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Dorobantu, Marius; Green, Brian Patrick; Ramelow, Anselm; Salobir, Eric

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Being human in the age of AI



OPTIC Network



OPTIC is a research and action network that prioritises human values in the development of new technologies. While such development sometimes raises a range of concerns, and justifiably so, our belief is that technologies can also help build a society that is more respectful of each individual, provided we consider the ethical aspects and assess their real-world impact. While most technologies are not intrinsically forces for good or for evil, they cannot be considered entirely neutral either, in that they are the products of intentions and a vision of human values that are open to question. From this perspective, OPTIC seeks to encourage a renewed social discussion of the role that technologies should play.

The OPTIC network was founded in 2012 under the aegis of the Dominican Order, and today has several thousand members and operates in Paris, San Francisco, Rome, Montreal, Brussels and Geneva.

It is a network of researchers, thinkers and entrepreneurs that is headed by Eric Salobir. After graduating from the ISC Paris Business School and working in management at the head office of the Crédit Lyonnais bank, he joined the Dominican Order in 2000 and became a priest. Since then, his focus has been on the media and digital technology. He has also been a consultant to the Holy See.

Fondazione Gravissimum Educationis



Fondazione
GRAVISSIMUM EDUCATIONIS

On October 28, 2015, Pope Francis founded the Gravissimum Educationis Foundation. The Foundation works in an educational context, supporting the integral education of the human person and the fraternal coexistence on earth.

To do so, it does not address only Catholic institutions - which are however, in the world, an important presence: 216,000 schools, 1,260 universities, 500 faculties and ecclesiastical institutes - but all those involved in the educational mission, facing together the challenges of today and tomorrow.

From a global perspective, attentive to the most difficult situations, the Foundation supports innovative and impactful projects, invests in quality, promotes scientific studies and fosters networking between educational institutions. In this way, it is close to young people from every continent, different in cultures but together engaged in building their own life project.

The Foundation is constituted as a juridical public canonical entity and a civil legal entity at Vatican City. It is based at the Congregation for Catholic Education, the Vatican ministry in charge of the promotion and organization of catholic education in the world.

Editorial

Today, «Dall-e» is capable of «creating» works of art by the greatest painters. Beyond reexamining our relationship to creativity, this innovation describes how AI is disrupting our way of «being» in the world.

We are all concerned by the impact of AI on our lives. Our social interactions are increasingly driven by algorithms to the point where serendipity is fading. These technologies end up setting the tone. In the same way that connected speakers grant our every wish, they can have major consequences when it comes to answering sensitive questions: «*Which is the capital of Israel? Tel Aviv or Jerusalem?*» This opens up a window of opportunity to influence our perception of the world.

All citizens must be aware of the positive and negative effects of these technologies to preserve a humane society in a world where AI is increasingly present.

I am optimistic. I remember a conversation with Michel Serres, where he reminded me that Socrates was against writing because it allowed people to access information they were not meant to receive. In the end, writing served us well. We have come out on top in every cognitive revolution and I think that will be the case with AI as well. But it is now that we need to think about new governance frameworks, as projects such as the metaverse and the web3 arrive, to ensure that they bring something to society.

In this context, OPTIC has mobilised its team and network to analyse the positive and negative impacts of AI through a theological anthropology approach. This document is the result of several seminars. It is intended to be used to develop training modules.

As we publish this work, I would like to thank the contributing members for the depth of their reflections: Marius Dorobantu, Brian Patrick Green, and Bro. Anselm Ramelow. I am also grateful to Bro Dominique Raphaël who is coordinating the work of OPTIC with the help of Ménehould Michaud de Brisis. My gratitude also goes to the partner institutions that have supported us in this process: the Human Technology Foundation, Gravissimum Educationis Foundation and the Pontifical University of St. Thomas Aquinas - Angelicum.

Finally, I hope that this modest contribution to the edifice will contribute to the repoliticization of technology, i.e. to put it back at the center of the debate in the city (Polis).

Enjoy your reading.

Eric Salobir

A BALANCED PERSPECTIVE ON AI FROM A THEOLOGICAL POINT OF VIEW

The religious sphere is sometimes known in the AI community for its conservative views on bioethical issues, and for its critical regard of AI. However, we believe that a theological assessment of AI can go beyond the common religious criticisms levied upon AI: idolatry, techno-salvation etc. Such a balanced evaluation would include a measured appreciation of the benefits of AI, but also a more subtle analysis of the potential latent in AI technologies to impact humanity in the long term. Our target audience does not consist of theologians, but of people who can resonate with universal human values, such as compassion, love and human flourishing.

AI has the potential to radically change our world and even who we are as a species in the long term. We are not only creating AI, but we are **created back in the process**. How is the process of creating AI reflected upon ourselves, in other words, re-creating us? Is it akin to how the experience of parenthood changes some people for good? Or, instead, is this endeavor bringing to surface some of our more undesirable aspects, such as greed, vanity, lust for power or cruelty?

We know that being human, or better, *humane*, is not necessarily a yes/no feature, and there is likely a *continuum*: individually and collectively we can be less or more humane, depending on how we act, and which values we choose as the guiding principles of our lives and societies. A crucial question about current and future AI is whether it engenders a more humane world and whether it helps us or not in **becoming better humans**.

Theological anthropology can be of great help in approaching this question, due to its millenary expertise in dealing with issues like what it is to be human or what is a good life. A core notion that could inform our reflection is that of the **image of God** (*imago Dei*). We believe there is something special about us, and this intuition is remarkably shared across cultures and time. The concept of human distinctiveness has thus strong resonances even in non-Christian environments. In particular, the so-called functional and relational definitions of the image of God can prove useful.

The functional interpretation regards the *imago Dei* as our appointment to represent God in creation by exercising stewardship and dominion. The **stewardship** dimension is especially important, because it stresses our responsibility. We have a duty to care for the world, and we cannot resign from it. Some key decisions with global impact will always need to be made by humans, and not simply delegated to powerful AI algorithms.

The relational interpretation affirms that the image of God is best understood as God's I-Thou relationship with humanity as a whole and with each human being. God, the Holy Trinity, is relationship («God is love»), and we are called to grow in the likeness of God by cultivating our loving relationships with God and with each other. Relationships are, to a certain extent, the most fundamental level of human ontology. Will AI help us have **more authentic relationships**, or will it promote a more individualistic and self-sufficient world? This is an open question.

Vulnerability is a key Christological and relational category. To be human is to be vulnerable. We cannot have authentic relationships without making ourselves vulnerable to the other, even if this comes with risks. Visions of the future that over-stress self-protection and invulnerability, such as certain forms of transhumanism, can therefore be evaluated through this prism of what is authentic humanness.

A common misconception is that such visions of the future are neutral, because they claim to be scientific and manifestly anti-religious. However, when deconstructed, they too are revealed to be built on top of some non-neutral values and principles, and, more importantly, some **implicit anthropologies**. When future utopias of AI-driven abundance and invulnerability are presented, we should always ask the question: what anthropology is really at work in this scenario? Is this a world where our humanness is promoted or inhibited?

The theological evaluation of AI can be overall positive, especially in light of creativity being an important part of the imago Dei. But a realistic engagement needs to take into account that there is a plurality of AI approaches and thus a plurality of possible futures. It is our duty to help the tech community discern between those futures.

Fr. Eric Salobir



Fr. Anselm Ramelow



Brian Patrick Green



Marius Dorobantu



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Introduction

As Artificial Intelligence (AI) takes an increasingly important place in our lives and its potential grows exponentially with the advancement of research, it becomes more and more a necessity to thoroughly reflect on its impact on human beings. As it transforms our world and daily lives, it also transforms us as a species.

The objective of this white paper is to develop a reflection on being human in the era of Artificial Intelligence, to guide us in larger projects. Its development is structured in two phases: first, a conceptual study that will be used in the second phase to establish training modules and courses for university students.

We must first understand how Artificial Intelligence impacts human beings anthropologically, before identifying the knowledge students need to be familiar with, in a world structured by the use of AI. This conceptual study consists in mapping the main impacts of Artificial Intelligence. Indeed, as it progressively makes its way in our daily lives and defines increasingly more the way that advances are made, the use of AI changes us, shapes us. It establishes a foundation upon which researchers may explore AI's effect on our human nature and, from their findings, define key knowledge and competencies students must learn in order to preserve our humanity and a humane society within an AI defined world. This is essential to establish, in the long run, a relevant education model to allow us to adapt, learn and benefit from these changes.

The anthropological nature of the study, understanding how Artificial Intelligence's effects profoundly change us, led us to adopt a multi-disciplinary approach to mapping these impacts (sociology, psychology, cognitive science, philosophy, political and societal studies...). This work allowed us to establish three axes at the center of AI's impact on human beings: relationship to others and to the world, relationship to God/our transcendence and relationship to oneself. Through these themes, we can explore the concrete effects of AI on how we exist in the world and the general changes human beings are going through, or will go through, as a species. The research also provided an opportunity to raise new questions on the long-term and global anthropological implications of the changes we have been able to observe.

Relationship to others: AI modifies the very nature of our social interactions, in their many forms (familial, friendships, sexual and romantic, professional and other global social relations). AI presents a new creation that can be used for both human interactions - helping us meet, communicate, understand each other - and new types of interactions - with the AI directly, replacing an increasing amount of personal and daily interactions. This creates new opportunities and risks, modifying how we perceive each other, and ourselves through that. AI may be changing the very nature of our relationships, playing as a constant intermediary, which presents advantages such as their optimization and the increase in connections we have with each other, but also risks such as the decrease in tolerance, the loss of social competencies, the reification of the other... The question of fundamental human rights, which has a more socio-political approach, might help us define a framework, guidelines, in exploring AI's impact in our relationship to others. As we exist, first and foremost, through our relationship to others, this reflects back on our sense of identity and how we perceive the world. The importance of this axis lies in the very nature of human beings, which is social. It raises the question of our capacity to evolve within this nature, is this social dimension singular, or can it be entirely redefined? Does our social nature define us or do we define the way it is expressed?

AI changes the way we exist in the world, through the way we understand it, react to it, analyze and live through it. This is analyzed through our cognitive and physical abilities. AI taking our place in daily tasks, interactions and specific tasks modifies the way our brains and bodies learn and grow. As we become less autonomous as individuals, our collective capacities rise. However, it raises important issues, such as the importance of personal growth in collective improvement, as well as the replacement of human activity and actions by AI. AI has the potential to optimize our relationship to the world, but also of making us live completely passive existences. This raises the fundamental question of the existence of humanity as builders, are we individuals capable of positive growth or does human nature favor the easy way? Does AI improve us, weaken us, or simply make us evolve into a different species, concentrated on different tasks and with different capacities? Is AI built to encourage our shortcomings or our resilience? If it favors our flaws (laziness, greed, selfishness...), could it lead to the destruction of our species and its environment?

Relationship to God/our transcendence: AI's impact on our spirituality may be analyzed through its use in developing spirituality in general ("spirituality 2.0", more individual and rationalized) but also through the very existence of AI and its possible deification (which is a natural phenomenon given AI's very advanced nature and the way it impacts and transforms our daily lives). Beyond these effects, the general tendency of human playing God becomes a reality, as AI-powered technology allows us to modify ourselves in new ways (genetic engineering, robotic prosthesis...) and the world around us, making way for longer lives, perhaps even overcoming death. Moreover, through AI we create a new self-thinking entity, which takes us even further in our creation (and destruction) power and what that might involve for how human beings perceive themselves, deify themselves. Does AI mean a renewal in our spirituality or are the shifts it implies going against the very nature of transcendence?

Relationship to oneself: the use of AI tends to affect our self-perception and psychological identity of the self. This dimension of how we exist as human beings is modified in the AI era, through the advancement of research and, thus, a better understanding of ourselves. The technology we now have access to modifies our daily lives and, progressively, ourselves: AI pandering to our every need and desire impacts our patience, loneliness, global activity and, overall, individual autonomy. It changes the way we experience the human condition, trying to address issues human beings have always internally struggled with. However studies underline the gap between human development needs and AI's current uses, which may lead to an increase in global anxiety instead of individual improvement. A lot of unanswered questions have been raised in exploring how AI modifies our relationship to ourselves. Does AI help us perceive and understand ourselves better? Are the questions it addresses fixable issues, especially through technology? Are the changes it implies individual transformation or a collective mutation (outside the sum of individual changes)?

IS AI INTELLIGENT?

Fr. Eric Salobir

*President of OPTIC network and the Human Technology Foundation
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A problem of definition

Anyone who wants to technically define artificial intelligence faces an issue: none is agreed upon. The acronym AI designates a set of methods and applications that are frankly disparate.

The first step is to define the concept of intelligence.

It is necessary to distinguish the intelligence of the heart from the intelligence of the body and mind. The developmental psychologist Howard Gardner went further with a dozen subdivisions ranging from mathematical intelligence to existential intelligence. Jean Piaget considered that «*intelligence is not what we know, but what we do when we don't know*». I cannot exhaust this theme in a few quotations, as brilliant as they may be, except to conclude, with the great painter Edouard Degas, that «*the day we started to write Intelligence with a capital I, we were screwed. There is no Intelligence; one has the intelligence of this, of that. You only have to have intelligence for what you do.*» The same reflection applies to artificial intelligence.

In fact, «*Intelligence*» is a slippery concept, which is difficult to define. But at least, we know how to recognize its quality. When I read *Hamlet*, listen to the *Well-Tempered Clavier* or use the Pythagorean theorem, I have the feeling of being in front of something that belongs to an intelligence of the world, even if I don't necessarily feel capable of defining it. But Artificial Intelligence? It is a black box. What's inside it? An algorithm, certainly, but it is just as opaque to me.

For a history of AI

In order to try to see clearly, let's follow a chronological thread whose starting point, necessarily arbitrary, corresponds to the moment when the mathematician Alan Turing envisaged a machine to mechanize thought in 1936 in an article on the problem of «*decidability*»; This reflection is prolonged after the war (during which he plays a decisive role in the decoding of the German coding system ENIGMA) in the article *Computing Machinery and Intelligence* that he publishes in an English journal of philosophy, *Mind*, four years before his suicide. «*I propose to consider the question: can machines think?*» he writes. And his answer is yes. One can, he says in substance, represent human actions by systems of symbols and introduce what characterizes the human, its unpredictability, into a machine

that is by nature deterministic. He also proposes a test, known as the «*Turing test*,» in which a human observer interacts blindly with another human and a machine programmed to formulate sensible answers to various questions. If the observer is unable to define which of the two is the machine, then the machine has passed the test and can truly be considered «*intelligent*».

The test has remained famous but has not aged well. Today we know its limits, and in particular that success in the test is more a matter of cunning than intelligence. Anyone who has ever spoken to a chatbot knows that there comes a time when its programming reveals that «he» or «she» doesn't understand the question asked, but that, for a more or less long time, it can pretend to do so even if it has the IQ of a vacuum cleaner.

On the other hand, the hypothetical machine invented by Turing is still brand new. It is a kind of ideal typewriter that can be controlled with a program, and it has remained the model for all future computers. To come to the question he asks, Turing first states that «*mathematical reasoning can be considered schematically as the exercise of a combination of faculties that we can call intuition and ingenuity.*» Intuition consists in his eyes «*in producing spontaneous judgments that are not the result of conscious chains of reasoning.*» Ingenuity, on the other hand, has the function of «*helping intuition by adequate arrangements of propositions.*» But how to code this intuition? When should the machine «feel» that it is necessary to stop perfecting a solution at the risk of procrastinating, in order to take action? How do you tell the machine, «*stop*»? Known as the stopping problem, this is a fundamental limitation of a Turing machine that means that there is no algorithm to tell if it will stop or loop indefinitely. In fact, Turing is looking for a way to avoid the effects of the theorem stated by the mathematician Gödel in 1931, namely (roughly!) that among the assertions that can be made in mathematics, some are established as true or false by theorems, but that there will always be at least one that remains undecidable.

To get around this problem, Turing uses a brilliant metaphor, that of an «*oracle machine*». A kind of grain of sand, a throw of the dice to restore randomness in the too smooth universe of the normal machine. In fact, an additional machine that makes the decision when the other one is unable to do so. However, he specifies that «*we will not go any further into the nature of this oracle except to say that it is not a machine.*» I don't either, because it is mathematics that is far above my grade and, as far as I know, the problem remains. The fact remains that the seed of AI having been sown, the post-Turing generation is going to seize it. And from the beginning, its ambition is to model the human being, in its capacity to learn, to communicate and to create.

Did you say Artificial Intelligence ?

AI received its baptismal name one year after Turing's death, precisely in the summer of 1955 at Dartmouth College (New Hampshire) when John McCarthy, a computer scientist, mathematician and, later, creator of Lisp (one of the oldest imperative programming languages, like Fortran, which is considered, according to Hacker's dictionary, as the mother tongue of AI), proposed to organize a seminar on «*Artificial Intelligence*». The big word is out, it will be a hit. With Marvin Minsky, Nathaniel Rochester and Claude Shannon, three other stars of cybernetics and computer science, he defines a seven-point program that delineates some of the problems they believe AI poses, emphasizing as a preamble that «*if a machine can do a job, then an automated computer can be programmed to simulate the machine. The problem is not the power of computers but the inability to write adequate programs*»; they explicitly ask «*how can a computer be programmed to use a language*», and whether artificial neural networks can be assembled in such a way that they form concepts. Where did this idea of artificial neurons come from? From two major scientific events of the post-war period: the discovery of nerve impulses between neurons in the early 1950s by Bernard Katz, Alan Hodgkin and Andrew Huxley, and the invention of the transistor in December 1947 at Bell Laboratories by John Bardeen, William Shockley and Walter Brattain.

At the beginning of the 1950s, two British biologists observed how the central nervous system communicates with the whole organism by means of a nerve impulse that they interpreted as an action potential. Transposed to the human brain, this means that it is composed of elementary units, the neurons that exchange with each other through this action potential. Basically, each neuron receives electrical signals from neighboring neurons, and depending on the intensity of these signals, sends a signal to its neighbors. Such a behavior is quite similar to that of «*transistors*», these small electronic components which let pass, or not, the current which crosses them according to the received signals. Hence the idea of reproducing the human brain with a network of «*transistor*» neurons. This vision is perhaps naive in its vision of the brain, but fundamental in the birth of one of the branches of AI.

The first thinking machine

This idea will be carried by the psychologist Frank Rosenblatt who invented, in 1958, a machine which results from it. His perceptron, he assures, is «*the first machine to think like humans*». As the New York Times titled it on July 13, 1958, «*an electronic brain teaches itself*». Rosenblatt's brilliant idea was inspired by the cybernetics based on feedback (reacting directly to information received, like a thermostat, for example, which turns on the heating when the temperature it perceives differs too much from the one programmed) of the mathematician Norbert Wiener and the ideas of the neurologist Warren McCulloch: instead of imagining the brain divided, roughly speaking, between a memory part and a calculator part, he considers, as McCulloch says, that «*the brain can be likened to a digital calculator consisting of ten billion relays called neurons*». For feedback, he borrows a simple idea from Wiener and imagines a labyrinth with food hidden somewhere, and electric fences scattered around. An animal that is taught to tra-

verse this maze must remember its route and optimize it to avoid shocks and find food. The association between the contact of the electrified wire and the unpleasant shock that follows modifies the connections between neurons, so that the brain decides to avoid the contact. This is the principle of reinforcement learning in neural networks.

In other words - and this is fascinating - the two main currents of intelligent machines are present since the fifties: the symbolic current, which works according to the idea that AI can do not only calculations with numbers but also operations with any type of symbols. The connectionist trend, where AI is based on networks of «neurons», i.e. interconnected networks of elementary processors working in parallel. The two approaches will successively experience ups and downs. With Big Data, the connectionist approach has the wind in its sails for the moment, thanks to data banks of tens of millions of examples that can feed the algorithms.

Returning to the very definition of AI, McCarthy and his colleagues point out that «we will try to figure out how to get machines to use language, abstract forms and concepts, solve problems now reserved for humans, and improve themselves.» Andrew Moore, who runs Google Cloud AI today, says it all: AI is «the science and know-how to make computers behave in ways that until recently were thought only human could do». As well as Yann Le Cun, the head of AI at Facebook, for whom «it is the ability of machines to reproduce faculties attributed to animals or human beings, including problem solving». Tasks or faculties?

A complex landscape

Hence the third point, namely that the acronym AI today masks a landscape that is much more complex than the simplicity of its two letters and that has many subdivisions. There is not one Artificial Intelligence, but many artificial intelligences and significantly different lines of research. The paths for the future revolve around five key points.

- 1) Interpretability: when a model makes a decision, it must explain why it made that choice.
- 2) Guarantees: prove that the model works in principle.
- 3) Resistance to attacks: many models are sensitive to undesirable properties of the data. This is the example of the AI that has to recognize images of wolves, but has learned to recognize them on a white (snowy) background and that just needs to be given images of wolves on other backgrounds to make it crash.
- 4) The dependence on the amount of data: to make AI work nowadays it takes a lot of data, and researchers are trying to get the same results with less data. This would allow more players to enter this market, beyond the giants who harvest the dumpsters of Big Data.
- 5) Transfer: take an AI that performs well on one task and try to make it work on another.

With such diversity, it is understandable that there is no consensus on what is or is not AI. What is common between sound processing, image processing, voice recognition, translation, reasoning, movement... Putting all this under the umbrella of AI, as they say in marketing, is a convenience that hides a very large disparity. And isn't that the answer to the question of the moment: is artificial intelligence intelligent?

Automatic identification systems (AIs), unlike humans, use mathematical calculations fed by millions of examples. To recognize a cat, the appropriate algorithm has access to a database containing millions of cat pictures. And it is then able to identify a cat with a probability of 98%. This is an undeniable feat. Even better, *Google Brain* was able to detect cat heads and human forms in the millions of Youtube screenshots it had been fed for three days. And the system, explained Andrew Ng, the founder of *Google Brain*, discovered, in his words, the «*concept of a cat*» from a mush of pixels. Granted, but how many cats does a three-year-old have to see before he or she can identify them, even while doing handstands or rolling over three times? Only two, because the child will deduce this new knowledge from the ones he already has: it looks like the Lion King or Grandma's dog, but not quite; it is an animal, and therefore it eats, drinks and sleeps a lot. But we don't know how to code this «*common sense*» that makes a child quickly know that a cat is a cat, that nettles sting and that a flame burns.

Dumb as a post

This is what makes Andrew Moore say that «*AI is stupid, very stupid*». For how long? To this day, as Marvin Minsky humorously remarked, «*there is no computer that is aware of what it is doing, but most of the time, neither are we...*» The mass is said, AIs, currently at least, only have intelligence as shown by their designers. We can admire their functioning neither more nor less than by observing *Curiosity* collecting rocks on the Red Planet thanks to its AI Aegis or the algorithm of *Netflix* recommending a new series according to the tastes of each subscriber. Still, you can be dumb as a broomstick and cause a lot of damage, or do your job badly. In fact, the broomstick, like the robot, is neither dumb nor smart. But everyone knows that it is susceptible to nuisance: in the animated version of *The Sorcerer's Apprentice*, Goethe revised by Walt Disney in 1940, we see young Mickey illustrating the old story of the inventor overwhelmed by his invention. The broomsticks to whom the apprentice entrusts the task of emptying buckets of water to clean his master's workshop, carry out the order to the letter. The result is a catastrophic flood that requires the intervention of the chief wizard. Swedish philosopher Nick Bostrom has modernized this subject with a chilling parable in which a silly but disciplined AI devotes itself to making paper clips using all the material in the world, including humans. The story can easily be transposed to an AI sent, say, to Pluto, and which would pilot bots relentlessly building elements of a Babelian tower, in the absence of instructions to stop.

The promise of Babel

With that, we have to do justice to the immense possibilities offered by the use of well-designed algorithms. Today artificial intelligence is used, usually successfully, in medical imaging to diagnose breast or lung cancers or to anticipate heart attacks; in the fight against global warming, it could be used to better control the production of renewable energy, facilitate the removal of CO2 from the atmosphere and help governments manage climate change. And - to be fair - I have not yet mentioned one of the great achievements of AI, perhaps one of the oldest, since it is linked to the problem of translation, in other words to the myth of Babel. There are, in the history of this unfinished construction, several possible «lessons» that illuminate both a promise and an abyss of artificial intelligence.

The promise is obvious and marvelous: there are more or less 6500 languages, 2000 of which are very confidential throughout the Planet, and, when the day comes, everyone will be able to hear and understand the other without difficulty. People who speak Tagalog will be able to exchange with others who speak Wolof. Those who speak basic and hesitant English will converse with a pure Oxfordian without blushing! And it's happening fast. In July 2019 in Las Vegas, we could see Julia White, vice president of Microsoft Azure present a keynote in English while her hologram translated into Japanese in front of her to an audience equipped with augmented reality headsets. Isn't this Babel in reverse? The reconciliation of all men? Yes and no.

In Genesis, the Lord notes that men have undertaken in the land of Shinar the construction of a tower whose top touches the sky. According to the classical interpretation, God, displeased with the pride of this enterprise, causes the men to no longer speak the same language, which obviously poses problems of cooperation between the construction teams. The construction stops and the men are dispersed on the surface of the Earth.

The linguist Umberto Eco proposes an opposite interpretation: he maintains that polylingualism, the set of all languages, was the mother tongue and that the heritage left by Adam to his sons, «*is the task of conquering the mastery, full and reconciled, of the Tower of Babel.*» A task undertaken and soon won by AI. Except that, and this is an abyss, the otherness of men is also threatened by the illusory unity that a language, that of the machine, can bring men together: «*the brotherhood of Babel is false. No man is recognized for what he is, but for his usefulness in the construction of the tower,*» remarks the sociologist Shmuel Trigano.

To put it another way, the brotherhood of man does not depend on machines, nor on the true or false hopes we place in it.

“*The way not to be fooled by the machine,*» wrote the philosopher Emmanuel Mounier in 1959, «*is not to expect from it what it cannot give (...): splendid or harmful, to tear it from the fantastic*». Sixty years later, his warning still deserves to be heard.

AI AND OTHERS

*Brian Patrick Green
Director of Technology Ethics at the Markkula Center for Applied Ethics
Santa Clara University, California*

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AI is a transformative technology

By taking pieces of human mental activity and externalizing and automating them, we cast bits of our minds into the world as independent sources of action. And these sources then, in turn, shape us by their actions. And of course, this “we” is not all of humanity, but just a few powerful people, with their own motivations and goals, for better or worse.

But before questions of ethics and who *we should be*, we should think of *who we are*: our anthropology. Our future conception of ourselves depends on who and what we envision ourselves to be now. How will AI affect us at the level of our human nature and identity? This requires considering the history and philosophy of technology.

Humans must use technology: we cannot survive without it. Rather than being specialized like other animals with claws, fur, or wings, we are instead specialized towards making and using tools, which give us the ability to make knives, clothes, and flying machines. Unlike animals that instinctively know how to behave, humans must be taught how to behave and to make and use tools via culture. Technological culture serves as an adapter between humans and their environment, and both our mental and physical natures exhibit this fact.

AI is a form of technology, and technology is commonly used with two meanings: technology as «know how» – the skills needed to get things done and produce things – and technology as the products of that «know how.» The first are techniques and the second artifacts. These are distinct but united in that both techniques and artifacts always have a purpose. Techniques often help to produce artifacts and artifacts often enable new techniques. Artifacts become part of our human-built environment and through their existence often «build us» back.

Because every technology has a purpose, humans are extremely sensitive to the existence of purpose around them, whether in tools, symbols, other humans, na-

ture, or God. While sometimes humans err and see purpose where it is not, AI - as a form of technology - always has a purpose. It may be a terrible purpose, or be terrible at fulfilling a purpose, or it may run perfectly, but AI always exists for a reason, and that reason is ultimately a human choice.

Technology extends human power. It gives us more scope of action (doing things that have never been done before), more efficacy (doing things humans have done before, but faster and more easily), and greater determinism of outcome (things are more likely to turn out the way that humans want)¹.

There is nothing intrinsically wrong with power itself. Power is merely the capacity to get things done. Whether those things that are done are good and bad is the next step of philosophical judgment.

Part of the extension of human power is delegating that power to other entities under human control which then specialize in that task. In the past this often meant humans who acted to follow the commands of leaders, or animals forced to work on farms, and so on. Gradually over time, machines began to replace human and animal muscle at various tasks, and now machines are extending into the cognitive realm as well².

This process of delegation and specialization makes human society into an organic whole. Theologically speaking, this should remind us of the body of Christ, where we all cooperate for a common goal of sharing God's love and life with the world.

However, there are many things to consider when this comes to AI. It is one thing to delegate physical or mental activities to a human and another to delegate them to a machine. Delegating physical activities may not call our human purpose into question, but delegating mental activity is much more personal. If God is love and humans are made in the image of God, then the activity of expressing and receiving love is critical to our human nature. Can we then delegate and automate that love via an AI? Something with that seems terribly wrong.

There are some things that should not be automated because they are too central to who we are as human beings, and love is one of them. In her essay "The Thoughts the Civilized Keep" the philosopher Shannon Vallor quotes Alfred North Whitehead, who wrote in 1911: "*Civilization advances by extending the number of important operations which we can perform without thinking about them*³." But Vallor argues for an exception to this movement towards unthinking, by asking this question: what is the purpose of thinking itself? The purpose of thinking is understanding, which is hard work, and is also apparently not something that AI can do. And for Christians, understanding means understanding the ultimate purpose of our human life: to love God and neighbor. AI will never adequately replace humans when it comes to reproduction, raising children, loving family

1 Irina Raicu and Brian Green, "An Introduction to Data Ethics," Strata Data Conference, San Francisco, March 26, 2019.

2 Brian Patrick Green, "Artificial Intelligence, Decision-Making, and Moral Deskillling," Markkula Center for Applied Ethics website, March 15, 2019. <https://www.scu.edu/ethics/focus-areas/technologyethics/resources/artificial-intelligence-decision-making-and-moral-deskillling/>

3 Shannon Vallor, "The Thoughts the Civilized Keep," Noema, February 2, 2021. <https://www.noemamag.com/the-thoughts-the-civilized-keep/>, citing Alfred North Whitehead, *An Introduction to Mathematics*, Chapter 5, 1911.

relationships, caring friendships, and compassion towards the elderly, because being human is intrinsic to those relationships, on both sides. God is love and we are called to love God and neighbor as divine commands. No elite few can serve this role for humankind, everyone should love God and neighbor. Can AI help with that? Very likely yes, but in a supportive role, not as a replacement for humanity.

In the *Summa Theologiae* St. Thomas Aquinas argues that human groups have five objectives that need to be fulfilled by society as a whole (not necessarily by every individual). Human groups need to survive, reproduce, raise children, live in society, and seek the truth¹. AI can help us in these areas, but it should not replace us. AI cannot survive for us, nor reproduce for us, nor raise our children for us, nor live in society for us, nor seek the truth for us. These are things that we must do; AI can help, but it cannot not replace us.

There are several key areas, then, where AI should be very carefully understood in its likely effects upon humanity, and that understanding directed toward the goal of respecting and loving our fellow human beings and all of creation.

Twelve key areas

1. Who gets to decide what mental actions to externalize and automate? Because this involves a power dynamic, those who decide for others how AI operates in society are taking for themselves the role of an authority, though perhaps not an ethically legitimate one (despite a user license agreement perhaps saying otherwise). Because society is affected by these decisions, society as a whole needs to make these decisions, and this occurs in an interplay of many segments of society: business leaders, engineers, lawyers, legislators, workers, consumers, users of technology, and everyone in society who is affected by technology.

Additionally, the biases of the creators of AI, as well as the datasets AI is trained on, and of the society that is making decisions about AI will become embedded in the AI itself. This means that we should remain skeptical of the automated decisions of these systems. In some cases they may become less biased than human decision makers, but we should never assume that they are perfect and certainly not let their decisions go without human oversight.

2. Personalization of identity via AI. One power of AI is to seemingly personalize our own identity more and more, by associating, for example with only people who agree with us, watching only media that we agree with, and so on. But this inward-focused identity building radicalizes and extremifies us, splitting us into Balkanized echo-chambers. Our identity is strongly constituted by our relationships with others. But if this identity building is mediated by AI then is it really the individual building their identity or the AI? This personalization process is really a mirroring of ourselves back at ourselves, making us - in our inward focus - more shallow rather than more deep. Depth of identity - in a sense, the fuller manifestation of who we are as a real being - is something that we can only gain through interaction with reality outside of ourselves.

¹ Thomas Aquinas, *Summa Theologiae*, I-II, 94.2.

The constant inward focus withers us rather than making us grow. AI “personalization” might make us more of an individual, but not more of a person.

We should not let algorithms distort our identity and character in this way, instead remaining always as actively in control of these core aspects of ourselves as we can be. AI objectifies humanity into mere data and in this way literally dehumanizes us. With this objectifying gaze turned towards profit or control, it also stunts our growth and tries to make us serve the AI’s masters. This is not what our human destiny is meant to be. How can AI be used to facilitate the cultivation and flourishing of true humanity instead?

3. AI mediates human communications and relationships. AI-powered content moderation determines what we see online, and through that, what we think reality is. AI can distort reality and harm our ability to accomplish the five goals St. Thomas describes: survival, reproduction, educating children, living in society, and seeking the truth. AI-promoted misinformation distorts our minds just as AI-controlled apps control who we see as potential romantic partners. Communication is a core human capacity, and AI mediation of that capacity gives AI control over our ability to participate in the world.

Additionally, AI tends to hide from us that it is taking this meditative role, and so we ought to have more transparency given to us concerning when AI is acting in this way. AI creators should keep human flourishing in mind, not merely corporate profits or social control. How can AI better serve humanity in the realm of communication, to promote truth and love?

4. Delegating labor allows for specialization but also creates dependency. All people in a society depend upon each other because everyone gives up some skills to become better at others. This “deskilling” problem relative to AI means that we may lose certain cognitive skills to AI so that we can become more skilled at others. But what skills should we keep? Understanding, ethics, politics, and caring for each other – all in the context of love – all seem vital. What else?

Recalling our own Christian heritage we might be reminded of Biblical references to the Body of Christ, and how Christians live today as Christ’s body on Earth. We do not all do the same thing - diversity is necessary in an organism - so some of us may be more focused on more practical matters while others on more theoretical. None are better than the other, all are necessary. And we are dependent on each other and that is, not only okay, but good. But all people need to still practice love, compassion, caring, and respect for everyone else as divine images in Creation. AI might be able to help us here, and we certainly should not allow it to obstruct us.

5. AI is already simulating and replacing our relationships: friends, family, and romantic partners. AI always tries to please us, always gives us what we want – unlike other humans. In contrast to subservient AI, people seemingly become obstacles to our flourishing rather than being constitutive of the very nature of flourishing. Human relationships come to feel like burdens compared to people-pleasing AI.

If the goal of Christian life is to love, then by replacing relationships, AI obstructs love rather than enabling it.

What other roles might we justifiably say that AI ought to be excluded from? Where should AI fear to tread? (Or, where should we rightly fear to let AI tread?) Pastoral, theological, and charitable relationships might come to mind beyond the already-stated family, friends, and romance. In our relationships we owe ourselves to each other, and these human relationships are more important than AI. Additionally, how we relate to pets, and other life forms in nature are something that we ought to protect from AI interference. A robot dog - or a robot caretaker for a dog - are poor substitutes for the real thing.

6. Much of human labor will be replaced by AI. Whether physical or mental labor, AI will alter how humans relate to each other through our work. Society and relationships will be disrupted as more and more human work becomes AI work. Many people will find themselves idle and possessed of skills of little value while a few people (those with understanding of AI and its role in society) will find themselves in such demand that they will scarcely be able to stop working. This will disrupt social order and increase wealth inequality as more and more of GDP moves from return on labor towards return on capital invested in AI.¹

How can we work to help those disrupted by this social transition? In these cases, developing a stronger theology of labor will be vital. What are humans here on Earth to do? We are here to do God's work, and there will be no shortage of this work, no matter how much AI might do for us. Additionally, we should constantly recall the intrinsic dignity of every human being, both in terms of respecting them, and in terms of helping them to fulfill their purpose of respecting the dignity of others. This - as intrinsically ethical work - is also an infinite well of work that AI can never replace us in doing.

7. The AI-powered attention economy is a disaster for human relationships. We spend more time with screens and less time with each other. Relationships wither. Children are not raised by humans but by AI-powered games, social media, and entertainment. In effect we are becoming feral – raised not by loving humans, but by artifacts, machines, and algorithms, including exploitative sycophantic AI. We must fight the distraction of addictive technology designed to exploit our mental weaknesses and enslave us rather than free us. How can AI assist human attention, relationships, culture, and freedom rather than degrade them?

8. AI can be like a bad parent, infantilizing us and stunting our moral growth.² AI seems to be raising us to obey (a voluntarist and not a rationalist parenting paradigm). We should search our souls, examine our consciences, and consider how to understand and react to this situation. The easier life we are seeking might also hide exploitation. We need to grow and be healed psychologically and spiritually.

¹ Robert Wiblin and Keiran Harris, "Dr. Paul Christiano on how OpenAI is developing real solutions to the 'AI alignment problem', and his vision of how humanity will progressively hand over decision-making to AI systems," The 80,000 Hours Podcast, October 2nd, 2018, <https://80000hours.org/podcast/episodes/paul-christiano-ai-alignment-solutions/>

² Green, "Artificial Intelligence, Decision-Making, and Moral Deskilling."

What kinds of perceptions, dispositions, and attitudes are being cultivated by AI? How might the Church participate in this healing of society, acting as an adoptive loving parent for those who are being raised by AI? The Church has a conception of human flourishing that includes not only mental and physical well-being, but relational, social, cultural, and ultimately spiritual well-being. This holistic approach to human flourishing is something that contemporary culture deeply needs, and the Church should not be ashamed to offer help when so many are needing and asking for it.

9. The loss of the feeling of reality as reality – derealization – is an effect that has been connected to virtual reality (VR), but which also has precursors in merely looking at screens or other fantasy environments for too long.¹ Are we risking losing sight of the seriousness of reality by substituting the non-seriousness of entertainment and games? AI plays a role here, both in making fantasy too attractive and reality less appealing, as well as making reality itself much more serious, complicated, and risky. One response to derealization is to spend more time in the real world, in nature, interacting with real people and real living beings.

10. Nature, the natural environment, and “others” beyond humankind. The human relationship with nature is in a dire state. Insofar as AI serves its human masters it is, as CS Lewis noted, an application of natural power turned into artificial power “exercised by some men over other men with Nature as its instrument.”² The use of the powers of nature which are given as a gift to all of humanity should not be turned into tools of exploitation. This is a deep perversion of the gift of God’s grace in Creation. Instead, the proper use of AI in this respect is to act as a help to humankind in our stewardship of creation and our work towards helping each other. And AI can certainly help in these ways! But we must choose to use AI in these good ways.

11. What should our ethical response be to AI? AI will give us the ability to increase our efficacy at many actions. We should make sure that we are using this efficacy for good and not for evil or we will come to live in a terrible world. And so we should ask ourselves: how can we use AI to make it easier to do good? And how can we use AI to make it more difficult to do evil?³ AI is a technology that can help in these ways. AI can help to search for better solutions and thus facilitate human decision-making, and might someday even facilitate virtue. In more practical matters right now, AI can search data for evildoers (such as finding financial fraud) and it can evaluate ways to make good more efficient (such as aiding vehicle flow in traffic-snarled cities). While the technocratic paradigm sees mere efficiency as the goal and good of humankind, a more comprehensive look at technology reveals that technology and efficiency should always be judged by ethics. Ethics must always come first,⁴ and then technology can take its proper place supporting good human actions and opposing evil.

1 Aardema F, O’Connor K, Côté S, Taillon A. “Virtual reality induces dissociation and lowers sense of presence in objective reality.” *Cyberpsychology, Behavior, and Social Networking* 13(4), (Aug 2010):429-35. <https://pubmed.ncbi.nlm.nih.gov/20712501/>

2 CS Lewis, *The Abolition of Man* (New York: HarperSanFrancisco, 2001 [1944]) p. 55.

3 Brian Patrick Green, “The Technology of Holiness: A Response to Hava Tirosh-Samuelson,” *Theology and Science* 16(2) (2018) 223-228.

4 Brian Patrick Green, “Ethics Is More Important than Technology,” Markkula Center for Applied Ethics website, 10 August 2020. <https://www.scu.edu/ethics/all-about-ethics/ethics-is-more-important-than-technology/>

12. Second order desire. If our ultimate goal with AI is – as it seems – to give people everything that they want, all the time, as quickly as possible, then it becomes extremely important to want the right things. When it comes to technology, mere “power” is no longer the question, but second order power: power over power.¹ And this second order power requires a deeper contemplation of desire and what we want to do with our power. Mere desire is no longer enough; rather, second order desire becomes our question: we need to desire to desire the right things. We need to desire goodness and love. We need to want compassion and caring. How can we cultivate our souls to want what God wants for us: to love God and each other?²

In the midst of all these questions there is some hope. If AI can do much of the tedious work that obstructs human flourishing, perhaps it can also give us more time to do what humans do best, and what only we can do: express compassion, caring, and love for each other.³ This would be a better future. But it will not happen on its own; it is one that we must create intentionally, by our effort. AI can help, but humans must lead.

AI offers both immense promise and peril

Of note in all of these concerns is that risks can occur when a technology works well or when it does not. Addictive technology is a blight on society when it works well, and for such exploitative technologies, failure is helpful to people and society. Contrarily, we want self-driving cars to work well, because when they fail they can cause injury or death.

AI has the power to fundamentally alter human relationships by placing itself between ourselves and the world, including our social world. Insofar as AI can do this and harm us, our relationships, and the world, it should be stopped. And insofar as AI might help us in these ways, then we ought to encourage and promote these good uses.

Much of the time the ethical evaluation of technology can only be done in retrospect, after the damage has been done. But also much of the time this same damage can be anticipated and either is not, due to lack of interest, or is anticipated and the damage allowed to happen anyway, simply because the creators of the technology do not care. With the most powerful technologies currently being produced, such as synthetic biology, nanotechnology, and AI, this lack of interest is no longer tenable. It is one thing to harm a few people through negligence, and another thing entirely to put at risk, harm, or kill much or all of humanity. And we should make no errors about the stakes: AI has already caused immense harm through social media, among other things.

Given this situation, the highest ethical behaviors and cautions are warranted. AI offers both immense promise and peril, and it is only through our choices now that we can choose what sort of future we will live in.

¹ Hans Jonas, *The Imperative of Responsibility* (Chicago: University of Chicago Press, 1984) pp. 140-142

² Brian Patrick Green, “Ethical Reflections on Artificial Intelligence,” *Scientia et Fides* 6(2)/2018, pp. 26-27. <https://apcz.umk.pl/SetF/article/view/SetF.2018.015/15729>

³ *Ibid.*

AI AND OUR RELATIONSHIP WITH GOD

Fr. Anselm Ramelow, O.P.
Dominican School of Philosophy and Theology
Berkeley, California

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God's Original Plan and the Fall

Technology may appear to be a very secular thing, but to assume that technology can be understood without God would be a mistake. Technology is deeply involved in our relationship with God. This involvement is, moreover, profoundly ambivalent.

To begin with the positive side of this ambivalence: the growing awareness of the dangers of technology should not lead Christians to think that technology is necessarily a bad thing. It is, in fact, not even merely a "necessary evil." Rather, we can find in the use of technology an unfolding of our God-given rational nature. If we believe that God "*made us in his image and likeness*," then this quite directly implies two things: a) God is a **maker** (he made us), and b) since he made us in his image and likeness, **we are makers as well**. The making of technology thus reflects our dignity as made in the image and likeness of God.¹ Accordingly, the Church has been more positive towards the development of technology than one might expect, and some of our technologies (e.g., agricultural, architectural, and timekeeping technologies) have their roots in medieval monasteries.²

We should therefore expect that Adam and Eve, had they not fallen, nevertheless would have become makers of technology in some form or other. They would have exhibited inventiveness and tool use, though perhaps not a tool use focused on warding off evil (which did not exist in Eden), but concerned with promoting positive forms of life, such as tools of art and communication. Art and communication technologies are, like all tools, means to an end; but these in particular contain their ends in themselves. In Aristotelian terms, their making (*poiesis*) concerns a *praxis* (such as "making conversation"). That is why we sometimes forget to list

¹ Noreen Herzfeld, *Technology of Religion* (West Conshohocken, PA: Templeton Press, 2009), 10-17.

² For some examples see Brian Patrick Green, "The Catholic Church and Technological Progress: Past, Present, and Future," *Religions* 8 (2017): 106; <https://doi.org/10.3390/rel8060106>. The contemporary (and earlier) ecclesial condemnations concern rather technologies of warfare and human reproduction, or else the "technocratic paradigm" (in *Laudato Si*), but not technology as such; *ibid*. An exception may be Gregory XVI. forbidding railways and gas lamps in papal states. Even Harari acknowledges the innovative role of the Church in the Middle Ages: the Church ran monasteries like companies and pioneered their archives, timetables, catalogues etc. – in short: it developed data processing just as the companies in Silicon Valley do now. Yuval Noah Harari, *Homo Deus – A Brief History of Tomorrow* (New York: HarperCollins, 2017), 276f.

such technologies among our typical examples of technologies. We forget, for example, that among the technologies of communication, *language* as a physical tool (sounds or written marks) is an obvious example. And it is a prelapsarian feature: the book of Genesis has Adam naming things *before* the Fall. In doing so, Adam echoes God's own creative «technique» of speaking or calling things into being.¹ Even in its oral form, language is a matter of human making and a technology of communication. In paradise, communication would not have been merely instrumental, not merely a means, but an intrinsic good, embodying knowledge and intersubjective communion.

Other forms of prelapsarian technology, however, are a matter of speculation. And whether or not one agrees with J. Ellul's thesis that there was no such prelapsarian technology,² the ambivalence of technology is clear from the very beginning as well. This is, at least, what we see in the book of Genesis. For, as a matter of biblical record, it was Cain and his descendants who founded cities and developed technology (e.g., Tubal-Cain as the "forger of all instruments of bronze and iron," Gen. 4:22). And the history of these urban civilizations does not display the best part of human behavior. But if, as we have said, technology is not necessarily bad thing, then this must be a *corruption* of technology. What might this corruption consist in?

I want to suggest that it consists precisely in the corruption of our relationship with God, from which technology can never abstract and in which it is, for better or for worse, embedded. Unsurprisingly, therefore, as technology progresses, this relationship becomes more and more explicit, and it does so in a paradoxical way: initially, it is an attempt to put humanity in charge and control, to replace our need for reliance on God by allowing us to play God ourselves. But in our current situation, particularly with the emergence of AI and machine learning, the roles appear reversed: rather than putting humanity in charge, technology in turn is increasingly in control – to the point of becoming itself a god or idol that rules human life. As a result, we only end up having replaced one God with another. This will be explained in what follows.

Early Modern Motivations and their Consequences

Beginning in the 17th century especially, philosophers such as Descartes and Bacon express a desire to undo the consequences of the Fall. But they do not aim at repairing our ruptured relationship with God. Rather, they only hope to eliminate the consequences of that rupture, and to do so, not with the help of God, but by means of technology. The goal is – in Descartes' words – to become "masters and possessors of nature" again, just as we were in Eden.³

¹ Jacques Ellul, "Technique and the Opening Chapters of Genesis," chapter 8 of *Theology and Technology: Essays in Christian Analysis and Exegesis*, ed. Carl Mitcham and Jim Grottes (Lanham: University Press of America, 1984), 123-37, at 131.

² According to Ellul, this would have arrogated to man the honor God, whose work as perfect and complete ("he saw that it was good") would have been contradicted by a claim of progressive unfolding through human co-creation. For Ellul, there were no (technological) means or mediations in paradise because everything was im-mediate (*ibid.*, 127-29).

³ Descartes, *Discourse on Method*, part VI.

Illness, famine, mortality, and labor¹ as consequences of the Fall are to be overcome, not by God, but by the new machines that a new science is to make possible. Not by accident therefore do these machines themselves gain religious overtones. As N. Berdyaev observes: «Modern man believes in the might of technology, of the machine, and sometimes it would seem, that this is the one thing, in which he still believes.»²

The modern mathematical science that is at the service of this development is itself, as Heidegger noticed, the result of a technological interest.³ As a form of knowledge invested in controlling the contingencies of life, this new science is in direct contrast with a reliance on God's grace and providence. Albert Borgmann has pointed out that it is a science of control which seeks out only the necessary and deterministic features of nature, i.e., those that make things predictable so as to be used and commodified. Grace, history, and providence, on the other hand, are the realm of the contingent. They cannot be controlled and are therefore left outside of this new science. They typically become relevant, manifest, and thematic only where technological control fails.⁴

If this is true, then modern science and technology by their very nature led to the occlusion of God's intervention in our lives. It illustrates that technology is never spiritually neutral, but always involves our relationship with God. This was always true, but it becomes even more obvious in the modern age, even though – or precisely because – it attempts to replace this relationship by technological control. In the words of N. Berdyaev:

*“For a long time they regarded technology as a most neutral sphere, something religiously indifferent, something furthest removed from spiritual questions and therefore something innocent. But this period has past, though not all have noticed it so. Technology has ceased to be neutral. The question about technology has become for us a spiritual question, a question about the fate of man, about his relationship to God”.*⁵

1 Labor as laborious, that is. For “in paradise [work] would have been pleasant on account of man's practical knowledge of the powers of nature.” Aquinas, *Summa theologiae* I, q. 102, a. 3.

2 Nikolai Berdyaev, “The Spiritual Condition of the Contemporary World,” *Journal Put'*, 25 (1932): 56-68. – We should also note that technology in this form developed only on the background of Christianity. R. Guardini explains this through the Christian experience of world-transcendence; R. Guardini, *Die Technik und der Mensch* (Mainz: Matthias Grünewald Verlag, 1981), 74f. Schiller and Hegel also took Christianity to be at the root of the disenchantment of the world; others, of its exploitation (Lynn White) (on the latter, Herzfeld, 92). Humanity arrogates to itself the transcendence that Christianity had taught to be a feature of the creator. For a possible reintegration see our last part.

3 Echoed, e.g., in *Laudato Si* (n. 106) on “the scientific and experimental method, which in itself is already a technique of possession, mastery and transformation.”

4 Albert Borgmann, *Power Failure*, 65-80. What may be lost here is also a sense of gratitude.

5 Berdyaev, “The Spiritual Condition.”

Problematic as this development may be, we should hasten to add that there is nothing intrinsically wrong with using technological means to alleviate the consequences of the Fall. There is, for example, nothing illegitimate about using medicine against illness, and agricultural technologies against famine; the Church has always found this praiseworthy.¹ Such burdens *ought* to be made lighter by technology. Some burdens, however, are *good* burdens that we should carry rather than eliminate by technology:² caring for one's neighbor, for example, or learning to live with those who are annoying or boring, or the hard training for good skills and tasks, and building virtue – all of these we could not or should not outsource to technology. Eliminating these efforts or avoiding them by technological means would make us lose something about ourselves. Nor would we want to use technology to medicate grief or the dark night of the soul. These burdens are essential to our relationship with God and neighbor – that is, to the relationships destroyed by the Fall; they can only be repaired by *taking up* these burdens.

Moreover, among those burdens that we may legitimately hope to alleviate by technology, some may prove to be beyond our efforts because of a lack of available technology – and this lack in turn may in some case be beyond remedy in principle, as is most likely in the case of death. As Robert Spaemann noticed, all medical doctors are familiar with the unavoidable entropy of life and with the fact that ultimately all their efforts always end in failure.³ This failure and its acceptance may be more important than we think, yet modern technology seems to struggle with the acceptance and acknowledgement of its own limits and finitude. It is precisely at these limits that God comes into view again, the God who alone can save us. God, however, cannot be used like yet another machine. For he does not dispense his help in any controllable way. Praying for a miracle is not like pushing a button on a machine; it is rather like a conversation with a person. And this conversation itself may be more important than anything we can hope to attain by it in this world. For it rebuilds the very relationship that at bottom is the real issue.

Thus while technology wants to turn everything into a controllable “standing reserve” (Heidegger), it is good for us to accept our limitations as – to use technological language – “features, not bugs.” Even if we were able to construct a technological paradise for ourselves, this alone would not reestablish our relationship with God. We may think that it would give us at least the leisure to think more about God. But technological entertainment will likely preempt this by filling our leisure time with diversions. And all the ease of life that technology produces may rather subvert the divine pedagogy that we see displayed in salvation history, which is in so many ways an education in the awareness of our dependency on God. For the learning of patience and trust in divine providence is at issue, and that can be more important than any (otherwise desirable) improvement of our physical condition.

¹ See, again Brian Green, “The Catholic Church and Technological Progress.”

² Here I take some inspiration from a personal communication from Albert Borgmann.

³ Robert Spaemann, “Genetic Manipulation of Human Nature in the Context of Human Personality,” in: *Human Genome, Human Person and Society of the Future*, edited by J. Vial Correa and E. Sgreccia (Città del Vaticano: Libreria Editrice Vaticana, 1999), 340-350, at 350. Doctors who cannot accept this often end up promoting what they cannot prevent: euthanasia is the result of feeling the need always to do something, one way or the other.

Technology just on its own may merely be a testimony to our cleverness, but not necessarily to our moral goodness. Rousseau may be right in thinking that it in fact makes us worse, morally speaking. Technology itself may not have the moral neutrality that we assume. i.e., it may not only be the user who determines the morally good or bad use, but that the technology all by itself may imply certain uses of a particular moral quality.¹ Usually, we would think here of technology that is intrinsically evil in all its possible uses; but we could also imagine the opposite: could technology not be used to make us morally *better*? Perhaps there are technologies that have an exclusively good use built into its structure (e.g. into its algorithms)? Technologies of self-surveillance and of the “quantified self” come to mind, controlling not only external nature, but also our own, human nature.² Yet, while such technologies may make us better on a number of levels, we should not expect them to help us build virtue or become morally better.³ They would be at best neutral or indifferent with regard to our *redemption*. In fact, it may even be detrimental to our redemption, if it distracts us from God and from the right kind of efforts we need to make in our lives – for example, by relegating our moral choices to “morality apps.” In other words, the original sin is not a technological problem. It is not a computer virus, nor a genetic defect that could be fixed by technology. Only love can save us, as Ted Peters notes: “Increased intelligence would be quite capable of increasing the destructive force of evil. Increased love, regardless of its accompanying level of intelligence, increases compassion, peace, and harmony. Love is redemptive.”⁴ John Polkinghorne reminds us of this: “An ultimate hope will have to rest in an ultimate reality, that is to say, in the eternal God himself, and not in his creation.”⁵ This hope, as Pope Benedict noted in *Spe Salvi*, is not to be found in technology. Karl Marx’s classless society, even though it provides for all of our needs by means of the technology taken over from the capitalists, is not automatically going to make us into better people.⁶ Human freedom is capable of evil in that utopian state just as much as Adam and Eve were in the garden of Eden, which, after all, was a perfect state as well. In the end it is not a matter of the body, nor of the mind, but of the will; and the will cannot save itself, with or without technology.⁷

The Divinization of Technology

While these questions have been with humanity for a while, more recently, matters have taken a paradoxical turn: initially we see how modern technology is used to reduce our dependency on God by eliminating contingencies and threats. But the result seems, paradoxically, to create a new dependency on the very techno-

1 A point that is currently emphasized by various authors; a well-known example is Langdon Winner, “Do Artifacts Have Politics?” in *The Whale and the Reactor* (Chicago: University of Chicago Press, 1986), 19-39, as well as the work of Bruno Latour as a whole.

2 Shannon Vallor, *Technology and the Virtues; A Philosophical Guide to a Future Worth Wanting* (Oxford: Oxford UP, 2016), 188-207.

3 Ibid.

4 Ted Peters, “The Ebulient Transhumanist and the Sober Theologian,” *Scientia et Fides* 7 (2019): 97-117, at 104.

5 Ted Peters, “Artificial intelligence, Transhumanism, and Frankenfeer,” in *AI and IA: Utopia or Extinction?* ed. Ted Peters (Adelaide: ATP Press, 2018), 15-42, at 42.

6 *Spe Salvi*, nn. 16-23.

7 Suggestions of “moral enhancement” by gene technology (Ingmar Persson and Julian Savulescu, “The Perils of Cognitive Enhancement and the Urgent Imperative to Enhance the Moral Character of Humanity,” *Journal of Applied Philosophy* 25 (2008): 162-177) misunderstand the very nature of moral action and its evaluation (even while they do understand that cleverer is not morally better). This is not a topic that can be addressed here.

logy that promised to put us in control.¹ At the same time, technology takes on features of the divine, confirming J. Ellul's thesis that the technological desacralization of traditional religion makes technology itself (as a "universal mediator") into the Sacred. Lewis Mumford similarly notes how in the early modern age mechanics becomes the new religion and the machine its "new Messiah;" in the early modern Utopias, he observes, the machine replaces Plato's virtues as well as Christian grace and redemption.² Yuval Noah Harari even suggests that currently religion prospers more in Silicon Valley than in Islam and Fundamentalism, with technology promising peace, happiness, prosperity and even eternal life.³ The technological Utopia of this-worldly control thus has its own eschatology as it replaces the heavenly Jerusalem of Christianity with its own idea of such an ultimate culmination point of technological progress.

Theologians themselves have at times embraced this vision, as even secular authors will now invoke Jesuit Teilhard de Chardin's anticipation of a global "noosphere." Teilhard seems to have considered this noosphere to be at least in part the result of human technology.⁴ While unknown in Teilhard's time, the Internet has now indeed spun its web into a worldwide sphere of connectivity that enlarges human consciousness to the point that the planet itself seems to develop a global self-awareness. Marshall McLuhan expected such a universal self-consciousness from information technology as well, particularly in combination with space travel: after the moon landing, TV cameras captured a view of Earth from the moon for a global human audience. This was, as it were, a reflection of the planet back onto itself, a suggestion of planetary self-consciousness.⁵ The heavenly realm, the "starry sky above" that Kant could still invoke, ceased to be the transcendent realm of gods or angels; it became the sphere of human technology. The orbit of heavenly bodies moved by angels was now replaced by the orbits of artificial satellites; they now govern our fate and observe us with increasingly all-seeing

1 We may become so dependent on machines that turning them off would amount to suicide; cf. Ted Peters, (quoting Bill Joy), "Artificial intelligence, Transhumanism, and Frankenfer," 16. Already earlier, industrial machines were operating autonomously (Hegel's *selbständige Werkzeuge*, the early paradigm being the mechanical clock). They, too, dominated the life and labor of the factory workers (processes of deskilling can be found then as they are experienced now). For a while now, technology has also "colonized the Lifeworld" (Habermas) and become "autonomous" and emancipated itself from human decision-making; Jacques Ellul, *The Technological Society* (New York: Vintage, 1964), 133f.

2 Lewis Mumford, *Technics and Civilization* (1934) (Chicago: University of Chicago Press, 2010), 45 and 58.

3 Harari, *Homo Deus*, 356f.

4 Even earlier, the late 19th century Russian Orthodox ascetic Nikolai Fedorov argued – inspired by Darwinism – that humans could direct their own evolution to bring about the resurrection. For a suggestive account see Meghan O'Gieblyn, "God in the Machine: My Strange Journey into Transhumanism," *The Guardian*, April 18, 2017. Another early example is E.M. Forster's short story *The Machine Stops* from 1909 which eerily anticipates so much of the contemporary scenario (including social media), but which also anticipates a reemergence of religion in which "The Machine" takes on divine features, after it initially had destroyed religion:

"Those who had long worshipped silently, now began to talk. They described the strange feeling of peace that came over them when they handled the Book of the Machine, the pleasure that it was to repeat certain numerals out of it, however little meaning those numerals conveyed to the outward ear, the ecstasy of touching a button, however unimportant, or of ringing an electric bell, however superfluously. 'The Machine,' they exclaimed, 'feeds us and clothes us and houses us; through it we speak to one another, through it we see one another, in it we have our being. The Machine is the friend of ideas and the enemy of superstition: the Machine is omnipotent, eternal; blessed is the Machine.' ... The word 'religion' was sedulously avoided, and in theory the Machine was still the creation and the implement of man."

5 S. Kubrick's *Space Odyssey 2001* in its final shots seems to envision a new birth of the planet in this kind of return to and reflexivity on itself. The photo "Earthrise" from the astronauts of the moon landing turned the gaze from earlier outward looking space exploration in the 1960ies back to the fragility of the Earth; Catherine R. Osborne, "From Sputnik to Spaceship Earth: American Catholics and the Space Age," *Religion and American Culture: A Journal of Interpretation* 25 (2015): 218-263.

eyes, mimicking divine omniscience.¹ Meanwhile, on Earth, Facebook and other applications (not without the use of facial recognition software) display similar aspirations to quasi divine omniscience and algorithmic governance of our fate and choices. And yet in the end, we need to remind ourselves that it is still we who are looking at ourselves, playing God with the help of our technology.²

Our eschatological moment also features an electronic Pentecost. In the biblical Pentecost, the Holy Spirit overcame the linguistic separation of humanity – a separation that had resulted from technological ambitions described in the story of the tower of Babel, where humanity yet again grasped for heaven on its own terms. In contrast with the biblical Pentecost, the modern, technological Pentecost hopes to heal the wound caused by these technological ambitions with the help of the same technological means that inflicted it in the first place.³ Global connectivity as well as AI translation programs promise to overcome the linguistic and cultural separation and alienation even without God's Holy Spirit. But just as the biblical Holy Spirit is also the life-giving soul of a community – the Church as the mystical body of Christ – so here, too, some quasi-mystical body is to be constituted when all of humanity will connect in cyberspace as a global "hivemind." In the words of Ted Peters: "One's cybermind would be in community with all other cyberminds, a variant on Teilhard's noosphere. One might even celebrate a new higher level of community."⁴ And so, in a quasi-Joachimite eschatology we may witness ourselves participating in the outpouring of an electronic substitute for the Holy Spirit.

But this substitute has a rather different character. For, of course, the Holy Spirit is indeed spirit, not matter. God is not a "force" or electricity, but a personal being, a creator spiritus who transcends his creation. A material and technological substitute, on the other hand, would not transcend the physical universe. In theological terms, the implied religious aspirations would be pantheist, and of one piece with the physical world. Hence this outlook would not have a place for a relationship with a transcendent God. And, as we will see, excluding this relationship may even be the very point.

1 In popular culture, Isaac Asimov Foundation series experiences a renaissance. Asimov envisions an all-knowing "psychohistory," predicting future events. All-knowing technologies are also anticipated in Bentham's Panopticon, of whose paradigmatic role Michel Foucault has made us aware (Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan, (New York: Vintage, 1995), 195-230). This, too, mimics God's eye's view, but now as an aspiration for humanity.

2 Marshall McLuhan, "At the Moment of Sputnik the Planet Became a Global Theater in Which There Are No Spectators but Only Actors," *Journal of Communication* 24 (1974): 48-58 and *Understanding Media: The Extension of Man* (New York: Signet, 1966), 258. M. McLuhan and Wilfred Watson, *From Cliché to Archetype* (New York: Viking, 1970), 9, and in some of his lectures. As an externalization of our nervous system electronic media give us an "instant, total field awareness." "In the electric age we wear all mankind as our skin," McLuhan, *Understanding Media*, 56. McLuhan was influenced by Teilhard; see Osborne, "From Sputnik to Spaceship Earth," 260. The global net suggests a view from nowhere, because we perceive from everywhere at once, implying a quasi-divine objectivity, an intellectus archetypus (Kant) which is constitutive of reality, suggesting that here reality and appearance (virtual reality) coincide. Only the real God can call that technologically simulated perspective into question. It is potentially a showdown between two competing ultimate perspectives.

3 Even in innerworldly terms, this may not be promising. Hans Jonas notices that technology is less likely to fulfill our eschatological aspirations and more likely to lead instead to the destruction of the planet and the human race. Hence even for secular minds, the biblical mandate to be good stewards of creation is now obvious, according to Jonas. Hans Jonas, "Technology as a Subject for Ethics," *Social Research* 49 (1982): 891-898, at 895.

4 Peters, "The Ebullient Transhumanist and the Sober Theologian," 108

Moreover, the “divinity” that is to replace the transcendent God would be an evolving god, similar to the god of Hegel or of process theology. And just as Hegel’s god needs our finite consciousnesses to become self-conscious, so here, too, the growing god of this quasi-pantheist religion is expected to gain some kind of self-consciousness: according to some, the global connectivity promises that this computer network will become self-aware and transcend its human makers.¹

AI will eventually supersede the power of its creators. It will be so much more intelligent than us that it will, effectively, become a god. With the Internet as its nervous system, the world’s connected cellphones and sensors as its sense organs, and data centers as its brain, this new deity will be as omniscient and omnipotent as any previous vision of God.²

The growing technology of neural networks fosters the expectation that machine learning will become autonomous and self-upgrading, outpacing even human innovation, and resulting in a “Singularity.” Now “self-upgrading” as a form of reflexivity suggests something like “strong AI” and that self-consciousness could be the property of material entities like machines.³ While this assumption can and needs to be challenged philosophically, what concerns us here is the religious imagination that drives the development of such expectations and that affects our relationship with God. The Singularity is, once more, a secular and technological eschaton, now replacing earlier Utopias. Such a global internet having become self-conscious would be the true providential agent of future history, and many, including perhaps Teilhardians and other theologians seem to welcome this coming god.⁴

1 I have argued elsewhere that only God can make true makers; true creativity can be found in human artists, but not in computers. A. Ramelow, “Can Computers Create?” *Evangelization and Culture* 1 (2019): 39–46. Or else we need to give them copyright and baptize them. Like God, however, we can pro-create other makers. All creation is preceded by pro-creation. *Ibid.*

2 Galen Beebe and Zachery Davis, “When Silicon Valley Gets Religion,” quoted in Peters, “Artificial intelligence, Transhumanism, and Frankenfer,” 38.

3 For a philosophical discussion, see David J. Chalmers, “The Singularity: A Philosophical Analysis,” *Journal of Consciousness Studies* 17 (2010): 7–65. Chalmers takes, for the most part, a positive view of the possibility.

4 Jaron Lanier implies that the protestant variant of this theology is something like an electronic Rapture into the Singularity; J. Lanier, *Who Owns the Future* (New York: Simon & Schuster, 2013), 125. Steve Jobs, on the other hand, sought his religion in India, and indeed, New Age and Eastern Religions had a home in Palo Alto since the 1980ies; *ibid.* 213. There are also Mormon and Buddhist versions of Transhumanism; Peters, “Ebullient Transhumanist,” 110f. N. Bostrom’s “Simulation Argument” envisions something like a “naturalistic cosmogony” with nested simulated realities, each having its own gods or people running the simulation, rewarding and punishing behavior therein. Since inhabitants of each simulation try to create simulations of their own, this notion may potentially appeal to Mormons (who tend to be interested in Transhumanism as well); Nick Bostrom, “Are We Living in a Computer Simulation?” *The Philosophical Quarterly* 53 (2003): 243–255, at 253f.

Nor do the religious overtones even depend on the assumption of machine-consciousness of the kind we have just discussed. According to Harari, the religion of “dataism” supersedes human beings precisely because it supersedes consciousness and self-consciousness as something that is merely a clumsier kind of data-processing mechanism. In dataism, not human persons or consciousness, but data are the ultimate entities, and data flow is the ultimate value. “Life” as a value just consists in the flow of information, to which everything else is subordinate. Hence the imperative (or quasi-divine commandment) to share one’s own data with everyone else. Even now, humans are merging with that flow and feel elevated states of consciousness by being participants in something greater – a quasi-religious experience in which one’s own existence is confirmed (“I share, therefore I am”). Not that human experience matters. It is as outdated as humanistic politics and democracy (which even now is incapable of keeping up with technological developments). The flow of data merely *uses* human beings and their politics; it may eventually also discard them as outdated forms of data processing. Already in our own time, human conscious decision making is increasingly bypassed by automated algorithmic mechanisms, which know us and our desires better than we know ourselves. In the past, humanism has declared God to be a figment of our imagination; now, dataism declares human imagination itself to be merely the product of our biologically based algorithms. As our biology becomes outdated as a data processing system, so the flow of data becomes independent from human consciousness and affectivity.¹

Harari lays this out in rather cynical formulations – which helps to highlight what is at stake even for humanity.² Even if the “internet of all things” did not eliminate human consciousness altogether, it would certainly not bring human consciousness in contact with the reality of a transcendent Other. It would isolate our consciousness from reality altogether and keep our conscious life entrapped in the parallel world of the internet. Our consciousness would live and move and have its being not in God, but in cyberspace, in a metaverse, in virtual reality

Something about our relationship with *reality* is askew in this picture. And this is not as new as one might think. It is the apex of a long historical development that began with the 17th century attempt to control reality technologically and scientifically, as we saw earlier. Modern science began by reinterpreting reality as something susceptible to our mechanical manipulation, i.e., by taking reality itself to be a mechanism (initially with God as the increasingly remote clockmaker in the background). Accordingly, we assume that we have understood what reality is, once we are able to make a machine or robot that perfectly *simulates* this reality.³ Reality and simulation become indistinguishable, even conceptually. Reinterpreting reality in this way means to understand it relative to our needs (for control), i.e., as an object existing only relative to our own subjectivity. And indeed, in Descartes, unless there is a God who is not a deceiver, reality may as well be our dream, i.e., a mere appearance or virtual reality. Again, appearance and reality

1 Harari, *Homo Deus*, 372-398.

2 Only in the very last few pages of the book does he indicate that he may not necessarily support this development; *ibid.* 399-402.

3 This includes our own reality. According to Mumford, the machine is created in our own image and likeness, but devoid of our humanity’s flesh and blood. It is really only an image of our own power, i.e., of the thing that interests us most and that equates our life with work – and what other life do machines know? Mumford, *Technics and Civilization*, 51-53.

become indistinguishable.

The resulting unreality of reality¹ can be witnessed early on in a growing epistemological skepticism which turns everything into appearances and leaves reality inaccessible (Descartes's dream problem, Berkeley's idealism, Kant's noumena etc.). Today this skepticism is recast in technological terms as Nick Bostrom claims that perhaps we are really living in a virtual reality simulation. God the creator, then, is replaced by the mad scientist who orchestrates this simulation – foreshadowed already in Descartes' "genius malignus." For Berkeley it was still God who orchestrated the appearances; now, as God is dropped entirely, we or our technology are responsible even for that part. We supposedly live in our own or another human being's technological creation, not in reality.

Reinterpreting reality as relative to our needs, to our technology, or to our consciousness, has thus already been around for a few centuries and only now ends in an attempt to *replace reality altogether*. And this, too, has a prehistory. Harari seems to suggest that already with the beginning of agriculture, a more direct, animistic contact with nature disappeared, and that the gods of the new cities were understood to mediate between humans and nature. Animals, plants, and nature were silenced and became a mere backdrop of life or are even cruelly exploited with the help of the gods.² What is specific to the modern development is that the *scientist* now takes the place of the gods as the mediator between us and nature. *They* know what nature really is and how it can be made to serve our needs by means of technology.³ On the level of material culture, and particularly since the industrial revolution, technology has begun to seal us off from nature as well. Ortega y Gasset and others have noticed this as early as the late 1920ies.⁴ While, as Lewis Mumford notes, the earliest completely artificial environments may have been the mines of the early modern age,⁵ it is only in the later 19th century that chemistry has produced plastics and other artificial substances that constitute much of the modern environment.⁶ In our day, this culminates in the fabrication even of biological life, namely in artificial organisms constructed by genetic manipulation.⁷

1 "Entwicklung der Wirklichkeit;" Robert Spaemann, "Wirklichkeit als Anthropomorphismus," in Grundvollzüge der Person, Dimensionen des Menschseins bei Robert Spaemann, ed. Hanns-Gregor Nissing (München: Institut zur Förderung der Glaubenslehre, 2008), 13–35, at 29. Spaemann liked to quote (critically) Hume's claim that "we never take a step beyond ourselves."

2 "Entwicklung der Wirklichkeit;" Robert Spaemann, "Wirklichkeit als Anthropomorphismus," in Grundvollzüge der Person, Dimensionen des Menschseins bei Robert Spaemann, ed. Hanns-Gregor Nissing (München: Institut zur Förderung der Glaubenslehre, 2008), 13–35, at 29. Spaemann liked to quote (critically) Hume's claim that "we never take a step beyond ourselves."

3 Harari also points out that the modern version features its own variant of the fall story: Newton's apple falling from another tree of knowledge. Here, even snake and God are silenced, only Newton remains; and he is not punished but enlightened by knowledge and praised. Harari, *Homo Deus*, 77 and 98.

4 José Ortega y Gasset, «Meditación de la técnica» [1939], translated by Helene Weyl as «Man the Technician» in *History as a System and Other Essays Towards a Philosophy of History* (New York: W.W. Norton and Co., 1941), 87–161. Cf. also Berdyaev's transferal from the "organism" to "organization," which begets a "tendency towards suicide;" Berdyaev, "The Spiritual Condition." Between about 1928 and 1932 (published sometimes a few years later) quite a number of prominent authors suddenly produced treatments of technology, e.g., J. Ortega y Gasset, K. Jaspers, O. Spengler, L. Mumford, R. Guardini, N. Berdyaev.

5 Mumford, *Technics and Civilization*, 69f.

6 Mumford, *Technics and Civilization*, 229–235. Earlier, the production of clear glass helped create the artificial environment of the hothouse, now encompassing the natural, organic world; *ibid.* 124–25, and 258. Science itself takes place in the artificial environments of the laboratory.

7 Hans Jonas, "Ethics and Biogenetic Art," *Social Research* 71 (2004): 569–582.

Moreover, it now promises us a completely artificial reality by means of a nanotechnology that is subject to our every wish and whim (the so-called “utility fog”¹). Or else, we can live in Facebook’s Metaverse, a virtual reality according to our own image and liking – though controlled by its own “Lords of the Cloud” (J. Lanier²).

In all of this, technology affects our relationship with God. While for Descartes God had to guarantee our access to reality and the natural world, the opposite is true as well: it is this natural world that normally also gives us access to God. Nature as a product of its Maker can be regarded as God’s manifestation. But as we are sealing ourselves off from nature, we become isolated and alienated from nature’s God as well.³ The more (by means of chemistry and nanotechnology) we make and live exclusively with substances not found in nature, the less we find access to God in his creation. Instead we will soon be facing only ourselves in the realm of our own productions, which, as we have said, are defined by our purposes and therefore fit comfortably within a frame of reference defined only by ourselves.

And here is where we may entertain a certain hermeneutics of suspicion: if God is Being Itself, and therefore the most real being of all, are we then perhaps, by replacing “real reality” with virtual realities of our own making, not actually trying to avoid God himself? Are we afraid of real and *true otherness* – most especially that of God, but also that of our neighbor? And was it perhaps this motivation that drove the whole development from the beginning? It will still have to be seen, whether alternate realities like the Metaverse will allow for places where God and his revelation can be spoken of. In principle, it is hard to imagine this metaverse as a place in which God could become present by an incarnation. God’s incarnation is, after all, something like Alfred Hitchcock making a cameo appearance in his own movies: it would *break* the illusion and let otherness, the reality of the author, back in. Yet are we not rather seeking distraction and isolation from this otherness in a metaverse or other forms of virtual reality?

¹ Ray Kurzweil, *The Age of Spiritual Machines* (New York, Penguin, 1999), 145.

² J. Lanier, *You Are Not a Gadget* (New York: Vintage Books, 2011), 85 and 94-99.

³ Thus perhaps making the earth into an isolated “silent planet” under the rule of Lucifer, as in C.S. Lewis’ *Space Trilogy*. – Ironically, as Lewis Mumford explained, the separation from nature’s cosmic and sacred time occurred due to the invention of mechanical clocks used by monks for their prayer time; cf. Mumford, *Technics and Civilization*, 12-22. Clockmakers were the first machinists, as clocks, unlike tools, operate on their own; *ibid.* 134.

While God's Incarnation is hard to imagine in virtual reality, religious experiences may appear more promising, because they are more subjective to begin with. And they have indeed become the subject of the quest for technological surrogates. This quest, however, may amount to a performative self-contradiction: for can anything not caused by God be an experience of God? Much as Ray Kurzweil can fantasize about technologically induced "religious experiences" (by brain stimulation), these are not forms of a personal encounter with an Other, nor true forms of self-transcendence.¹ Any manipulation does *as such* preclude a personal encounter if such encounters by their nature must happen in a free gift of the self. This gratuitous freedom is most especially required, if the other person in question is God, because God by his very nature transcends any grasp of ours and can be encountered only in his own gift of grace. How indeed could grace become subject to our technological manipulation if it is always freely given? Thus a real encounter cannot be our production. All we can make are only appearances and simulations. Attempting to produce religious experiences on our own, will only keep God and an encounter with him farer away. In this way, technology once more does not heal but rather cements the rift between God and us. The "fault line" between us and God only gets larger, perpetuating the distrust that led Adam and Eve to grasp the fruit in the first place and subsequently made them hide from their creator. This is still our situation – only that instead of hiding behind fig leaves, we now hide in virtual reality.²

But there is, again, a paradoxical twist that we can observe in our own days: what was then simulation or virtual reality now becomes itself the one true reality on which we depend – namely, once we live under the rule of the "Singularity" which we have discussed earlier. This Singularity promises to take on a life of its own and to subject us to its own designs, in short: to become a new god or first cause in our life.

Parallel with this development we can currently observe an odd turn among philosophers, a turn which also reverses the early modern philosophical beginnings. In the 17th century, Descartes and Bacon and others eliminated formal and final causes from their ontology, which they considered to be a form of anthropomorphism. Only human beings were taken to have ends and purposes, not nature. Interpreting all reality mechanistically eviscerated nature of its claim to contain animated and spontaneous entities of its own. Animals and other beings were considered mere machines without a subjective life of their own, and therefore of much lesser reality than the human beings that therefore could turn them into mere tools.

¹ In fact, Kurzweil's own experiments only feed us back our own "musical" brain wave signals; Kurzweil, *The Age of Spiritual Machines*, 151-53.

² Cyberspace aims at creating a heavenly Jerusalem without God: "Software engineer Michael Benedikt envisions cyberspace as a place where 'we would enjoy triumphs without risks and eat of the tree and not be punished, consort daily with angels, enter heaven now and not die. . . [it is] the Heavenly City, the New Jerusalem of the Book of Revelation. Like a bejeweled, weightless palace it comes out of heaven itself. . . a place where we might re-enter God's graces. . . laid out like a beautiful equation.' Eternity as a never ending video game." Herzfeld, *Technology and Religion*, 75. Yet the video games of cyberspace (played preferable in invincible "God-mode") are typically games of destruction. – At the same time, their almost instantaneous feedback loop suggests that appearance and reality, subject and object become one, a "fusional loop of subject and object," a man-made representation taking on features of the real presence of something made by God. Cf. Thomas Zengotita, *Mediated* (N.Y.: Bloomsbury, 2005), 197f.

Yet now, in an odd turn, we suddenly invest even what really *are* mere machines with subjective states and consciousness, thinking of robots as having a subjective mental life of their own. Accordingly, some philosophers are now even wondering whether robots should receive rights and protections.¹ But how is this not even worse than the allegedly animistic projections that philosophers had been mocking earlier, when it came to nature?² And at the same time, the very beings that engage in this kind of projection (namely we ourselves), are subjected to reinterpretations through the mechanistic reductionism used earlier on nature – thus reducing the human mind to a “carbon-based computer.” Subject and object of the early modern age are reversed: machines are elevated to a status beyond nature, while we are reduced to mere mechanisms. This will certainly help to set the stage not only for a *personalization* of machines but for their *divinization*. For we increasingly depend on them as an object of their machinations and relate to them more and more as mere docile and subservient subordinates. Who, after all, still understands all the algorithms that run our lives?³

Yet, in this new subordination, can we really *trust* this new “god”? After all, it is not clear that this new godhead will be benevolent.⁴ Unlike the God of the theological and metaphysical tradition, we are not dealing with the pure act of a spiritual being, i.e., a being that *must* be good by its very nature. The computer servers that run the algorithms of this new “god” are still material mechanisms. They originated as our tools, and most tools by their nature can be used for good or ill. And so, even if this particular tool were to gain some kind of autonomy, its moral indeterminacy would remain.⁵

Unsurprisingly, therefore, some futurists anticipate that the Singularity may turn against us. It may, for example, eliminate us as harmful parasites from the Earth. Some environmentalists may even welcome this for ecological reasons. Others like Harari anticipate that we will be discarded as an outdated mode of data processing. All that may be left to us at that point may be to choose to surrender our will-to-life – i.e., to surrender that same will by which we originally developed our machines, and to which we now submit for our own elimination. It would be an elimination by our own creations, the original subject of technology now being overcome by its object. Or, in the words of David Tracy: “*The object cannot think. The subject will not. We began as technical agents of our willful destiny; we seem to end as technicized spectators at our own execution.*”⁶ Dystopian fantasies of this

1 Nick Bostrom and Eliezer Yudkowsky, “The Ethics of Artificial Intelligence,” in *Cambridge Handbook of Artificial Intelligence*, eds. William Ramsey and Keith Frankish (Cambridge: Cambridge University Press, 2014), 316-334. David Gunkel, “The Other Question: Can and Should Robots Have Rights?” *Ethics and Information Technology* (2018). DOI: 10.1007/s10676-017-9442-4. Ray Kurzweil even envisions computers as going to their own kind of worship; Kurzweil, *The Age of Spiritual Machines*, 153.

2 This is still a biblical theme as well: “Ah! you who say to wood, ‘Awake!’ to silent stone, ‘Arise! Can any such thing give oracles?” (Habbakuk 2:19).

3 Even in the teams which develop the algorithms at Google, nobody understands the whole of it; Harari, *Homo Deus*, 398.

4 This ambivalence in the Singularity religion is noted also in Lanier, *Who Owns the Future?* 193.

5 We prescind here from the discussion of whether technology is neutral or intrinsically value-laden as many authors have claimed (from Ellul to Langdon Winner and many others). The non-neutrality may always imply a social or political context. On the ultimate level, this context will disappear, including even the very user and designer (according to the idea of a Singularity). It may, however, still be driven by what this entity is programmed to optimize (and it is not clear what could or would change that ultimate setting, or how it could change that setting by itself).

6 Quoted in Ted Peters, “Progress and Provolution, Will Transhumanism Leave Sin Behind?” in *Transhumanism and Transcendence, Christian Hope in an Age of Technological Enhancement*, ed. by Ronald Cole-Turner (Washington, D.C.: Georgetown University Press, 2011), 63-86, at 78. For D.B. Hart, however, the god of Transhumanism turns out to be a god of human sacrifice; see David Bentley Hart, “The Anti-Theology of the Body,” *The New Atlantis* 9 (2005): 65-73.

sort do abound, and they are, of course, not entirely new; they begin with the Golem, with Frankenstein's monster, and the Sorcerer's Apprentice. Others, however, will not surrender and rather try to forestall such developments. This may, for example, be achieved by upgrading humanity itself, in a kind of arms race with artificial intelligence (this seems to be the idea of Elon Musk'). Yet, for all this, they only repeat another version of the story of the Fall: grasping at the fruits and powers of a god who appears to be untrustworthy (and in this case, actually, is). For Transhumanists,² this grasp aims not only at undoing the consequences of original sin (e.g., overcoming death by uploading ourselves into a computer³), but even at introducing the qualities of the resurrected bodies into our life on earth, by remaking ourselves with "superpowers."⁴ Such an approach can sometimes take on strangely Manichean forms. After all, replacing reality with virtual reality is also a verdict on the materiality of the body: the claim is that our body can be replaced with patterns of information processing that are not bound to any particular computer or material substratum into which they are uploaded. In order to illustrate this, Nick Bostrom oddly appeals to the Catholic notion of purgatory, which he misunderstands as a way of purifying the separated soul from its body (rather than from its sins)⁵. Yet others suggest, curiously, that this Transhumanism could be a form of self-transcendence.⁶ But Christian self-transcendence has to do with self-sacrifice, with moral self-*transcendence*, and with surrender to God. Christian self-transcendence is, in other words, the very opposite of technological self-*elevation*. Surrender to God in fact seems to be replaced with the aim of becoming identical with God.⁷

1 But also Y.N. Harari; see Ted Peters "The Ebullient Transhumanist and the Sober Theologian," 103.

2 Transhumanists are the inverse of the "Inhumanists" (Robinson Jeffers). The latter see humanity only as a destructive parasite on planet Earth (hence perhaps welcoming such a Singularity). Thus nature either becomes an "untouchable taboo" or an object of abuse (Caritas in Veritate, n. 48). In neither case is there a God-given meaning to life: we either have to create it ourselves, or else there is none at all and we must be nihilists.

3 Ray Kurzweil is a typical example; see also Herzfeld, *Technology and Religion*, 64-69. Entrance into eternal life would be open not to the saints, but to the rich. Or else the rich prefer to prolong their real biological life and leave virtual reality as a cheap option for the poor; Lanier, *Who Owns the Future?* 330. Some have speculated that avoiding death may be to avoid God's Particular Judgment (related clashes can be found in Zoltan Istvan's novel: *Transhumanist Wager*). If so, then this attempt is, of course, illusory, because even this prolonged life ends at the latest with the heat death of the universe as a whole (or, theologically, with the Last Judgment). Avoiding death is not a new desire: L. Mumford suggests that even the earlier invention of recording devices promised a new form of immortality (*Technics and Civilization*, 244f.), and we may wonder whether the current promises are really different in kind or only in degree. – An upgrading of our nature was first envisioned by Pico della Mirandola in 1486 – as a mandate from God himself.

4 For John Locke, we own what we make or work on; and since God makes us, we are his property. Now, however, we begin to make or remake even ourselves (in our own image and likeness). This is a further appropriation of a divine prerogative that pushes God further out of the picture. Zengotita points out how this vision of self-made man continues through Comte, Marx and Nietzsche; it is celebrated by Donna Haraway, but abhorred by Heidegger as nihilistic; Zengotita, *Mediated* 272-257. Disturbingly, if we make and therefore own human beings, then we also may claim the right to unmake what we have made.

5 Nick Bostrom, "Human Genetic Enhancements: A Transhumanist Perspective," *The Journal of Value Inquiry*, 37 (2003): 493-506, at 495-96; he is also trying to address the problem of personal identity with this analogy. On the body see also Peters, "Ebullient Transhumanist," 109. Bostrom's nested proliferation of simulations within simulations (see above) may also remind us of the gnostic emanations of aeons.

6 Vallor, *Technology and the Virtues*, 233.

7 *Ibid.*

Another, quite contrary way of dealing with the untrustworthy god of the Singularity is again a kind of submission. But in this case, it is not a surrender to our own extinction and mistreatment.¹ Left with the task of making sure that this Singularity will be benevolent, Anthony Levandowski – an engineer of self-driving cars – suggested that we *worship* this entity so as to placate it. His (recently disbanded) church of AI, the “Way of the Future” was to anticipate the “Transition” to this Singularity in worship so as to get it to be on our side.² This is a startling idea, yet not exactly new. In fact, since we are still dealing with a technology that human beings have made, this is literally a page out of the Old Testament: it is a case of people “worshipping the work of their own hands” (*Isaiah* 2:8), i.e., worshipping an entity that presumably is not even conscious or self-conscious and hence literally “deaf and dumb.”³ In other words, it is a form of idolatry, though in the case of a “singularity” it is a kind of *monotheist* idol.⁴

Worshipping an idol will typically either reflect our own tone-deafness for God, or else make us deaf and dumb ourselves (“those who worship them will become like them,” *Psalms* 115:8). It is a deafness that results from making something that is essentially a *means* or tool into an *end* in itself, thus turning us back upon the ends that are definable within the scope of this technology and making us lose sight of the true end.⁵

At the same time it is, again, the paradoxical inversion of the starting point in which our means for controlling nature now control us and take on features of animation and divinization that we had excluded from nature.⁶

1 Submission here is not childlike but calculating. At the same time, technology with its deskilling is indeed also infantilizing us (unlike true childlikeness, which aims at growing up). Jaron Lanier describes a growing attitude of guilty fearfulness, akin to superstition: people blame themselves rather than the computer, if something goes wrong, or if it is hard to use. They also work anxiously on the upkeep of their social media presence, “avoiding the ever-roaming evil eye of the hive mind” (and there is only one such hive mind, thus without any possibility of emigration); and like God (but unlike money), computers never forget. J. Lanier, *You Are Not a Gadget* (New York: Vintage Books, 2011), 35 and *Who Owns the Future*, 70; 29-31.

2 “[T]his new deity will be as omniscient and omnipotent as any previous vision of God. In the face of such power, Levandowski believes, humans will merely submit and pray to be spared.” Galen Beebe and Zachery Davis, “When Silicon Valley Gets Religion,” quoted in Peters, “Artificial intelligence, Transhumanism, and Frankenfer,” 38.

3 Eric Salobir suggested in conversation, that “Alexa” is not deaf and dumb anymore but listens to our wishes and fulfils them (e.g. by ordering pizza). But Alexa does, of course, not literally hear, but only reflects our wishes and preferences and interests. Nevertheless, these devices may function like the Roman penates or household gods that are oracles, provide for household needs, and connect the family to the larger world. Such devices are just the way we like our gods.

4 We may even download its commandments and instructions from the “Cloud” onto our “tablets” ... Short of a global mind, companies like Apple now aspire to be themselves such a larger whole with a “spirituality” of their own, and with algorithms creating the groups of the elect. “You are either saved or damned, #BlessedByTheAlgorithm or #Cursed by it.” Linda Kinstler, “Can Silicon Valley Find God?” *New York Times*, July 16, 2021.

5 Typically, its place is then taken by opaque sensual desires that can be satisfied precisely by the commodities that technology provides; I find elements of this also expressed in Borgmann, *Power Failure*, 81-94. Grace becomes gratification; *ibid.* 127.

6 Some of this paradoxical inversion has been noticed earlier by Adorno and Horkheimer in their *Dialectics of the Enlightenment*, though they have no account of the theological dimensions of that problem.

Technology in the Church

Coming down from these eschatological speculations to our own daily lives, we find them invaded by technology even now. This includes our religious lifeworld.¹ Pandemic restrictions have made us accustomed to worshipping on computers, through livestreaming and other means. The one true mediator has Himself become mediated by technology and nobody seems to think much of it. Quite to the contrary, there was, in the 1950s, a vigorous debate among theologians as to whether it could ever be permissible to show Mass on TV. Robert Spaemann, for example, commented critically on the voyeuristic character of this technology (calling it, with Jean Cocteau, the “art of the keyhole”).² J. Ellul, too, notes the desacralizing character of this voyeurism:

*Technique worships nothing, respects nothing. It has a single role: to strip off externals, to bring everything to light, and by rational use to transform everything into means. More than science, which limits itself to explaining the “how,” technique desacralizes because it demonstrates (by evidence and not by reason, through use and not through books) that mystery does not exist. Science brings to the light of day everything man had believed sacred.*³

Long before the pandemic, this had been water under the bridge. Mass was even then shown on TV and technology has had its own way of invading our faith life. But with the recent increase in technical mediation, perhaps now the question may arise again.⁴ For why would we not accept livestreamed liturgies as the “new normal”? Why indeed are computer-mediated, livestreamed masses still correlated with a *suspension* of the Sunday obligation rather than with its alternate fulfillment? What is wrong with using technology in this context? After all, since writing is a communication technology, is not sacred scripture itself a technological mediation of revelation?⁵

1 The colonization of the lifeworld by technology also implies, sort of in the reverse, that our private sins, committed in our lifeworld, also affect the rest of the world more than before, amplified and spread by technology. Can our vices in turn be technologically counteracted by drugs in the water, brain implants, or genetic engineering? See the article by Persson and Savulescu, and my comments above.

2 See, for example, Robert Spaemann, “A Keyhole for Unbelievers? The Public Character of Cultus and the Broadcasting of the Mass on TV,” *Communio* 45 (2019): 629-636 (“Ein Schlüsselloch für die Ungläubigen? Die Öffentlichkeit des Kultes und die Fernsehübertragung der Messe,” *Wort und Wahrheit* 9 (1954): 165-168). Perhaps relatedly, Zengotita (Mediated, 42-45, 289) notices that birth and death are the only events which cannot be technologically “mediated.” The first and last moments of life confront being itself – before and after any possible technological mediation and reflection (and therefore they uniquely confront us with God). The same may be true for the sacramental real presence of the death of Christ. Filming the sacrifice of the Mass may be as perverse as filming someone’s death, Spaemann suggests. – A critique of Protestant televangelists (not exempting the venerable Bishop Fulton Sheen) can be found in Neil Postman’s *Amusing Ourselves to Death* (New York: Penguin, 1984), 114-124; for Postman this is blasphemy and idolatry (as the medium becomes the message).

3 Ellul, *Technological Society*, 142-43.

4 Perhaps also witnessed by the need for guides of proper etiquette for watching mass on a computer. Questions arise as to what is implied in using the very same computer (as a “multistable” medium (Don Ihde)) for looking at quite different kinds of things, religious as well as everyday features, and perhaps even obscene things. Cf. the book of Wisdom (15:7-8): “[The potter] fashions out of the same clay both the vessels that serve for clean purposes and their opposites, all alike; ... With misspent toil he molds a meaningless god from the selfsame clay.” A similar irony in Isaiah 44:12-17, where idols are made of leftover firewood.

5 In fact, Jaron Lanier suggests that Wikipedia emulates sacred scripture by putting together snippets from anonymous authors, all the while pretending to be the one true text of the world which incarnates God’s non-perspectival point of view; J. Lanier, *You Are Not a Gadget*, 32.

As an initial response, we may need to remind ourselves that language, as we had said earlier, is a prelapsarian technology. Moreover, it is only one of the ways in which the divine Word becomes present at mass. The sacrament of the Eucharist makes the divine Word present not just in a linguistic technology, but literally “in person.” The readings of scripture are a witness to this more primary form or “prime analogate” of God’s real presence. Accordingly, scripture’s primary *biotope*, the context in which alone it can be understood, continues to be the Eucharist¹. Echoing the Incarnation, scripture has its most authentic place in its “in-person” proclamation (within which its status as sacred scripture was historically determined in the first place). The real presence of the Eucharist remains a point of reference for all the forms in which divine revelation arrives in our lives.

The Eucharistic presence itself has a telling structure. For example, while many things have artificial substitutes and near perfect imitations in virtual reality, food is not one of them. Much as we technologically commodify eating into forms of fast food, we cannot escape the necessity of eating. There are no virtual substitutes for it. Even brains in the vat, which otherwise live in cyberspace, still have to receive nutrition. Noting this, we can ask: is it only by accident that God chose the medium of *food* to become present in person? Or was it because it was a congenial medium for his own real presence, precluding its virtualization? That eating is possible only in person is the most obvious obstacle to an electronic mediation of God’s Eucharistic presence; one cannot receive communion from a screen.² Here, as often, the Catholic faith proves itself to be relevantly and helpfully countercultural. The Catholic belief in the *real presence* is not just about a technologically transmitted piece of information, or a mere memory, or a projection of our imagination. As Robert Spaemann noted, early modern naturalistic forms of painting anticipate as a technique the virtual realities of later times, and they develop historically in a parallel with the Protestant virtualization of the sacramental real presence (i.e. as a mere memory or mere symbol).³

The *ministers* of this sacrament, too, must be really present. Priests cannot administer the sacraments over the camera or other technological devices; they need to be present in-person. And more generally, there must be a deeper reason for why the Church does not want masses to be celebrated with technological replacements for live music, or with electric candles and recorded homilies, nor even with iPads instead of printed missals. God as Being Itself does not live in ephemeral virtual realities or mere appearances.⁴ And that he is *sacramentally* present means that he is *really* present, rather than *virtually* or by technological mediation. Short of the beatific vision, though, this real presence will retain a paradoxical structure. As such it is, in fact, the exact inverse of virtual reality. Eucharistic Adoration may be the clearest example of this inversion. It is an inversion of appearance and

1 It, too, is perhaps a technology that finds its proper place only in a “focal practice,” such as a shared meal. Albert Borgmann, “Focal Things and Practices,” in *Technology and the Character of Contemporary Life* (Chicago: University of Chicago Press, 1986), 196–226.

2 Lewis Mumford discusses the adulteration of food in the time of the industrial revolution; Mumford, *Technics and Civilization*, 179. Today, we genetically alter our food – and we have yet to raise the question how much wheat may be altered until it ceases to be valid matter for the Eucharist.

3 Robert Spaemann, “Was heißt: ‘Die Kunst ahmt die Natur nach?’,” *Philosophisches Jahrbuch* 114 (2007): 247–64. He sees modern art reversing this trend (e.g., Cristo, Walter de Maria).

4 God also is personal, and as Robert Spaemann argued, persons are either real or nothing; there are no possible or imagined persons. Robert Spaemann, *Personen. Versuche über den Unterschied zwischen “etwas” und “jemand”* (Stuttgart: Klett-Cotta, 1996), 77f. N. Herzfeld makes a related point about the encounter with icons; Herzfeld, *Technology and Religion*, 85–90.

reality.¹ In virtual reality, nothing is real, and all is appearance. Faced with God in the Blessed Sacrament, on the other hand, we can see the real presence only with “the eyes of faith”; it does not appear. Hence, in virtual reality, nothing is real, and all is appearance; in Eucharistic Adoration nothing appears, but it is All Reality. Nothing appears, yet God’s presence is already as real as it will be in heaven when He will also appear to our sight. In other words: The Eucharist is a direct antidote to the contemporary obsession with virtual reality.

Can Technology Be Redeemed?

We cannot hope that technology would redeem us; this would indeed make technology into an idol. Instead, technology is itself in need of redemption. But what the redeeming of technology means is for technology to take its proper place in the plan of God. And for that, God’s own place needs to be reasserted first. What these proper places are respectively, can be made visible through the paradoxical development that we have described earlier:

The original sequence, as found in Paradise, is this one:

God → man → human work/product.²

The next step is that God drops out of the picture:

[God →] man → human work/product.

This seems to begin as early as with Cain and his offspring. But it is only with Bacon and Descartes that the focus on secondary causes and the creation of a “secular space” as separate from God becomes an organized program.³

The final step, which we witness today, is the resurrection of religion within technology, and it takes the form of a divinization of technology:

Man → work/product → “God.”

1 It is worth noting that, for Kant, the very distinction depends on God’s “intellectus archetypus” – which is why R. Rorty, with Nietzsche, rejects this distinction, while others celebrate the unfettered opportunity of technologically mediated self-creating (Zengotita seems more positive about this in his oral statements than in his book *Mediated*).

2 A further differentiation could be introduced within human life, if we consider the hierarchy of contemplation – action – making. Before there is a turn towards prioritizing making there is a problem in (moral) action, i.e. the Fall, which possibly results from an even earlier aberration in the act of contemplation – perhaps as a form of non-consideration or inattention to the rule (as Jacques Maritain suggests; J. Maritain, *St. Thomas and the Problem of Evil* (Milwaukee: Marquette Univ. Pr., 1942), 23–43). This would suggest, that (apart from grace), a recovery of the contemplative dimension of life would be a key for redeeming technology as well. See *Laudato Si* n. 112, as quoted below.

3 Though abandoning God for the world may be preceded by an abandonment of the world – not by God, but by the theologians that characterize Him as a *deus absconditus*, beginning in the 14th century. Modern man then eventually becomes a maker on the model of this God – a God who is a maker of the nominalist, voluntarist kind, and whose wisdom is not revealed in his works, but only his arbitrary will. Hence, getting the image of God as maker right will likely also correct our own ways of making. It would also require us to overcome the nominalism of this 14th century outlook (which is still with us): if there are no universal features in reality that make the world intelligible, then all of our conceptualizations of reality are “the workmanship of our mind” as John Locke has it – reality is, then, our construct. In other words: every nominalist has lived in virtual reality, long before modern technology.

Since there will always be a God, he now reappears, but at the other end of the spectrum. What becomes apparent in this trajectory is that once we forget that we are God's work, God becomes our product, an idol. But like any idol it subjects us, even though it is our own product.

And this is not new. It is, for example, what the Book of Wisdom seems to have in mind. In its chapter 15, it describes how the potter makes from dead clay a figure of God, forgetting that he himself was made from clay by God in the beginning. And while God could breathe life into Adam, the potter cannot do this with the deaf and dumb idol he made. In making an idol, he does not only forget God, but also himself. He forgets not only God, but that he himself is more than his work. We need that reminder more than ever: idols cannot hear and see; nor can "Artificial Intelligence" be intelligent or conscious, let alone self-conscious. The Book of Wisdom also explains the reason: human products lack the breath of God because human beings themselves do not have their breath from themselves (but only as "borrowed" from God), and therefore cannot pass it on:

*For it was a mere human being who made them,
one living on borrowed breath who fashioned them.
For no one is able to fashion a god like himself;
he is mortal, and what he makes with lawless hands is dead.
For he is better than the things he worships;
he at least lives, but never his idols. (Wisdom 5:16-17)*

Hence our making must not be "lawless," it must be subordinate to God's making as giving it its ultimate goals and ends. In this way, Laudato Si's hope for another use of technology may be fulfilled, namely one where "the desire to create and contemplate beauty manages to overcome reductionism through a kind of salvation which occurs in beauty and in those who behold it." (n. 112). But it requires us to reverse the above sequence and remind ourselves that we are God's creation first, and that we are makers only because God first has made us – namely in his image and likeness. The telos is to become godly indeed, but not a self-determined homo deus.¹ It is true, technology must remain subordinate and at the service of man. But this will happen only when man himself is at the service of God.²

¹ By contrast: "Having raised humanity above the beastly level of survival struggles, we will now aim to upgrade humans into gods, and turn Homo sapiens into Homo deus," Yuval Noah Harari, *Homo Deus – A Brief History of Tomorrow* (New York: HarperCollins, 2017), 21; T. Peters rightly compares this, yet again, to the Tower of Babel; T. Peters, "The Ebullient Transhumanist and the Sober Theologian," 98.

² Wolfgang Koch suggested in conversation that this is a participation in divinity, a mingling similar to that of wine ("work of human hands!") and water at mass (symbolic of humanity and divinity).

Such a properly subordinated technology is not outside of the biblical vision. It is important to note this well, so as not to overreact to the modern world of technology. We have observed earlier that we have spun ourselves into a cocoon of technology, including into artificial materials. In isolating ourselves from nature, we have isolated ourselves from the God of nature. In reaction, we may now be tempted to go “back to nature,” e.g., going back to the garden of Eden by leading a “green” lifestyle. And this may be good as far as it goes – though in isolation from further considerations it tends to turn not only against technology, but against its maker as well, i.e. against God’s image and likeness. The real image of our redemption, however, can be found in the Book of Revelation, and it is not a garden, but a city, the heavenly Jerusalem. Here, our redemption even picks up the technology of Cain (e.g., Tubal-Cain’s metalwork of musical instruments: the seven trumpets). In fact, this heavenly Jerusalem appears to be nothing less than a purely artificial environment. No animals are mentioned, and the only plants are the trees of life (and even those may be understood symbolically). The rest is inorganic matter – and artificial inorganic matter at that. The conflagration of the cosmos and its elements described in the second letter of the apostle Peter creates a new heaven and a new earth even in its material substrate. The “technological” application of fire (important in hominization and in the industrial revolution) persists in its product: earth becomes like jewels and pearls; water becomes like glass. And the result of this transformation is a good thing, for it is an elevation of these materials, as St. Thomas Aquinas’ explains.¹ It corresponds to the elevated state of our own resurrected body, for which it creates an appropriate environment.² Like our modern sleepless cities, there will be no night. But here the light is not artificial, electric light; it is the light of God himself. And this, then, may give us a further clue for redeemed technology: it must be a gift from God. The new elements in heaven are not made in human furnaces, but in God’s own fire.³ Only God can change elements, we can only use them. The heavenly Jerusalem was not built by Cain and Tubal-Cain, but by God, for it “comes down out of heaven from God, prepared as a bride adorned for her husband.”⁴

This bride is, of course, the Church and this may supply our imagination with some additional orientation. Unlike Adam and Eve, we do not live in the Church naked, but clad with baptismal garments, i.e. in the technology of clothing.⁵ But like the garments that God made for Adam and Eve (Gen. 3:21), this is a gift, the gift of grace. Grace does not destroy nature but presupposes it and lifts it up. This is also how a redeemed technology must operate. Our instrumental causality begins in God as the principal agent and it must elevate, not destroy, the nature that he has made.

1 See Thomas Aquinas, *Summa Theologica* III, Supplement, q 74, 5 and q. 91.

2 Thomas Aquinas, *Summa Theologica* III, Supplement, q. 82-85.

3 According to Aquinas, the fire is qualitatively, but not numerical identical with earthly fire (for the latter is also cleansed), and it acts as instrumental cause of God’s action. *Summa Theologica* III, Supplement, q. 74, 3, ad 1 and ad 2.

4 Rev. 21:2. When the Israelites conquer and settle the promised land, they do not build cities, but they take them over from others, somehow as a gift from God. This includes David’s conquering of Jerusalem. Is there a way in which we can “conquer” modern technology in a similar mode? Perhaps. But it may still include the “woes” of the book of Revelation, as it also may include destructions like that of Jericho.

5 The Church is itself both a body (the mystical body of Christ) and clothing (namely, architecture as an analogue to clothing).

The Book of Wisdom contrasts the dead idols made from wood with another kind of wood:

For blest is the wood through which righteousness comes about; but the handmade idol is accursed, and its maker as well: he for having produced it, and the corruptible thing, because it was termed a god. (Wis. 14:7-8)

The wood that is meant here, is the wood of Noah's ark, and the ark surely is an image of a God-inspired technology.¹ God instructs Noah how to build it (as he does later with the Ark of the Covenant). But the ark is also a prefiguration of the Church. And the Church, too, has its maker: Jesus, the son of the carpenter Joseph, whose tool was a piece of dead wood which became the tree of life. For "the Father and I are still at work" (Jn 5:17). Jesus in collaboration with his Father (and analogously with his foster father St. Joseph) is the model for our making and technology. We, too, need to collaborate with the Father, in Christ.

This applies also for the technology of language, of communication. If, as we have said, Adam's naming of things continues the creative speaking of God, then Jesus, the second Adam and the Word of God itself, is the ultimate model for our use of language. If technological devices such as Twitter do not accommodate this use of language, then we ought to revise them.

The model for all of these kinds of "media" and technical mediations are the liturgical rites and sacraments of the Church. In them, the minister of the sacrament is appropriating the words of the Son (in persona Christi), who, with the Father, is still at work. Made on this model, our productions do not become idols, but icons of God's presence. However, here, too, we need to begin from the right end of things. The model does not suggest that we introduce secular technologies into the celebration of the sacraments,² but rather the opposite: allowing the reimagination of our technologies to be inspired by these celebrations, i.e., making them more liturgical as well.

When Jesus instituted the sacraments, he took into his hands the work of human hands – bread and wine – and elevated it, supernaturally. Human beings cannot do the same except "in persona Christi." Sacraments are an exception, but nevertheless also a model. There is no algorithm that will tell us how to follow this model in the rest of our lives. The following of Christ is not itself another technology that we could figure out. We must trust him, we must talk to him and we must follow him. Then our technologies will follow him as well.

¹ Unlike the gods from whom Prometheus must steal the fire, God does not begrudge us our technology; he is even willing to teach it to us.

² This was an unfortunate idea of the 1960ies, when faith and science were brought together, e.g., by celebrating Ascension Thursday with rocket and telescope installations (Blaise Schauer) or by designing chapels as laboratories for liturgical "experimentation" (the laboratory as another technological metaphor). Cf. Osborne, "From Sputnik to Spaceship," 234f. This has it precisely backwards.

AI AND OUR RELATIONSHIP WITH OURSELVES

Marius Dorobantu,
Research associate and lecturer in the Theology & Science department
Vrije Universiteit, Amsterdam

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In a Christian discussion of what it means to be human in the age of AI, our relationship with ourselves is a particularly relevant focal point, alongside our relationship with God and with each other. Our 'relationship with ourselves' is an umbrella term that covers all the ways in which our character and self-perception might be affected by interacting with the AI technologies that are increasingly present in our world and in our lives.

In our view, the aspects that are most worth paying attention to revolve around concepts like human autonomy/freedom, virtue, flourishing and dignity. The challenges and opportunities brought about by AI with respect to the above can be discussed at both the individual and collective levels.

AI and the challenge to human autonomy

In our relationship with modern technology, we are obviously often making a tradeoff, either consciously or unconsciously. We trade our attention and information about ourselves for the convenience and opportunities provided by AI-powered applications. The latter is hard to overestimate because technology endows us with quasi-superpowers, which would have been unthinkable only a generation ago. This positive aspect of the tradeoff should not be neglected. It is the giving-away-information part that raises some ethical problems, especially when the consequences of doing so are not made clear to the user. However, beyond these two visible parts of the bargain, there is arguably a third, invisible one: the voluntary outsourcing of many of our cognitive capacities. Having a machine do all kinds of things for us can lead to the **atrophy** of our ability to do those things. This is evident when it comes to our navigation skills, which is a rather trivial example, but the same can be true of our ability to make decisions or moral judgments.

This concern regards both the individual person and society at large. Individually, it might seem innocent to let the algorithm choose for us the next song or movie in the playlist. But things complicate very fast when dealing with aspects of our lives where more is at stake, such as our career choices or romantic lives. Collectively, we seem a bit too quick (and eager) to delegate difficult decisions, such as those related to judiciary sentences or hiring. Ethically, there should always be humans involved when big decisions are made about the lives of other humans (and the right to ‘appeal to a human’ should always be available). In addition to that, theologically, there is a problem with delegating important decisions to machines, and it relates to human responsibility. The Judeo-Christian notion of being in the image of God is both a privilege and a duty, meaning that we are entrusted with ultimate responsibility for God’s creation. If we can harness the algorithms’ crunching power to make better decisions for all creatures, then that is undoubtedly something blessed and perhaps even a moral imperative. But a total abandonment of our responsibilities to AI, such as in the popular utopia of an artificial superintelligence that could govern the world better than us, seems theologically problematic.¹

It is likely that most people, if asked, would have a strong preference for remaining in charge of the big decisions, both individually, in respect to their own lives, and collectively, as a species. We seem to have this desire for autonomy and **self-determination** planted very deep in our psyche, which is not at all surprising from a Christian perspective, given the *imago Dei* doctrine.² It is thus essential that AI technologies do not chip away at our autonomy in a paternalistic fashion. Humans need to be able to remain in charge of the things that are important to them, even if that means they sometimes make “sub-optimal” decisions, which AI would have gotten better. This is because the opposite scenario, where AI paternalistically decides in our stead because it (thinks it) knows what’s best for us, is a dangerous slippery slope, leading to dystopia.

Some voices cheerfully prophesize a future world where robots whose intelligence exceeds our own will take care of all the work, research, and exploration while providing us with the resources and entertainment necessary to satisfy our needs. They will treat us similarly to how we treat our pets.³ However, for the above reasons, it is naïve and dangerous to believe that people will be content with such a life. Such predictions betray a profound misunderstanding of human nature and how humans flourish. If it is true that we value our freedom of choice and autonomy so much, even with (or precisely because of) all the inherent risks, then we should design technologies that enhance or at least preserve our agency.

1 Marius Dorobantu, «Why the future might actually need us: A theological critique of the 'humanity-as-midwife-for-artificial-superintelligence' proposal,» *International Journal of Interactive Multimedia and Artificial Intelligence* 7(1): 44-51, 2021, Doi: 10.9781/ijimai.2021.07.005.

2 Marius Dorobantu, “Human-Level, but Non-Humanlike Artificial Intelligence and a Multi-Level Relational Interpretation of the Imago Dei,” *Philosophy, Theology and the Sciences* 8(1): 81-107, 2021, Doi: 10.1628/ptsc-2021-0006.

3 Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies*, Oxford University Press, 2014

Another aspect of our interaction with AI, which goes at the heart of the issue of human autonomy, regards all the ways in which we are being **deceived** and **manipulated**. Deception occurs when it is not obvious that we are interacting with an AI algorithm. This is sometimes the case with chatbots and Twitter trolls pretending to be human. A more insidious form occurs when algorithms subtly define our choice space and nudge us one way or the other while simultaneously hiding their activity and making us believe that it is we who are behind the wheel. Manipulation is even more evident when profiling and hyper-targeting are involved. As the documentary, *The Social Dilemma*, very graphically shows, tech companies create virtual profiles of each user and continuously refine them based on each action we take online.¹ With enough data points, these algorithms can reach a level where, in the words of the historian Yuval Harari, they know us better than we know ourselves.

If used correctly and shared with the user, new information about us can increase our self-knowledge. Phones give us weekly screen-time reports and smartwatches can detect early signs of illness, based on tracking our heart rate and other body measurements. Collectively, our algorithms can reveal inherent biases and blind spots in the data used to train them. AI can thus act as a mirror in which we see ourselves as we really are, without too much space for self-deception.

But when such information is kept from the user and turned against them by being used to trigger specific behaviors, it is no exaggeration to call this an assault on human autonomy and freedom. Is it virtue that such algorithms seek to cultivate in us, or its opposite? In Christian traditions, we have an eerie correspondent for such manipulative intelligences, namely, devils, who ceaselessly collect information about us and then try to use it by tempting us with just the right personalized thoughts and temptations. Without insisting too much on the remarkable resemblance between social media algorithms powered by AI, and the traditional picture of demonic intelligence, we can simply note that this comparison gives clear pointers about what AI should not be like. Whether intentionally or not, in time, our interaction with these algorithms does transform us in significant ways, and this is something we should pay particular attention to.

Human flourishing in a digital age

From a Christian perspective, the most relevant criteria are the habits being fostered in us and how much closer or farther we are being moved in relation to **virtue and flourishing** as a result.

One way technology can promote an egocentric engagement with the world is if AI makes things too convenient and tailored to our individual needs, thus training us to think that reality exists only to give us what we want. Instead of inhabiting a shared reality, where inherent obstacles and some level of adversity are crucial for growth as human persons,² we might end up living in custom-made worlds, where everything is made maximally easy for us, but where there is little possibility of growth and fulfillment in the long term. Seeing the world only through the

¹ *The Social Dilemma*, directed by Jeff Orlowski, Exposure Labs, Argent Pictures & The Space Program, Netflix, 2020.

² Paul Bloom, *The Sweet Spot: Suffering, Pleasure and the Key to a Good Life*, Random House, 2021.

prism of one's desires is arguably an impoverished way to live one's life, which is precisely why pride is considered to be so damaging for oneself in a Christian worldview.¹

This kind of scenario turns dystopic if we imagine the algorithms anticipating human desires and catering to them before they even arise. Humans grow and become themselves precisely by learning how to manage their desires and cope with adversity. If all this process is short-circuited, there is a danger that humans might become infantilized and reduced to mere consumers fed by the algorithms. Furthermore, the kinds of desires that AI can stimulate and satisfy are arguably not the ones that are ultimately most important for us. Our deep existential questions and the so-called "God-shaped hole in our heart" are something AI can do little about except temporarily distract us from them.

Another way in which technology might impoverish our experience is by reducing our engagement with the world to its instrumental dimension and losing out on all the richness and benefits of a deep life. Human agency and cognition cannot be reduced to mere optimization and planning because such a model does not account for the interpersonal dimension. We give ourselves to one another and to our work. How we achieve something is, therefore, as important as what is being achieved. In addition, by deeply engaging with the world, we not only develop skills – which might indeed be made redundant by AI – but a texture of mind that can build and appreciate complex things. There is an argument that AI could do all the easy and unimportant stuff for us so that our minds become free to roam at higher, richer levels of cognition, such as art and contemplation. But without the laborious effort presupposed by a deep engagement with the world, we might find ourselves incapable of handling those complex, richer dimensions of existence.

Moreover, the fact that our interactions with our friends and with the world are always moderated by AI-powered social networks and newsfeed algorithms can have effects that we are not even aware of at the moment. Consider the following example: your Facebook or Twitter feed is an odd mix of personal updates from friends and family, funny memes, and dark news about global politics and the economy. I think this mixture in itself changes our perception of reality. If I see news about atrocities in Ukraine between two funny cat pictures, my empathy response won't be the same. Somehow, even the world's most horrific tragedies become nothing more than just another form of entertainment for my mind, something new that would take me out of my boredom and give me a temporary boost of dopamine. The world becomes a screen that exists to offer me novelty and entertainment, and I am at the very centre, the protagonist for whom everything unfolds. In the long run, this arguably makes us more selfish and less sensitive to the suffering of others and is something we should pay close attention to if we are to remain fully human in the age of AI.

¹ Jordan Joseph Wales, "Narcissus, the Serpent, and the Saint: Living Humanely in a World of Artificial Intelligence." In *All Creation Gives Praise: Essays at the Frontier of Science and Religion*. Ed. Jay Martin. Washington, D.C.: Catholic University of America Press (In Press).

Finally, when we analyse AI's potential impact, we should also pay attention to our self-perception – both individual and collective, as humanity. Individually, AI-powered social media algorithms are already notoriously affecting our self-image by infusing it with a hyper-awareness of how others perceive and appreciate or judge us. Wanting to be popular is natural to us, a propensity rooted deep in the evolutionary history of our social primate species. However, being able to continuously monitor that with precise figures, such as the number of likes or followers, is what is entirely new, with potentially devastating effects on our mental wellbeing.

Intelligence, dignity, and our evolving self-understanding

From the collective perspective, continued progress in AI will likely affect humanity's picture of itself in the long run. If algorithmic machines can do so many of the things that were uniquely available to us, does that mean we are also algorithmic machines? Already in the 1960s, amazed by the recent capabilities of the first generation of AI programs, philosophers started to wonder whether human cognition too might perhaps be explainable through a computational theory of mind. If AI ever reaches general intelligence, will that make us think less of ourselves?

In that respect, our attitude toward AI so far might serve as a cautionary tale. We are only fascinated and in awe of technology until we understand how it works. As John McCarthy, one of the AI pioneers, said, 'as soon as it works, no one calls it AI anymore.'¹ This is why 'true AI' has always been an ever-receding horizon. We tend to correlate intelligence with mystery and even magic, so we only regard as truly intelligent that which we do not fully understand.² In the future, this propensity could backfire because we might arrive at a much clearer understanding of our own selves and how our intelligence comes about. If that moment ever comes, we should be careful not to tie our **dignity** and self-worth to our perceived intelligence. Christian traditions emphasize that we are worthy of love and respect not because of a particular intellectual feature but because we are created, redeemed, and ultimately loved by God. The advent of AI can then be regarded as a blessing in disguise because seeing machines outsmarting us should once and for all cure us of our tendency to correlate human dignity with intelligence.³

¹ Moshe Y. Vardi, "Artificial Intelligence: Past and Future," *Communications of the ACM* 55(1): 5, 2012.

² Marius Dorobantu, «Imago Dei and robots: Theological anthropology in the AI age», [forthcoming] 2022.

³ Marius Dorobantu, "Cognitive Vulnerability, Artificial Intelligence, and the Image of God in Humans," *Journal of Disability & Religion* 25(1): 27-40, 2021, Doi: 10.1080/23312521.2020.1867025.

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CONTACT

General Secretary OPTIC : dominiqueraphael@optictechnology.org

Site web : <http://optictechnology.org/>