about the world."[23] The propositional form is not the only way to think about knowledge, and is in fact one that is interpretionally quite "productive" – which leads to the fallacy discussed in the next section, the "non-neutrality" of digitization: It re-makes the world in the particular form of propositional statements.

Before launching the next section to explicate this "productivity" of technology and why therefore the neutrality view of technology is a fallacy, I want to earmark for further theological discussion that when we compare recent propositional accounts of divine omniscience with the classical conceptions, we might actually see the beliefs driving the digital age reinfiltrating theology. Defining divine omniscience as knowledge of all true propositions which effectively duplicates the world into a "mind of God" is quite a recent invention, and it may not be a coincidence that its spread goes hand in hand with the rise of "the digital age."[24] What presents itself as an objective,

[21] Boyd and Crawford (2012).
[22] Nassehi (2019), 106–7.
[23] Nassehi (2019), 73.
[24] Especially if this digital age is as broadly construed as by Nassehi, see above FN 6.

general model of knowledge may in fact be quite contextual to the specific branch of modernity we live on.

3. Worldmaking Beyond Manipulation: The Neutrality Fallacy

3.1. Real-World Effects Under the Neutrality Assumption: Knowledge is Power

Not only does digital propositionality fail to achieve perfect knowledge, it is *also* not neutral – which I want to explicitly distinguish from "not objective." Digitization does not just add an external interpretive layer to reality which remains external to reality while leaving it untouched – as the propositional form did. Digitization also alters the reality which it only pretends to represent. Whereas non-objectivity points to the inevitably interpretational nature of digitization, non-neutrality points to its real-world effects: what Foucault would have called its productivity.

Of course most people are aware that digitization has real-world effects, and that such effects could be judged to be positive or negative. There are those who think that digital technologies hold the key to everything good: progress, economic growth, personal enjoyment, convenience, self-perfection and enhancement, and that they will usher in a new age with unprecedented possibilities through more precise knowledge, increased efficiency, and better tailoring of technological solutions to cure all of society's ills. There are also those who call out the way in which digital technologies generate social alienation, replace whole employment sectors, amplify bias, or facilitate oppression or even totalitarianism through corporate power, political manipulation and control of individual behavior as well as societal processes.

However, most people will lean towards the seemingly more balanced assumption that technology *as such* is neither good nor bad *in itself*, but that it has to be judged according to the uses it is put to, in short, that it is, in and of itself, neutral. Knowledge is power: It enhances the possibilities of the wielder to achieve their aims, but whether it is good or bad depends on the use it is being put to. Such an assumption rests on an *instrumental view* of technology. The instrumental understanding views technology – from its simplest to its most sophisticated forms – as a tool. A tool, like a hammer or a knife, is not good or bad in and of itself, but has to be judged according to the end to which it is put, the intentions with which it is applied, the outcome, and the consequences its application engenders. A hammer can be used to build a shelter or to break a person's scull. Data analysis can be used for racial profiling as well as for life-

saving medical diagnostics. Knowledge derived from social media data can be used to manipulate elections as well as to facilitate grassroots organizing. And so on.

This view of technology is not completely wrong of course (I do not deny moral accountability for the way individuals, institutions or corporations use either hammers or data analysis), but it is incomplete. In the 1980s, Melvin Kranzberg, one of the 20th century's most important historians of technology formulated what has become well-known since as Kranzberg's first law of technology: "Technology is neither good nor bad; nor is it neutral."[25] Kranzberg saw the need to take into account "the utopian hopes versus the spotted actuality, the what-might-have-been against what actually happened, and the trade-offs among various 'goods' and possible 'bads'" as well as "how technology interacts in different ways with different values and institutions, indeed, with the entire sociocultural milieu."[26] These broader factors would make any judgment more ambivalent – differing effects come together without cancelling each other out, which yields an uneasy, "it's complicated."

In practice, this version of non-neutrality usually evolves into a view of technology as "benign, if regulated": The technology as such will continue to be seen as ambivalent in its effects but in itself morally neutral. This means it could potentially be used for good; the issue becomes discerning where to draw the line between good applications and problematic applications. This is an important task, and it will legitimately take up the bulk of ethical and legal reflection on emergent technologies.

I am not an ethicist or a politician. Others are better qualified to assess the moral quality of potential effects and to develop regulatory frameworks. As a *systematic* theologian, my relevant expertise may instead lie in assessing the more general differences a difference in the structural architecture of any "system" makes. I am therefore interested in the non-neutrality of technology even "before" any of its applications.[27] I want to examine the *specific ways in which* technology is non-neutral, i.e., the broader transformative power of the technology under question, or what Foucault would have called its productivity. How digitization changes the nature of the problem – this non-neutrality has to be distinguished from the moral neutrality or non-neutrality of its uses.

[25] Kranzberg (1986), 545.

[26] Kranzberg (1986), 547–48.

[27] Again: This line of questioning should not at all prevent ethicists and lawmakers to inquire into the moral quality and desirability of intentions, effects, ends, and results in the application of technology, and to develop frameworks for their deployment which would limit "bad" uses and allow for "good" uses. All of these questions obviously *still* stand on top of the non-neutrality in the "productivity" of technology that I focus on here.

3.2. Divine Omniscience: Power is Knowledge

In divine omniscience, we do find views corresponding to the more instrumental understanding such that God uses God's knowledge to *influence* the course of events. In these accounts, God is an agent who interacts with history like others, and God's knowledge enhances God's power in the same way as technological tools enhance human abilities to achieve their intended aims. Like in a game of chess, God's intricate knowledge of the game and the other players gives God a unique and decisive advantage.[28] If knowledge is power, then more knowledge is more power, and omniscience evokes omnicompetence (if not outright omnipotence). So far so good, so unspectacular.

What should give us pause is that the instrumental view of knowledge is not the primary angle on divine omniscience in the tradition, and that theologians have seen human freedom as seriously threatened by omniscience even though *abuse of power* is not a common worry raised with regard to God. Nevertheless, theologians have raised contentions with regard to divine omniscience based on the *control* it exerts or might be thought to exert to the verge of determinism. What we could learn from theology is that the moral non-neutrality of the effects of superhuman knowledge might not be the only or indeed the most fundamental non-neutrality involved. We need to think about the "productivity" of technology, beyond – or before – the question of its right use.

From divine omniscience we learn that not only is knowledge power, but more importantly: Power is knowledge. Divine omniscience is not only a tool that would intervene in the world in this way or that, instead, it forms the world itself according to its image. Not only is there nothing that exists that God doesn't know, without divine knowledge of it, there wouldn't even *be* a world.

Theologians have argued over the centuries whether God's eternal decree to create the world precedes God's knowledge of the world, or the other way around. In the first case, God knows the world infallibly *because* God willed all of reality into being. What is true is then true because God willed it to be, and God knows God's will. To stay with the game metaphor: God invented the game, laid down the rules, and designed the characters playing it. Since God is in control of the game as its creator from

[28] The chess metaphor is one that is prominently used by proponents of "Open Theism," who understand omniscience in a similarly secondary/world-neutral way as the instrumental view of technology would, cf. Sanders (1998). Precisely in order to prevent the challenges to human freedom posed by classical theism, they have scaled down omniscience to complete knowledge about the past and the present in propositional form, not including the future and not taken into account important complexities this tradition has generated.

eternity, God already knows the outcome – no wonder that under these assumptions theologians have invariably run into dilemmas between divine foreknowledge and human freedom.[29] Even if this conception sees God's knowledge as *reflective* of being, not causative thereof, the fact that God knows things to be true infallibly from eternity basically precludes their ability to be otherwise.

In the second case – as prominent thinkers have stipulated – God's knowledge actually *causes* the world to be. This even more clearly "productive" understanding of divine knowledge can be summed up as follows: "God's power is His knowledge. He creates by thinking. Whatever is is sustained immediately by the knowledge of God. [...] The mirror passively reflects the objects present. God's knowledge produces them."[30] In that case, there is no difference, no double text, because the world that exists *is* the world in the mind of God.[31] "Esse is percipi"[32] – to be is to be perceived, or: it is God's knowledge that sustains reality in being.

Whether God's knowledge is seen as *causative* of the world, or whether it is understood to *reflect* God's will that brought forth creation, theologians have usually agreed that God's knowledge of the world ontologically precedes its existence, and that divine knowledge and power are co-constitutive, co-extensive, and identical with God's essence[33]. In other words, we do not need to learn from Foucault[34] that knowledge is not just an instrument which confers power over a world, but that power is what generates knowledge and gives it its particular shape.

3.3. Digital Game-Changing, or...: Towards a Computational Ontotheology?

Doctrine can teach us that at the intersection of power and knowledge, manipulation or abuse is *not* the only issue. With the "mind of God", the productivity of the data double is immediately apparent, in the case of technology, the productivity may not be quite as crass. But even if the technological knowledge of the world does not create the (whole) world itself, it is still clearly non-neutral to it.

[29] And indeed, this dilemma has been at the forefront of debates from Boethius through Calvin to Open Theism. See e.g., Zagzebski (1991), as well as the very helpful dialogical overview of contemporary positions in Beilby and Eddy (2001).

[30] Rogers (2000), 75.

[31] See also in modern times Schleiermacher (2016), § 55, 219–228.

[32] Berkeley (1710), often slightly inaccurately reported as "esse est percipi".

[33] Rogers (2000), 71.

[34] See e.g. Foucault (1978) and *Two lectures on Power/Knowledge*, in: Foucault (1980), 78-108.

These insights apply therefore even when most data is actually not collected in order to *manipulate*[35] anyone (in the sense of: moving them towards doing something specific against their will or natural inclination), but to *control* behavior, i.e., to make it readable and predictable, to account for every variable in it, and to expand the duplicate data world. The latter may even be the most decisive factor because it draws on a self-reinforcing loop: More data generates more power because it generates more reality: First, it expands the shadow universe, not only by adding the respective individual items of data to its archive, but also by in this way expanding it with an infinite number of additional possible combinations, correlations, predictions and inferences which in turn yield a lot of additional data, therefore further augmenting the duplicate text.

Second, it expands the real world: Digital technologies do not just generate a shadow text that is external to the world. Like with writing, the generated text is in the world as more concrete objects and artifacts – data, code, algorithms... – which are not just an interpretive layer on reality, but objects with which the "original" world itself then interacts. While the world is duplicated into the digital without being contained in it, the digital itself is in fact contained in the world, populates it, and becomes a part of the world itself and establishes its own materially, socially and culturally relevant relations in it.[36]

The duplication into data generates a version of the world in which both problems and their solutions can be precisely described. This is in fact the appeal and the promise of the digital, what makes it so efficient – that its reduced and computable form allows it to discern relationships in the data of the duplicated world, to perform operations on it in the form of aggregation, cross-referencing, analysis, at the end of the day in the hope of managing the world which it describes. "The paradox situation ensues that the border between them *cannot* be overcome, but in practice always *is* overcome."[37] Technologies of knowledge are not neutral to the world they describe – they are involved in "the reality business."[38]

Continuing in the game metaphor[39], we can describe the non-neutrality of technology as follows: Technology is not neutral not because it produces good or bad game moves

[35] And again: Of course, there are plenty of examples where manipulation and abuse *are* real issues, and they should of course be addressed. I focus here on the productivity of technology that is there even beyond or before any abuse.

[36] See e.g., Presner (2010), Berry (2011) about different waves of digital humanities.

[37] Nassehi (2019), 112.

[38] Zuboff (2019), chap. 7.

[39] The game metaphor is used by Foucault for "a set of rules by which truth is produced. [...] it is a set of procedures that lead to a certain result, which, on the basis of its principles and rules of procedure, may be considered valid or invalid, winning or losing." (Foucault [1997], 297).

or because it makes good or bad people win the game, but insofar is it puts new pieces on the board within the game, manufactures the board on which the game is played, and fundamentally alters the rules according to which the game is played.

Tech optimists and pessimists alike point to the deeply transformative effects of technology, effects that extend beyond the good or bad intentions of those who apply them: "Change the instruments, and you will change the entire social theory that goes with them."[40] Part of the game-changing nature pertains to the change of the very criteria for what can become objects of knowledge: They change "the standards governing permissible problems, concepts, and explanations" as well as "the institutional and conceptual conditions of possibility for the generation, transmission, accessibility, and preservation of knowledge."[41] Technologies of knowledge do not just expand the range of possibilities to whoever is in control of these knowledges; Extant power structures shape the processes and technologies of data extraction and determine what becomes knowledge – an observation from the non-neutrality of technology which adds another aspect to the non-objectivity discussed earlier. Technologies of knowledge engender certain kinds of power relations and certain kinds of subjectivities through the way they mediate reality.[42]

As technologies change the ways we view the world, the way we interact with it, and the ways we make decisions, they engender and shape epistemic possibilities as well as conditions of freedom. "As the advantages of the computational approach to research [...] become persuasive [...] the ontological notion of the entities they study begins to be transformed. These disciplines thus become focused on the *computationality* of the entities in their work." Berry even goes so far as to stipulate: "Computationality might then be understood as an ontotheology, creating a new ontological 'epoch' as a new historical constellation of intelligibility."[43]

The doctrine of omniscience can direct our attention to the fact that technologies of knowledge production are non-neutral to the world because they change the rules of the game. In the next part, I will address more concretely some of the particular *ways in which* digital technology is non-neutral, and what different kinds of issues come into view once we take seriously this non-neutrality. In particular, I will argue that the contemporary focus on issues of privacy fails to take into account the non-neutrality

[40] Latour (2010), 155.

[41] Presner (2010).

[42] This is a huge aspect. Several chapters in my upcoming book on "Political Theologies of Omniscience" are dedicated to this insight.

[43] Berry (2011), 12. See also Bollier (2010).

of digital technologies and how it is therefore completely unable to track and account for crucial emergent issues.

4. The Privacy Fallacies

4.1. Why Privacy is not *the* Problem

In an age where all of our movements, purchases, interactions, and behavior leave data traces that can be stored, aggregated, analyzed, and not least: sold, privacy has been a major concern, and rightly so. But our consideration of debates in divine omniscience could flag to us that privacy may not be the only or even most important issue at stake here.[44]

In what follows, I will argue that the contemporary focus on privacy in discussions about the power of data fails to get at the central problems of digitization. Privacy may remain *an* important problem in the digital age, but the focus on it is misguided because it works with categories that originate in a different world: a surveillance that is interested in individuals. In this well-known world, I watch you, I know what you did, and I can potentially use that knowledge against you. If the observer possesses some kind of power and/or authority, whether it be that of a tightly-knit moral community, a religious institution, a law enforcement agency or a totalitarian state, the infringement of privacy will undermine the conditions of the possibility of important aspects of personal freedom. Let's call this type of surveillance "disciplinary surveillance": surveillance which is conducted on individual or collective subjects to track and flag, punish, or discipline *individuals* and prevent their misbehavior or misfitting of some kind.[45]

In a context of disciplinary surveillance, it is obviously crucial to protect individuals – and, importantly, not only people "who have something to hide"[46]– against intrusive,

[44] Cf. Lyon (2010), 13: "privacy is not the most significant casualty."

[45] I treat this model here only in passing to signal how the kind of surveillance investigated in this article differs. For a thorough discussion of the issues involved in "disciplinary omniscience" as well as its variation "performing omniscience", see the respective sections in my forthcoming book, "Political Theologies of Omniscience."

[46] The statement "He who has nothing to hide has nothing to fear" is often used to claim that any regular and honest Joe need and should not worry about sharing personal information with third parties. This is more than naive already within the paradigm of "disciplinary surveillance." Not every "hiding" is due to shame or guilt from wrong-doing. Minorities, especially where oppressed politically, have always known that the "they who have nothing to hide have nothing to fear" slogan might at best be true in an unbiased, egalitarian society etc. Furthermore, there is nothing criminal, let alone evil, about pregnancies, mental health issues or sexual orientation, but we may easily concede that people may have legitimate interests in "hiding" such information, if only because other people's knowledge about

manipulative, and oppressive forms of surveillance. We continue needing to draw the line with regard to excessive collection of data, especially of sensitive data. All of this *remains* true where this model of disciplinary, subject-based surveillance is enhanced by means of technology, e.g. where a human police agent is complemented or replaced by video cameras and further supplemented by a host of data- and meta-data tracking technologies. Obviously, this problematic dimension is all but exacerbated as technologically facilitated collection and analysis of personal data *further increases* spread, invasivity, and ubiquitous presence of tracking technologies.[47]

But *this* problematic dimension is nothing that is *specific* to "the digital." On the other hand, the specifics of "the digital" generate a range of problems which *cannot* be approached through the paradigm of personal freedom and privacy protection commonly invoked in "disciplinary surveillance." In this sense, this is a good example for what I described as the "non-neutrality" of technology in the first part of my contribution: The focus on privacy fails to grasp the ways in which digital technology not only "replaces" earlier instruments – like an electric drill might replace a screwdriver –, but alters the structure of the problems, i.e., it fails to take into account the fundamental non-neutrality and productivity of the technology which I work out above. *The digital is fundamentally agnostic with regard to concrete individuals*. It is only interested instead in what Deleuze has called the "dividual."[48]

The focus on privacy is not enough because it is constitutionality unable to attend to the substantial paradigmatic transformations through digital technology: It fails to attend to the agnosticism of algorithms with regard to individuals.

Alas, privacy has not been a central preoccupation for theologians. As witnessed in the occasional anguished protest "where can I flee from your presence?" (Ps 139:7b, NRSV), the theological tradition does have an understanding that "too much" divine

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such facts might lead to negative consequences. Even where no systemic concerns can be cited, such a view is problematic because it reverses the burden of proof as it turns every one into (potential) criminals who then have to prove their "innocence" rather than the other way around.

[47] As a side note – privacy may even be complicit to the problem it presents itself as solving: privacy has always been a function of control and the result of technologies of truth production and confession (cf. the work of Michel Foucault, esp. in Foucault [1990] : *The Will to Knowledge*, and Foucault [1978]) The clear boundary between public and private space which we have grown accustomed to see as a safeguard of self-determination and individualism is a very specific development of the bourgeois society and has always been deeply involved with highly normative and normalizing processes (cf. Nassehi [2019], 311, who even suggests that modern privacy is the effect of a certain strategy of data analysis. Some of the developments of the digital age may prompt us to even reconsider our infatuation with privacy – it itself may be more the correlate of a specific historic constellation of normalizing power than an inherent "human need."

[48] Deleuze (1992).

presence and knowledge can be unbearable for the human being. But mostly, theologians wrestling with divine omniscience have been concerned with securing divine perfection while wanting to uphold a notion of human freedom in service of ethical accountability. Can conceptions developed in this vein yield insight for the decisive difference, the specific non-neutrality of the digital that is marked by agnosticism vis-a-vis the concrete individual? Counter-intuitive as it may seem, I answer yes. In what follows, I will substantiate this claim further and demonstrate more concretely how the digital agnosticism vis-a-vis the concrete individual renders approaches from data protection to data sovereignty essentially ineffective in addressing the changed problematic structure which digitization engenders.

4.2. Middle Knowledge

Disciplinary surveillance, as briefly sketched above, was centrally concerned with the individual – e.g., the police officer would follow you to establish your typical behavior, or would listen in on your conversations, and then deduce conclusions about the likelihood that you committed a crime. The information collected from an individual was typically used to infer something about this *same* individual. This seems trivial, but it is precisely this logic that the digital moves beyond.

In terms of divine omniscience, the "disciplinary" paradigm would see God as a perfect observer who knows what you did *after* you did it *because* you did, and who would take some appropriate action, potentially: reward or punish you for it.[49] While theologies along these lines exist, such a notion seemed highly inappropriate to the classical thinkers *both* with regard to divine perfection *and* to human freedom. If God only knows *fait accompli* what humans chose to do, then divine perfection would be significantly compromised. Additionally, it would essentially mean that God's own choices are limited by the free choices of human beings, and that God would be essentially (if partially) determined by the choices of human beings – another inconceivable notion for classical theologians. In order to avoid these issues, theologians stipulated that God's knowledge therefore cannot *reflect* lived reality; instead, such knowledge has to be drawn from God's knowledge about Godself.

[49] This model has of course been highly influential historically as well as in the present. I have argued elsewhere that panoptic surveillance – from Bentham's prison to the emergent Chinese social credit system – "translates" this theology into a social management system. There is much to say here, but the conversation with this kind of theology and this kind of surveillance is beyond the scope of the present paper.

An ingenious solution to this dilemma was proposed by the Jesuit theologian Luis de Molina and has become known as "middle knowledge."[50]. It expanded the scope of God's knowledge beyond the two "kinds" stipulated by Thomas Aquinas: *Natural or necessary knowledge* is what God knows prevolitionally, i.e., by God's very nature, "before" God's choice to create the world. Such natural knowledge includes metaphysical truths, logical truths, basically to all that could not have been different from the way they are. Secondly, *free or contingent knowledge* refers to what God knows (still in eternity, but) "after" God's choice to create, based on that choice. The content of this knowledge is contingent – it could have been different if God had chosen to create a different world or no world at all. Still, given God's choice to create, free knowledge is infallibly true, since God from eternity knows God's choice to create *this* particular world. While natural knowledge is metaphysically necessary, free knowledge also becomes necessarily true after the condition upon which it hinges obtains. E.g., as God chose to create *this* world, Socrates is a bachelor, which potentially could have been otherwise but now is in fact (irrefutably, but contingently) true; whereas there is no world in which "all bachelors are unmarried" does not apply, because it is a logical truth. But if God chose to create the world in which Socrates is a bachelor, and therefore there is no world in which Socrates is married, how can we understand Socrates' decision to remain unmarried as a free choice? If Socrates could have chosen otherwise, he would essentially have dictated God's choice to create, if he could not have chosen otherwise, how can he be understood as free?

Luis de Molina presents middle knowledge as an option that does not see divine omniscience and human freedom as a zero-sum-game. Middle knowledge is prevolitional like natural knowledge in that it does not depend on God's choice to create, but its content is contingent in that it refers to everything people would (hypothetically) do when put in specific situations. That is, God's knowledge does not only include necessary truths as well as past, present and future, but it contains so-called "counterfactuals of creaturely freedom," which refer to what a free creature would have chosen freely in any set of circumstances. God knows all these conditional contingents, all these "possible worlds" – to use a common shorthand – prevolitionally and *then* decides which world to actually create. Not only does middle knowledge not take anything away from divine knowledge, it even adds the realm of possibilities to it. At the same time, divine knowledge does not infringe on the human ability to decide freely – i.e.,

[50] Cf. Molina (1988) See also the excellent introduction of Alfred Freddoso in the same volume. For a contemporary Molinist position, see Craig (1991).

neither does it determine the choice itself, nor does it take away the possibility that the person could have done otherwise.

It is important to note that God doesn't know what God knows about your choices *because* you chose – remember, as sketched earlier, that according to tradition God's knowledge belongs to God's eternal essence and can therefore not be dependent upon something a creature does or doesn't do. God instead knows your essence and what you *would* do freely under any potential set of circumstances *were* they to obtain – and then decides to actualize one of these sets of circumstances. You then choose freely what God already knew you would choose freely without *making* you choose this way. Still, nothing will happen that God did not already *know* from eternity. From all the potential versions of you that exist in parallel worlds of potentiality, God chose to actualize this one at this particular set of circumstances which only the "you" in the actualized world inhabits.

4.3. The Digital as Technologically Realized Middle Knowledge: A Case Study

Middle knowledge seems like a highly speculative theological category. But it offers our best theological analogy for particular properties of the statistic principles behind data-based knowledge and the ways in which it is non-determinative of human freedom while still being predictive. Middle knowledge was able to secure both divine omniscience *and* human freedom by being fundamentally agnostic to the reality-status of any given world – by expanding God's knowledge to all possible worlds and only therefore, almost coincidentally, including the knowledge of the one actual world which we now find ourselves inhabiting. And here is the parallel to the digital: Data analysis does not rely on the pertaining of information to actual existent, particular individuals but rather to statistical "types," and then actualizes these types by applying them to concrete individuals.

Identifying the precise sets of circumstances to determine which option will be actualized in any concrete case is at the heart of statistic prediction. Where in middle knowledge, God knows what Peter *will* choose to do under specific circumstances because God knows what Peter *would* have done in all possible circumstances, data analysis today knows what people who are in significant ways *like* Peter *have* done under the same circumstances and will therefore predict what *Peter* would do in these same circumstances – thus potentially giving interested parties possibilities to act upon actualizing or not actualizing the set of circumstances under which Peter would choose the

action in question. Instead of possible worlds, we have statistical correlation, instead of counterfactuals of human freedom, we have typologies.

In the most general way, the rendering of the world in the form of data serves to facilitate the detection of relations of probability and distribution. The discernment of patterns that is characteristic of this process goes hand in hand with the development of types and typologies. In fact, the typologizing power is often seen as the crucial characteristic of what has become known as "big data" technologies: "Big Data is less about data that is big than it is about a capacity to search, aggregate, and cross-reference large data sets."[51] In so doing, "digital observation of the world is not primarily concerned with individuals but with certain types: with the discernment of typologies."[52] Data science is fundamentally agnostic with respect to concrete individuals: It aggregates data across different subjects, files it under categories and labels that run across individuals, and then discerns patterns that emerge across a range of individuals. This makes it highly effective at predicting the actual characteristics pertaining to concrete individuals, while not taking anything away from their theoretical freedom to choose otherwise. "Big Data doesn't create social groups, but statistical groups."[53] From data collected about *other* individuals, analysts are then able to make inferences about specific individuals whose data may not even be part of the originally analyzed data set.

Let me spell out these points drawn from the analogy with middle knowledge by way of an example. In a recent study, researchers developed an intelligent model which on the basis of Facebook Likes is able to discern an individual's character traits with a higher degree of accuracy than people who know the individual personally and well: "computer models need 10, 70, 150, and 300 Likes, respectively, to outperform the average work of a colleague, cohabitant or friend, family member, or spouse."[54]

It started when doctoral students developed the myPersonality App, which presented itself to the user as an innocuous device for a fun gamified self-test with personalized feedback. Users could opt-in to share their Facebook profile data with the researchers, who in return proceeded to compare the results with all sorts of other data on the subjects: their likes and posts as well as their publicly visible self-reports on gender, age, residence, etc. The app was widely used and shared, and by 2016, the database

[51] Boyd and Crawford (2012).

[52] Nassehi (2019), 58.

[53] Nassehi (2019), 302.

[54] Youyou, Kosinski and Stillwell (2015), 1037. Similar models have been developed on the basis of Twitter data, see Golbeck u. a. (2011).

contained more than six million personality profiles plus the data of four million individual Facebook profiles.[55]

This data treasure allowed the model to detect correlations and patterns in order to accurately predict a wide range of personal attributes beyond what people had disclosed, and which they presumably would not have guessed to be revealed by the data they had supplied: factors such as age, gender, sexual orientation, race, religious and political views, intelligence, personality traits, but even happiness, drug use, and parental separation.[56] With only 68 Facebook Likes of any variety, the model is on average able to predict skin color with a 95% accuracy, similarly sexual orientation, political affiliation, religion, whether your parents have been divorced while you were still underage, and how much alcohol you consume – even if these 'likes' may not explicitly connect to these criteria, at least by the best human guesses.[57] Consequent research showed that on the basis of the aggregated data, the model was also able to predict real-life outcomes and other behaviorally relevant traits better than human judges.[58] Does the computer model involved actually "know" you or me better than our colleague or family member does? Of course not. All it does is compare us to people who share some of our characteristics and/or some of our 'Likes' and predict how we might be similar to them in other ways, as well. It is therefore able to "predict" with high degrees of accuracy traits which we have not explicitly chosen to share. This case study can demonstrate how the privacy paradigm, which presumes that individual freedom will be upheld by the protection of sensitive personal information, fails, and fails radically, because:

1. we don't understand our data – we have no idea what *other* personal information might be drawn from the data that we chose to share;

[55] "Suddenly, the two doctoral candidates owned the largest dataset combining psychometric scores with Facebook profiles ever to be collected." Grasseger and Krogerus (2017). It became a unique source of psychological data for further research for testing and validating new models of predicting personality data which could always be run on samples of Facebook data. Facebook uses such findings for marketing purposes. It has become common knowledge by now that the personality analysis under review here was highly influential in the 2016 US presidential electoral campaign, see Grasseger and Krogerus (2017).

[56] Kosinski et al (2013).

[57] E.g. individuals with parents who separated have a higher probability of liking statements preoccupied with relationships, such as "If I'm with you then I'm with you I don't want anybody else." Similarly, the model established that high intelligence could be predicted from 'liking' Curly Fries even though "there is no obvious connection between Curly Fries and high intelligence." "Even knowing a single random Like for a given user can result in nonegligible prediction accuracy" (Kosinski [2013], 5803.5804).

[58] Kosinski et al. (2016), see also Youyou, Kosinski and Stillwell (2015).

2. the knowledge *about* us is not based *on* us – and we have no way to protect ourselves against predictions about us on the basis of *other* people's data;

3. the prediction participates in the production of the future.

4.4. The Illusion of Data Protection I: You don't Understand Your Data

The first thing that we can see from this model is that data protection won't "fix" or even address the issues that are most particular to the digital age. For data protection and privacy to be effective, especially in the form of individual conscious choice what data to share with whom, the individual needs to be able to have an understanding what information about them might be inferred on the basis of what kind of data. The principle rests on the assumption, however, that the information the individual *shares* is the same as the information that is *received* by the other party. That sounds almost tautological, but remember the earlier insight that interpretive processes stand at both ends of the data communication process. In You You et al.'s model we find a concrete example of how this plays out in digital modelling: The identity of the information that is put in by the user with the information that is received through the analysis of the datafied signals transmitted cannot be taken for granted where intelligent machines make predictions from data patterns that seem unrelated or are not even apparent to the human eye. Thus, *if and what* we may want to hide in front of *whom* eventually is something we may not be able to understand at the time of deciding to share certain data.

Interestingly, a similar issue already obtains in divine "surveillance" of human behavior, as seen in the final judgment account in Mt 25:31–46[59]. In this passage, the un-

[59] Here is the text of the parable: 31 "When the Son of Man comes in his glory, and all the angels with him, then he will sit on his glorious throne. 32 Before him will be gathered all the nations, and he will separate people one from another as a shepherd separates the sheep from the goats. 33 And he will place the sheep on his right, but the goats on the left. 34 Then the King will say to those on his right, 'Come, you who are blessed by my Father, inherit the kingdom prepared for you from the foundation of the world. 35 For I was hungry and you gave me food, I was thirsty and you gave me drink, I was a stranger and you welcomed me, 36 I was naked and you clothed me, I was sick and you visited me, I was in prison and you came to me.' 37 Then the righteous will answer him, saying, 'Lord, when did we see you hungry and feed you, or thirsty and give you drink? 38 And when did we see you a stranger and welcome you, or naked and clothe you? 39 And when did we see you sick or in prison and visit you?' 40 And the King will answer them, 'Truly, I say to you, as you did it to one of the least of these my brothers, you did it to me.' 41 Then he will say to those on his left, 'Depart from me, you cursed, into the eternal fire prepared for the devil and his angels. 42 For I was hungry and you gave me no food, I was thirsty and you gave me no drink, 43 I was a stranger and you did not welcome me, naked and you did not clothe me, sick and in prison and you did not visit me.' 44 Then they also will answer, saying, 'Lord, when did we see you hungry or thirsty or a stranger or naked or sick or in prison, and did not minister to you?' 45 Then he will answer them, saying, 'Truly, I say to you, as you did not do it to one of the least of

witting believers are surprised by the verdict because they had no understanding what aspects of their data would be used to infer what about them. Where "the Lord's ways are higher than our ways" and God comes to a final judgment by taking into account unexpected data, human beings have no way to hide because they do not know what it is that they in fact should be hiding. The individuals charged in Mt 25 might not deny that they behaved in the reported way, but they weren't able to envision how the reported behavior would enter the divine "calculation," and what it would be read *as*.

Our data reveals more and quite different things from what we think it may. What Youyou et al.'s model shows is that personality traits can be predicted on the basis of data that seemingly has no connection to the predicted variable. E.g., individuals may explicitly decide *not* to share information about their sexual orientation. But where Youyou et al.'s machine is at work, "merely avoiding explicitly homosexual content may be insufficient to prevent others from discovering one's sexual orientation."[60] The model was able to predict users' sexual orientations from likes of cosmetic brands, music, or categories like "Being Confused After Waking Up From Naps". The underlying data seems as innocent as unconnected with the predictions that were – with surprising accuracy – made on their basis. Users did choose to share these 'Likes', but they could not conceivably have belabored how these 'Likes' – taken together and cross referenced with the 'Likes' of hosts of other profiles – would be indicative of their sexuality. Such a predictive model makes it impossible for individuals to control what kind of information they might be revealing in, with and under the data they decide to share.

Similar models are capable of predicting mental health issues like depression on the basis of markers in photographs uploaded to Instagram such as brightness, numbers of faces in them, and filters used.[61] Even if individuals explicitly consented to Instagram's use of the data from their vacation pictures, they could not possibly have known that they were disclosing mental health related information – but the model "found" that information in the data anyways. And after knowing the patterns well enough, the model was even able to correctly "diagnose" users if they had never been diagnosed, and maybe were not even aware themselves of their mental health condition. Yet other models have been successful at predicting sexual orientation on the basis of facial fea-

these, you did not do it to me.' 46 And these will go away into eternal punishment, but the righteous into eternal life."

[60] Kosinski (2013), 5805.

[61] Cf. Reece and Danforth (2016).

tures.[62] People who share selfies with a social network, or even just walk into a grocery store or across a street may have consented to sharing these images, but as they did so, they had no way of understanding that they might be "giving away" information about their sexual orientation merely by showing their face.

Building on principles of consent, data minimization and purposefulness,[63] clearly seems to be a reasonable approach to the uncanny powers of the digital age. Users deliberate – as the privacy paradigm rightly suggests they should – about what information would be problematic to share based on what they can conceive other human beings with attention directed to them personally to potentially do with such information against them personally. And while these deliberations continue to be very important to prevent certain kinds of privacy abuses, the point here is that beyond them, we can have no understanding what intelligent machines might be able to do with the data we share. They are able to establish connections, correlations, and cross-references between data that does not have anything to do with each other to the human mind. In other words, concepts like informed consent make little to no sense where the potential uses of data and the potential information that could be inferred from the data in question is literally "a black box."[64]

In middle knowledge, God does not need to wait for the human being to act or chose specific things in order to know about it. God can "predict" the behavior or choice from the matrix of possibilities of counterfactuals – how this person would behave under all different possible circumstances. From this matrix of possibilities, God knows already how the person will behave in the particular set of circumstances – just like a statistical prediction based on typologies. Middle knowledge does not depend on the individual's "sharing" of its concrete information with the universe at large. Therefore, the person could never escape divine knowledge about who they are, what they would do or might be, not only where they hide their actions, but even where the situation in question never actually obtains (which seems like the most radical way of hiding information).

Against the predictive power of data-driven modeling, the protection of personal information will therefore not merely be difficult or costly to protect privacy; no, it will be completely ineffective. The lofty vision of "data sovereignty" which is "about enabling and shaping one's own self-image, about what some call autonomy, what others

[62] Cf. Kosinski 2017.
[63] See Dabrock (2019).
[64] Cf. Pasquale (2015).

call self-determination" has no traction vis-a-vis middle knowledge *or* AI power. Even where data protection is technologically and legally implemented and where people deliberate carefully and decide specifically which data to share with whom, there can be no self-determination of one's image when there is no way of predicting *what* my data may tell the other party at this or a later point of time, based on correlations to so many other data sets. Where we have no ideas what information our data in fact contains or might be made to render, then we can neither shape our perception nor have any idea what data we might want to protect when and from whom. Claims of "making the right to informational self-determination behind traditional data protection weatherproof for the age of Big Data, AI and machine learning"[65] are therefore illusionary at best and lulling into a false sense of security at worst.

4.5. The Illusion of Data Protection II: The Knowledge About You is Not from You

There is a second reason why privacy approaches fail to grasp what kind of knowledge digital technologies produce: Privacy can only protect you from your *own* data, but the knowledge digitally produced *about* you is not necessarily sourced *from* your own data. We come back to the issue of algorithmic agnosticism in relation to concrete individuals.

In middle knowledge, God was conceived as having knowledge about counterfactuals of creaturely freedom, i.e., God's knowledge was not based on what really-existing human beings actually did, but on God's general understanding of what individuals might do under such and such a set of circumstances. Digital statistical modelling is just as (in fact, even more[66]!) agnostic with regard to concrete individuals: The success rate from the myPersonality App does not necessarily come from the fact that it knows this concrete individual very well. Instead, it comes from the sheer quantity of data it is able to generally take into account – statistical correlation supplies the counterfactuals of human freedom, so to speak: The model does not just "know" your individual Likes, but compares them with the publicly available information from 2 billion other active profiles and then calculates statistical correlations. On the basis of its vast mass of data, the model is able to make impressive predictions for concrete individuals.

[65] Dabrock (2019).

[66] As indicated before, the nature of agnosticism is different in both cases: Middle knowledge of course does in fact pertain to concrete individuals, just to the same concrete individual in all hypothetical worlds, while statistic data deals only in real, not hypothetical data, but predicts the traits or behavior of one concrete individual from the data of other, significantly similar, concrete individuals.

E.g., a model used to predict any future user's (let's call him Peter1) mental health status does not need to "know" anything about Peter1. It only needs to know something about the general patterns that have emerged from the data of Peter2-n, who have participated voluntarily in the previous study. But assessing Peter1's likes on Facebook or their filter use on Instagram, the model will be likely to correctly identify Peter1 as depressed – whether Peter1 has been diagnosed before or not, whether Peter1 is aware of their own mental health status, and whether Peter1 is actually under the impression of explicitly not disclosing that information. Protecting Peter1's privacy by cautioning them from sharing information related to mental health status will not prevent the model from accurately discerning Peter1's health status by virtue of what it "knows" about Peter2-n in correlation with the ways in which Peter1 behaves like or unlike Peter2-n. Once the predictive model is established on the basis of the data available (via informed consent!) about Peter2-n, Peter1's decision not to disclose their mental health information does not prevent the model from predicting their mental health status accurately – and there is literally nothing Peter1 can do against being diagnosed by it.

The model is even able to make predictions about individuals who did not "share" *anything* about themselves, simply by cross referencing what information is publicly available about them with the rich data about other people who are in some ways "like" them – mining techniques which can easily be applied to large numbers of people without obtaining their individual consent and without them noticing.[67] In the election scandal since turned historic, Alexander Nix claimed that on the basis of the myPersonality App, Cambridge Analytica was in fact "able to form a model to predict the personality of every single adult in the United States of America"[68] – even though only 68% of US adults were Facebook users in 2016, and even much fewer of them had given the myPersonality App access to their data.

[67] Kosinski (2013), 5803.

[68] Grasseger and Krogerus (2017). Even if this is an exaggeration (and it might well not be an exaggeration), this demonstrates that exercises in "digital detox" or "getting off the grid" as well as strategies of data minimization might still be beneficial in a variety of ways, but their most beneficial effect might be limited to mental hygiene for those who employ them. Buying less will not get you out of the economic system and not speaking will not get you out of a discursive space, just like taking wings of dawn will not lead you out of the divine presence (Ps 139). They may give you some perceived breathing space, but they do absolutely nothing to prevent "the system" from having a grasp on you. In the context of the Cambridge Analytica affair, people have stipulated that "marketers can attract up to 63 percent more clicks and up to 1,400 more conversions in real-life advertising campaigns on Facebook when matching products and marketing messages to consumers' personality characteristics." I was not able to track down the evidence for this claim, but see Matz et al. (2017), who cite "converging evidence for the effectiveness of psychological targeting in the context of real-life digital mass persuasion" (12717) and show how "behaviors of large groups of people can be influenced through the application of psychological mass persuasion" (12714).

An interesting potential connotation of middle knowledge for human agency might become relevant here as well: In both contexts, Peter1 has no possibility of assessing their own standing in relation to the non-actualized/statistically correlated Peter2-n, and therefore doesn't even know what kind of knowledge about them exists based on their similarity and dissimilarity with them. Peter1 in some ways bears the consequences even for actions they never committed in this particular world with this particular set of circumstances, because God did not actualize it. Similarly, in the digital model, the concrete individual Peter1 will be judged by the standard set by Peter2-n.

The reality of digital modelling is: Whatever information about an individual is publicly available can be used, not only "against" that individual but "against" anyone. It is very difficult to shift our mind away from the focus on the concrete individual in this sense, because obviously the individual (especially that individual that we *are*) is the organizing principle of our self and world-perception. But it carries only so far. Predictive modelling based on *other* people's aggregated and examined data "challenges the extent to which existing and proposed legislation can protect individual privacy in the digital age [since] such inferences can be made even without having direct access to individual's data."[69]

4.6. The Reality Business of Prediction and the Freedom Fallacy

All these insights may come as a shock for our self-understanding as subjects: Our particularities, our idiosyncrasies, our spontaneities are not as individual as we like to think. They form patterns; they can be correlated with factors that made no conscious difference for us; and they are also highly predictable. For our conceptions of agency, authority, subjectivity, decision-making, and accountability, the possibility to attribute actions and characteristics to a concrete individual is decisive. But now technology is able to "read" our behavior as merely specific occurrences of general types and patterns, and with a high degree of accuracy: "The illusion of the autonomously acting subject – to which that which it does is then attributed individually – is irrevocably abolished."[70]

Here it is worth noting that the analogy rests on a significant difference, though: Data-driven superhuman knowledge is *person*-relatedly agnostic whereas the God of middle knowledge is *reality*-agnostic: Statistics does not care which concrete individual the original data belongs to when making the prediction, whereas in the concept of middle

[69] Youyou, Kosinski and Stillwell (2015).
[70] Nassehi (2019), 121.

knowledge, God does nothing care whether the knowledge is about the actual or a possible world. But based upon the predictions engendered by such initial agnosticism, God creates a particular reality. Is data, likewise, involved in *producing* its predicted realities?

At the least, prediction creates self-reinforcing cycles, as has been widely demonstrated, e.g. in the context of predictive policing and racial bias.[71] In this sense, prediction is merciless – it evokes an image of the individual based on statistical correlations and it evokes an image of the future out of the past. It will treat individuals as the sum aggregate of their past and as the cross-correlation of their statistic groups. And where these predictions count as knowledge, societal agents act upon them and give them a truth status.

God is not like this, the theologian might interject. Theological concepts like justification and grace point to the fact that eternal self-reinforcing loops are not the driving force of God's history with the world. Instead, God allows creation to be otherwise, to not be bound by what is already known about them. That is the Christian hope: real newness – a hope that tech optimism does not come close to. The sheer reproduction of the past kills. The Spirit sets free. If this isn't inscribed in the systems we use to generate knowledge, they *will* suffocate us. Maybe we also have to find ways of "reading" the digital differently and allow it to be something other than the self-fulfilling prophecies I have gestured towards – but we will have to see how much that is *systemically* possible.

But while theology in this sense may have a counter-vision to offer to our age, we may also have something very important to learn from the specific issues posed by the digital age. The traditional theological debate around divine omniscience has in great parts revolved around the double commitment to secure "perfection" of God's knowledge (with differing candidates as to what "perfect knowledge" should be and entail) and secure human freedom as well (with differing candidates as to what human freedom should be and entail). Central driving interests have been: to avoid determinism and to mitigate issues of theodicy, while safeguarding divine perfection. Humans, thus the common assumption, *have* to be considered free agents, agents whose choices are not dictated by an outside party but who could have chosen otherwise yet chose not to, because our understanding of moral accountability hinges on this, which itself is a central condition of the possibility of ethics.

[71] Racial bias is well-documented in police work and translates into data-driven predictive policing, e.g., when algorithms are trained on biased data sets. It also applies more broadly to statistical modeling, however. See Noble (2018).

The concretions of the digital age can teach theology that this concern for freedom is not enough. An abstract understanding of the possibility to choose otherwise fails to have traction on the breadth and scope of issues emergent in the digital age – and raises suspicion that we may miss out on theological potentials here as well. If, e.g., targeted advertisement can lead to an increase in "conversion rates" by 1400%, choice may still be technically considered free, but that freedom is of little consequence. If, e.g., predictive policing disproportionately targets black populations, the statistic prediction leads into self-reinforcing logics that render the individual's objective freedom not to commit crime irrelevant. If social credit systems have people question the effects of their every move, public utterance, and social interaction on their aggregate score, freedom of will or ability to do otherwise just are not the central questions to ask. What theology can learn from the digital age is that considering freedom as an abstract good to be safeguarded or infringed is pointless. Theologians were able to theoretically avoid determinism while still upholding omniscience by pointing to human imperfections of knowledge: Because the future is unknown to us, even as it is known by God and therefore already settled, we behave "as if" we were free.[72] This "as if" of freedom Calvin and others described based on our lack of insight into the connections between everything might have theoretically rejected determinism, but does not render the world as something we can live in. I have scratched at the surface of the issue several times as an issue that has emerged in the debates around divine omniscience without going into it – because to my understanding, the concepts about free will and freedom of choice, freedom as a good that agents can possess and that then opens up room for their activity seems to be problematic, fraught, and a dead-end in a variety of ways.

Maybe the category of freedom is an area where theologians can, after all, learn something in return from "the digital"? Either freedom is overrated, because it does not actually make a difference, or else it has to be understood very differently.[73]

5. Conclusions

In this two-part contribution I have indicated that, unlikely as it may seem, century old debates about divine omniscience can indeed be illuminating for discussions about technological developments today. The questions people have asked in the doctrine of God about how omniscience interacts with the world, its neutrality and objectivity,

[72] Calvin, Inst. I,16.
[73] Cf. Friedrich (2019).

its transformative or productive power, and the different ways that have been explored to understand the interface between omniscience and human freedom can provide us with conceptual frameworks and lines of thought that may also be useful in assessing digitization today.

Unlikely as it seems, discourses about divine omniscience and digitization may actually have something to offer to each other – not just on a metaphoric level: They may even be able to help each other understand their respective objects a little bit better. Looking at contemporary developments through theological lenses has given us inroads into their epistemological and ontological status, the hermeneutic and productive aspects involved in data generation and analysis, the universal applicability and worldmaking quality of digitization, and why privacy may not be the most particular issue at stake in processes of digitization. On the other hand, digitization has given us clues about the limited applicability of propositional understandings to divine omniscience and the insight that concepts like grace, justification and new creation are curiously incompatible with the digital. Or are they?

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