

A THESIS IN THE PHILOSOPHY OF
TECHNOLOGY

Techno • Theology

*Toward a Theology of the Technological
System,*

after Jacques Ellul

ὅν τὸ πᾶν — *the All is One*

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Abstract

*“That which desacralizes a given reality
itself becomes, in turn, the new sacred
reality.”*

— Jacques Ellul

This thesis carries the late, theological work of Jacques Ellul to its logical conclusion and proposes a *techno-theology*: a reading of modern technology not as a neutral instrument but as a quasi-theological power that organizes the whole of modern existence. Departing from Ellul’s antagonism between technique and revelation, it treats the two as structurally congruent and asks what kind of theology the technological system silently practises.

It proceeds in seven movements. After locating the topic between a European and a Chinese “cultural ecology,” it defines theology functionally — through seven criteria of orthodoxy, cosmology, dogma, sanctity, catechism, eschatology, and soteriology — and shows their close analogy to Ellul’s seven attributes of the technological system. From the trenches of the *Somme*, by way of Ernst Jünger and Heidegger’s *Gestell*, it reconstructs how technique became the metaphysics of the age. It then turns to a *cybernetic gnoseology* — Whitehead’s God, the alchemical feedback-loop of Hermes, and individuation through information — before advancing a *digital theology* in which the universe is read as a virtual finite-state machine, and pan-computationalism as its cosmology. The final movements weigh transhumanism and the Omega Point against an

eschatological ethics, and close by naming technology a trickster and psychopomp: neither devil nor god, but the steersman fractally emulating the operating system of the cosmos.

The argument is, by the author's own admission, speculative and conjectural — an initial consolidation of a vast domain, written in the conviction that the obsolescence of our old paradigms now outpaces our theories, and that an Eurasian philosophical joint venture is required to think technology to its end.

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I · Introduction

1.1 · Documents, Literature, and Material

BEFORE JUMPING INTO THE THESIS, THERE ARE A FEW

Before jumping into the thesis, there are a few introductory statements required to clarify the full context of this paper. First, it is crucial to inform the reader at this point, that the thesis is authored by a European student (from Luxembourg, to be exact, a tiny country landlocked between Germany, France and Belgium) who had the honour to study on a Chinese government scholarship at Inner Mongolia University. As Europe and China both compose a distinct "cultural ecology", it is no tiny intellectual task to build a bridge linking both together. Often, we are thoroughly unconscious of the particularities of our own home culture, since it is the contrast between the homely and the foreign which helps us re-evaluate our own identity. For my case, it was exactly this contrast which rendered all the more transparent the particularities of Europe which have not been revealed to me prior to my life-changing stay in China. Coming to China, I soon realized that the efforts made by the Chinese to understand the West have largely outweighed the West's effort to grasp China.

Since I was fascinated by Chinese culture for all my life, the "Heimischwerden" in China has been comparatively easy, besides, modern information technology played a huge role in facilitating the whole process. Technology has greatly assimilated the East to the West in many regards and created an auxiliary techno-culture determined by the same paradigms.

For Europeans, philosophical (and theological) topics were the focal point for the initial, hermeneutical task of intellectually understanding the Chinese world. This initiated a continuous hermeneutical process of deciphering needed to be solved by "the philological gap" which still somehow seems to prevail between both systems. This I can say with great confidence, as learning Chinese made me feel like the former languages I was taught in Europe, were but a few dialects deriving from a singular "Franco Germanic mother language" completely unrelated to Chinese Hanzi.

Over the course of the history of technology, that is my conviction, an "Eurasian" philosophical joint venture is required to deal with the intellectual challenges caused by technology. As the Eastern tradition of "thought" is not logocentric, but holistic, in the sense that it integrates the whole existential phenomenology of the subject into the metaphysical project of achieving authentic knowledge. As authenticity in relation to existence does not exclusively lie in the abstract concept, quite the contrary, the intensity of the authenticity cannot but be mediated through flesh and blood.

There will not be enough space to commence with the defence of epistemological and ontological first principles, as it is so common to the German philosophical tradition but will proceed to tackle technology while nonetheless granting occasional strokes of insight into epistemological and ontological questions. Given the vastness of the topic, I am (at best) able to arrive at preliminary conclusions about the topic. This work shall be seen as an initial consolidation of the domain tackled.

1.2 · The Meaning of the Topic

The meaning of choosing this work stems from the personal intellectual quest of the author to arrive at satisfying conclusions about the human condition in our age. Like Hegel saw the Owl of Minerva

flying at dusk, it seems like the "end of the old era" is transpiring and a new age is at stake, the wisdom of the old age risks to be rendered obsolete and untimely. Besides intellectual speculation about the metaphysics of both theology and technology, it also tries to conceive a paradigmatic shift which might be realized in the digital age. As this work heavily relies on conjectures, it is speculative in its approach. The shift from the analogue to the digital technologies poses hermeneutical issues which do not encompass a sheer phenomenology of tool-using civilizations but try to shake the foundations of our worldview as the irrational "myth-making machine", the human psyche, is considered as a crucial factor. This work tries to provide a pattern of thought which understands mankind as a being in transition to a substantial transfiguration of its own nature. It provocatively tries to bridge the gap between the old (tradition, religion) and the new (modernity, technoscience) by allowing them to converge. Technology is interpreted as the new origin of dogmas, and not just as a tool, to understand its quasi-religious meaning for modern society. At the same time this work tries to point towards the new epistemological horizon which is unveiled by information technology and the curious insights we are currently generating using software and computational simulations. As such, there is a specific task for the philosopher of science and technology in this age which transcends the limited scope of the first, second and third Industrial revolution.

II · Commentary on "Théologie et Technique"

ACQUES ELLUL'S WORK ON TECHNICS AND THEOLOGY

J was the main source of inspiration for selecting the topic of this paper. When I first stumbled upon the book "Théologie et Technique" in 2019, I gradually became convinced that carrying the theme of his work to its logical conclusion was of utmost importance for further developments inside the field of philosophy of technology and beyond. It was in fact Yves Ellul, Jacques Ellul's son, who published the just-mentioned French book in 2014, exactly 20 years after his father's death. It contains less-known material of Ellul's archive, for example previously unpublished essays and letters about the prevailing theological issues regarding the phenomenon of technology. As this book has yet to be translated into other languages than the French original version, it so occurred to me that the continuation of Ellul's intellectual legacy and the interpretation of his late work would make an excellent starting point for my own philosophical observations and research. Although being a proficient French speaker myself, I have only read Ellul in the English translation prior to reading this book. I was perplexed by the idiosyncratic way Ellul was using the word "technique", which has often been loosely translated with the term "technology" in the English editions of his books.

Ellul's conceptualizations appeared to be in fact deeper than what was generally conveyed of him inside academia. Ellul, so I thought, was insinuating a "theological undertone" with his use of the French term "technique" which has not been properly conveyed in the translation of his works: the nuances of the French language

and style dissipate. This led me to the conclusion that the most common translations of Ellul's terms "Technique," "technique," and "société technicienne" have caused interpretational distortions in all the translated versions of his work which made them unable of giving a proper account of Ellul's implicit theological reasoning.

This issue stems from well-known sources of bias and is neither new nor surprising inside the philosophic tradition, as translation poses a major cross-cultural and inter-epochal challenge for scholars. In the example of Ellul, it seems as if the translators have (understandably) sought to evade the manifold hermeneutic troubles by simply translating "technique" with "technology", which made the argument more placative yet less accurate and loyal to the original. These translations are not wrong in the classical structuralist sense and they surely cause intended effects, yet they are partially incomplete in reference to the original to say the least.

One of the big challenges about Ellul's usage of the term "technique" in the French original is its fundamental breaching and extension into the vast domains of practical skills as such, whether they are instrumentally mediated or not. It is technique which threatens to dominate modern society by imprinting its absolute character on it. Technique is not just the sum of the machines and technical instruments applied by a society, but the totalitarian attitude with which the proprieties of technology, which will be elucidated in the following chapters, are dominating both common sense and intellectual reasoning. To the technological mindset, reality as such is perfectly describable through technical terms which are universally applied to every context. In the technological society, Technique is first and foremost an ideology before it is a methodology or a tool, extending the meaning of the term way beyond the Marxist means of production. Ellul, being a renowned Marxist scholar, claimed that if Marx had understood this sociological conditioning factor in its entirety and how it would develop in the

20th century, he would have posited "technique" as the thrust of his social dialectics rather than capital, which appears too structurally independent from the technological system in Marx more naïve techno-optimism. The question which needs to be asked here is whether it is still meaningful to apply an understanding of capitalist dynamics which originated during the early stage of industrial development (Industry 1.0) when we are on the verge of having fully automated industrial factories (Industry 4.0) becoming the new standard? Ellul himself did not witness the implementation of Industry 4.0 during his lifetime, yet he encouraged future generations to "do the same Marx did", meaning: to capture the complete picture of the historical moment society is embedded into and do a critical analysis of every aspect of the given circumstances and then conclude. It is not enough to blindly apply Marx writings when the only orthodox Marxist stance is to deconstruct the status quo at any given time from scratch.

By evaluating Jacques Ellul's intellectual heritage, one might come to the conclusion that Ellul was in some sense living a "double life", one as stern sociologist and sceptic of the technological reasoning and the technologization of society, and one as a Christian theologian whose deepest concern were ethical questions and the quest for non-violence and freedom in our society and for our age. Inside the field of philosophy of technology, the first stated version of Ellul's intellectual life is prevailing while the theologian Ellul remains largely unstudied and obscure. In the book "Techno-theology", Jacques Ellul's intellectual pluralism and his two major topics of thought flow together post-mortem and thus making a more complete account of Ellul's general worldview possible. Believing that technology desacralized nature and became a sacred value-in-itself, he renders it possible to understand that technology is not just a profane and neutral tool which heralds a post-sacrosanct age.

"That which desacralizes a given reality, itself in turn becomes the new sacred reality" Ellul

"That which desacralizes a given reality, itself in turn becomes the new sacred reality"

This work is dedicated to both Ellul's theological and sociological ambition by thinking "theologically about technology" and vice versa. While Ellul left these two domains mostly separated from each other without letting them converge entirely, this paper opts for a conceptual assimilation of both extremes. In Ellul's reasoning, technology is the "end of theology", as both seem to be mutually exclusive. Only a limitation of the technological system would make an authentic theological revelation and revaluation possible for us. This paper uses a slightly different strategy by building a type of theory which directly aims at understanding the theological dimension of the technological system and technique as such, as if both were totally congruent in structure and meaning. The holy grail of this quest being the setting up of a "proper" theology to describe and understand the technological society, the technological system and the technological mindset which determines modernity and modern mankind in all its actions.

"When mankind figured out to be free, it can finally limit itself." Ellul

A revaluation and an actualization of Ellul's legacy in the 21st century could not possibly be completed without including his plea

for a non-violent ethics. In "technique et theology" it clearly shows that he, at the end of his life, was deeply concerned by this. He works out four ethical pillars which compose the conclusion of a lifetime of intellectual work put into pondering the moral core questions of mankind. On ethics Ellul's thinking subsists and every Ellulian evaluation is profoundly carried along by his strong sense for the urgency of a collective ethical responsiveness towards the human condition in the technological age:

- First, the "ethical axe of non-power", which is not to be understood as impotence, namely the inability to do something in particular, but the ability to self-restraint by giving up doing "whatever is (technologically) possible" for the sake of it being possible. Technology must produce everything it can, thus, so Ellul, imposing ethical taboos on technology, like limiting the nuclear research program, is a formidable ethical act. This is, all things considered, the essential point of the work and explains why the publishers have retained it as the subtitle.
- The second axis concerns the freedom that the technological society emphasizes but which are futile and superficial: true freedom is that which is exercised in the choice for or against the sacred of the technique which has alienated man under the pretext of liberation. An authentic relation to freedom and not just the realm of necessity, which is exemplified in technology, is axiological for an ethical society.
- The third axis values the necessity of fruitful conflict as a precondition to the survival of humanity and its most noble ideas. Conflict, so Ellul, is linked to life itself, as opposed to the computer which excludes any dissension, any negotiation, any resistance, and any negativity. The freedom of the individual to dissent and to avoid the technical consensus for the sake of the betterment of authentic social conditions is an ethical maxim.

- Finally, the last axis is about the ethics of transgression and desecration, which poses a realistic and fair attitude towards technical objects: it is not the objects in-themselves that should determine us, which they are doing on a large-scale already, but it is us who must find a breakaway path to authentic human self-determination again. The technical must return to its rightful place in the world of objects and operate as a helpful tool whenever it is required to. Where technique dominates, the ethics of non-violence are not respected. Means and goals are muddled up, creating a systemic threat to humanity.

If one has read the earlier works of Ellul, one sees that he devoted his life to dealing with the matter. This thesis is not a plain scholarly work on Ellul and does not seek to merely re-interpret his wordings. On the contrary, Ellul's work is acknowledged as relevant and as a starting point to delve deeper into the intellectual and spiritual challenges of the 21st century. However, a radical innovation of Ellul's work is at times impossible as recurring topics, like ethics, have been extensively dealt with by him, as he is always showing genuine concern of the spiritual prosperity of humanity.

Ellul, being a devout Christian Protestant, based his ethics directly upon the Bible and developed a "theology against the leviathan of technology". In his theology, in a typical Protestant manner the return to the transcendent God and the revelation of the Bible have been the sole refuge from the cold, impersonal world of steel. Because technology "limits mankind in his finitude", theology needs to clear the path to authentic, infinite being again. Technological questions are, so Ellul, of no concern for his interpretation of Christianity, because they do not allow moral, personalist reasoning, which he sees as the sole path to humanist ethics. With all consent and lines of agreement between the author of this work and Ellul, the antagonistic relation of technology and theology is systematically challenged at certain points in this paper and consequently it is

not unlikely that Ellul would have personally disapproved of some of the philosophical arguments brought forth in this paper.

It is certainly a mammoth task to deconstruct the functioning mechanisms of society and identify the sources of inequality, injustice and alienation. Ellul's work is the foundation upon which this paper is set up, yet it will depart from Ellul in many crucial points besides ethics itself.

Both philosophy and theology should start neither with God nor with Man, for there is no bridge between these two principles, but rather with the God-man.

— Berdyaev

The way the term theology is applied in this philosophical paper is highly idiosyncratic. Theology is treated as an umbrella term for any systematic attempt or general tendency to collectively arrive at an "absolute worldview" by offering "completion" through any given (technological or pre-technological) medium, may it be intellectual speculation (philosophy, speculative physics, political theory, etc.), divine revelation (religion), charismatic leadership and enthusiastic mass movements in general (activism, politics, etc.). The term is not as normative as one could suggest, quite the contrary, the suggestive power inherent to the "religious motive" of forging collective identity (etymological roots of religion lies in "uniting") as a formative element of the civilizing process is the origin of what is called theology at this point. As such, theology is beyond mere intellectualism, sophism and archaic belief systems, but it is seen as a tool of intellectually unifying the largest and tiniest, the sacred and the profane, life and death. Theology and its "sacrosanct" dimension touch on the "psychological myth production" of the people which

turns into the common denominator of a people and the organizational core of a society. In the most general sense, every major historic attempt to craft a society around certain intellectual principles/ethical ideals/cosmological parameters/supernatural revelations/personal charisma or dogmas, lest they be religious or secular, has a concrete theological dimension it insinuates and adheres to as theology is rationalized mythology.

"Theology is rationalized mythology."

A constitutive theology is a closed system from which organizational structures, information flux and cosmological authority is derived, it is a paradigmatic philosophy with religious characteristics. A theological system is only open by the virtue of its self-negation, which will be called "ethical theology" at this point. Theology does not necessarily centre itself around a transcendent Deity, it can also be centred around the opposite: the absence of a transcendent Deity. Theology can deify certain ideas and let them appear as a fate which is intellectually beyond the world of factual but profane micro-truths. Any human enterprise operating from a "higher cosmological position" or a "revelation of the logos" has the dangerous, yet highly potent tendency to affirm its self-justification through formal rites and from an authority which operates beyond reasonable doubt (dogmatism). If the dogma is not mediated through the idol, which in typical Baudrillardian fashion does not necessarily convey the presence of a higher cosmological power but a simulacrum, it can be paramount to a "mystical participation" (Lévy-Bruhl) and thus tap into cosmogonic energies to herald a new era (dispensationalism)

around the birth of a new self-consciousness. The common usage of the term theology only encompasses apologetic and sometimes reactionary, metaphysical theism and has generally a negative connotation in other academic fields. The term, however, is enriched by additional nuances outside the traditional, religious domain. The morphology of theology is so that it has never been completely eradicated from secular academics, it has only merged into the scientific disciplines whenever they make use of metaphysical axioms outside their strict descriptive domain. For example, a theoretical physicist is generally tolerated to make speculative guesses about the origin of the universe, whereas other disciplines lack this kind of "crypto-theological absolutism" with which it can cross the mists of the unknown.

As already mentioned, a theology operates with either direct or indirect reference to a (living, dead, bipolar, castrated, phantastic, absent, etc.) "God", from which an anthropomorphic cosmology and its typical ontological presuppositions derive itself, or: to a value, idea, person which functionally and ideologically resembles a sacrosanct value in this system. Therefore, theology, as defined in this thesis, can be explicitly atheist while it implicitly adopts a substitute value for God and leads to a theocratic organization of the cosmos and society. In praxis, this results in a philosophical, scientific, ideological or religious idea to turn into the organization principle, or leitmotiv of a system. A theology, unlike classic mythology, requires a "gnosis", a rational insight into truth wrapped up in the suggestive power of the concept, or at least the claim to be in possession of "gnosis" (Voegelin). This gnosis, whether intellectually honest or fraudulent, becomes authentic when it is turned operational and transfigures society. At a later point the relation between gnosis and science and technology is given further exemplification.

A typical attribute of theology applied to politics is the tendency towards a distinct, universal meta-narrative, revealed through the

gnosis, which offers a premade "hermeneutic understanding of the historical process" and its goal. This historicism, for example, is present in the millennialism of Abrahamic religion and in modern "political religions" like Fascism and 20th century revolutionary Communism (Voegelin). This version of theology is a closed circuit and is likely to be built upon a latent monism. An open (ethical) theology is not restricted by a fixed narrative but by "interpretational pluralism" and authentic subjectivity of people, best case it lets sub-narratives merge into a dynamic meta-narrative.

This work is not a work of "presuppositional apologetics", thus it is not assumed that one particular religion is in possession of "the truth", quite the contrary, I tread on the intellectual path of Schuon, who brilliantly described the "transcendental unity of religions", by treating all manifestations of religion like geographically, ethnically, historically, sociologically determined forms of divine organizational programs which are sort of complementary to each other. Nor is it presupposed that one particular "holy scripture" contained the "one true revelation of the logos" which could not be independently arrived at by non-initiated outsiders. Since this is not a work of "presuppositional theology", this paper takes no recourse to religious dogma beyond sheer intellectual curiosity and speculation, yet the various religious attitudes in the world shall be respected and not desecrated. The functional aspect of theological programs is emphasized throughout the whole discourse and it is the structural resemblance which fuels the comparisons made in this paper. It is intended to dispel the obscurantist tendencies associated with the term.

An attribute of theology which is of particular interest when we launch a "theological investigation into technology", is that it not only organizes society in its political and ideological dimensions, but also the sociologically constructs or obstructs scientific research and the application of technology. A famous and often cited example

of theology taking such a dominant position is Galileo's struggle for the recognition of the Copernican worldview against the theological assumptions prevailing at his time. A counterexample is the modern progressivist belief in the universal benefits of technology and science being the "true deity of rationality" which is supremely above religion by being a non-religion (which I doubt exists). Another crucial aspect of a theological system, as defined in this paper, is a standard of "orthodoxy", meaning the pursuit of a "correct" way of living. The criteria of orthodoxy vary considerably from system to system. In Christianity it being, for example, the true "imitatio Christi", whereas in the technological society it might be "living in accordance with technology", meaning finding the correct and efficient way of using things and bringing personal life in harmony with technology, meaning to exploit technology for your advantage. Theological systems require a "catechism" to maintain their power and to recruit the new generations and the people "outside the system". Catechism, although a Catholic term, serves as a great, yet provocative example of the structural similarities between kerygmatic ambitions of a church and the spread of scientific, philosophical, and mostly technological know-how in a society organized around these parameters.

A theology, according to my own definition, has:

- I.** a criterion of orthodoxy
- II.** a "complete" cosmological framework
- III.** a meta-narrative based on dogma or gnosis (ideology)
- IV.** elevates values to "sanctity" (God)
- V.** applies a form of "catechism" to universalize itself
- VI.** has an eschatological outlook on history
- VII.** is infused with a soteriological expectation

These seven criteria of theology are in close analogy to Ellul's definition of the technological system which will be elucidated in the next section of the work (2.1). Yet, there are crucial differences between both, because the abstract and rational terminology applied by Ellul is now soaked in symbolic content related to the anthropology of religion and the human psyche in its irrational components beyond and below conscious cognition. Whereas Ellul's technosystem is uniquely describable in its own, objectivist terms, which are devoid of anthropocentric content, the definition of theology forwarded in this thesis emphasizes mythopoetic anthropology in its relation to technology: the object of theology is forever aligned with subjectivism and irrationality.

Firstly, the criterion of orthodoxy derived from the "practical nature" of theology and is applicable to human conduct in relating to what is the truth, what is right and what is the "divine" (see criterion 4). Orthodoxy is the right code of conduct inside the frame of a cosmology. Orthodoxy often is not only conducive to a moral code of conduct, but also to the achievement of eschatological rewards. (see criterion 6)

The second criterion of "completeness" of cosmology. This does not indicate that a given cosmology is final and proven to be true beyond doubt from a scientific perspective, but that it is instrumental to construct a common referential cosmological framework which through its own language, symbols, etc. strives towards absolutism and creates a homogenous being-in-the-world. Only by setting up a complete cosmology the world turns into a complete and thus closed system.

The third criterion can be derived from the epistemic ambiguity of theology and is in close analogy to Voegelin's work. Theology is sometimes selectively obscure about trivial topics and overly explicit about obscure ones (with regards to the scientific mindset), and for something to be considered theological in this work, it needs to

cohere to a concept of "gnosis", which is the claim of extraordinary insight. This claim is often instrumentalized to grant social power to the priest or the scientist who is in possession of the "godlike insight". Gnosis is wrapped up into dogma, which is the compromised form of knowledge which shall spread throughout society.

The fourth criterion is about the non-triviality and non-profanity of certain things or concepts in the presence of a theology. Certain qualities, objects, ideas, etc are elevated to the domain of the sacred, where divinity in some sort is projected onto a fetishist fixation and glorification through cultural conditioning. The transition from one paradigmatic worldview to another is often accompanied by an "iconoclasm" and a modification of common language.

The fifth criterion stems from virality or contagiousness through rites and cultural incorporation of the theology. When the elevation to sanctity of certain values/things has led to the consequent dogmatization of a certain entity (tangible or non-tangible), it needs to be spread out and transmitted. The dogma is the universal representation of non-derivative truth attained by "theological gnosis". The dogma is static and a fixed rule, as such it is catchy and memetic. Catechism is the spreading and propagation of the dogma leading to the initiation or conversion of the others. To make a theology turn into a hereditary tradition, it needs to have a catechist or kerygmatic program. This term is borrowed from Catholic theology, as one example of a historical ambition to universalize the religion through education, conversion and so on.

The sixth criterion stems from the incorporation of a mythological or rational idea of the end of time. The criterion for orthodoxy is often derived from this macro-cosmological event (cataclysmic natural disasters, the transitioning of aeons, the appearance of a messiah, the heat-death of the universe to name a few). In praxis, eschatological perspective serves to prevent (or like in cults: promote) extinction of the species, and/or to control the meta-nar-

rative, and/or prepare mankind for another historic epoch or even another world.

The seventh criterion is specific in the sense that it is about salvation of the soul. The salvation of mankind can take the mild form of modern progressivism, or the latent belief that history is going for the betterment of the human living conditions. Salvation is often propagated through immortality, meaning the overcoming of death, which is the fear haunting most if not even all of us. In the first place, this can mean safety, health and longevity, but is characteristically widened by the belief in the possible achievement of immortality, eternal bliss and happiness and the end of pain and suffering.

The attributes of theology are, evidently enough, not exhausted by this enumeration, yet it does its job by rendering a definition which can contain every traditional theology and new crypto theologies: "science gone wrong" and "technology out of control" can be integrated into these parameters plus it lets other socio-determining factors to be included in this list. The initial idea of formalizing theology in this fashion was -- of course -- given by Jacques Ellul, whose characterization of the technological system takes on a similar direction.

Let us remember that for Martin Heidegger it was philosophy which had the noble task of dismantling false or naïve theology. In the first step, it is indeed the task to identify naïve theology by assuming it to not only be present in religious, but also secular domains. Yet, to actualize Heidegger's idea, this relation works the other way around as well: it requires theology to substantiate a philosophy.

2.1 · The Technological System

In the trenches of Somme during World War 1, the young German soldier Ernst Jünger (1895-1998) witnessed a turning point of history. Inspired by the tales of the elders about the heroism of warfare, 18-year-old Jünger, like million other Germans and English people, volunteered for World War I. After joining a German regiment in France, he documents his experiences and observations on the battlefield in his diary. At the end of the war, the young Jünger is overall disappointed by modern warfare, he saw that some major *hybris* happened on the battlefield: the technician is replacing the soldier and the heroism of former warfare is about to vanish into nothingness. Soldiers are merely "workers of death" and technology is dominating the tides of battle. Technological advantages are now the most decisive factor in warfare and logistics have replaced classical strategies: providing the "war machine" with human resources, oil and steel is the key to victory. Tanks, which Jünger perceived as "giant steel bugs", are replacing horses, the last remaining symbol of the old, pre-modern world. The importance of Jünger's account lies in the fact that he witnessed the overwhelming power of modern technology firsthand on the battlefield, whereas academics tend to "think away" the negativity of the technology in their ivory tower. As such, Jünger had an "epistemological advantage" over the vast majority of intellectuals when dealing with this topic.

After the war, he published his war diaries under the name "Storms of Steel", reflecting his impressions of the horrors as well as the rare moments of beauty on the battlefield. He is later blamed by many in the Weimar Republic for aestheticizing the war by using a euphemistic, poetic language for what in fact is brutal destruction and ruthless murder. For example, through his eyes exploding bomb shells turn into "seas of red chrysanthemum blossoms". Jünger turned into a well-decorated soldier with an impressive record on

the field, rumours about his "invulnerability" were spreading among German soldiers: he was shot multiple (14) times during the war but would always get back to the battlefield, making him turn into a German soldier legend. In the eyes of many, Jünger was a "man of steel", the aesthetic ideal of Nietzsche.

There was one battle during World War I with a particular importance to history which he took part of: The Battle of Somme. This battle has been called the beginning of modern all-arms warfare. It was the first time in history that the chemical industry, which was the economic driving force of that time, was purposefully used for warfare: the British and French trenches in Somme were drenched by German mustard and chlorine gas. A British soldier described the pandemonium that flowed from the front lines to the rear:

"I watched figures running wildly in confusion over the fields. Greenish-grey clouds swept down upon them, turning yellow as they travelled over the country blasting everything they touched and shrivelling up the vegetation... Then there staggered into our midst French soldiers, blinded, coughing, chests heaving, faces an ugly purple colour, lips speechless with agony, and behind them in the gas-soaked trenches, we learned that they had left hundreds of dead and dying comrades."

Somme shall be remembered as the first battlefield modern chemical weapons of mass destruction were used, the technologization of warfare had taken an extreme dimension and all the former taboos associated with techno-warfare were gone by the night. As a German officer, wrote:

"Somme. The whole history of the world cannot contain a ghastlier word."

At the end of WWI, Ernst even managed to rescue his wounded brother from the battlefield and ended up at the military hospital where he received the "Pour le Merite", the highest military decoration at the time even though he started the war as a simple private. Jünger, even after the traumatizing experiences of World War One, turned into a techno-optimist at first, believing that the human brain, the heart, the hands, and the machine will merge in a higher unity and synchronize in a new machinic, yet cosmic time and rhythm. He was convinced that mankind would be able to build a new world with technology at the dawn of a "Titanic age", which the 20th century is heralding. His brother Friedrich intellectually took the opposite position of Ernst by prophesizing a technological Armageddon which will ruin humanity and planet Earth. Friedrich believed that technology will always be best at "manufacturing death", while Ernst believed in a "total mobilization" of the nation through technology, which makes new collective efforts for greatness possible. Ernst saw the worker as the new metaphysical figure on the stage of history which transforms the Earth through the application of technology. Friedrich thought that pacifism and techno-asceticism were the only way to dissolve the constraints of modernity. Although both Jünger brothers came to different conclusion about technology, it was Ernst's observations which were later going to influence Martin Heidegger and Jacques Ellul, two of the most important continental thinkers on technology. Technology, so Jünger, is the metaphysics of the 20th century. Only after the second World War did he grow increasingly suspicious of the overall impact of technology on mankind, believing that human perfection and technical perfection were incompatible with each other. Striving for one, so Jünger, means we must sacrifice the other: there is - in any case - a parting of the ways and we must either chose mankind over technology or vice versa.

A stance which influenced Heidegger, who is remembered by some as the first philosopher to think originally about the issue of modern technology, and Jacques Ellul, the thinker of technique and the techno-system.

Technique is, according to Ellul, "the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity."

Jacques Ellul postulated the "technological system" in his same-named book, which is the inevitable result of technological advancement and its tendency towards the functional interdependence of technological objects. The age of the singular technological tools, so Ellul, is over because of the structural requirements for the implementation of modern technology. Technology is a unified system; it is self-determining and obliges to its own inherent process logic. The technological system is the new anthropological milieu and the dawn of the first "post-natural" environment. Mankind ceases to face unmediated, raw nature and is embedded in a system of organized rationality, which operates like a substrate to the former while removing nature from its inherent "negativity" by functioning as a smoothening intermediary. The technological system has superseded the technological society in Ellul's thinking. Technology used to make up but the decorum of society, but now, it has emerged as the systemic structure of it. Technology is not just a concept or merely our environment anymore, it has become a closed, self-referential system which has been laid over our world, a *gestell* (Heidegger). As such, it is threatening the human cognitive autonomy and the sovereignty of the Self due to its totalitarian nature. The technological system dictates a technological mindset towards every aspect of life. Since technology invaded our minds, our environment, and our lifestyle, we grow increasingly dependent of its benefits while losing touch with the essence of life itself. Quantity is converted into quality and means are confused with ends. Human autonomy is re-

placed by technological autonomy since our spectrum of social action is heavily determined by technology. A sort of pseudo-freedom from nature is bought at the price of a total submission towards the technological mindset, which constitutes a new post-natural human condition. Technological decisions compose the whole spectrum of political action and governance. Every aspect of life can be modulated using technology and life can be approached technologically as such. Technological problems require technological solutions and there is no breaking away from this recursive logic. Technology determines the course of history, replacing nature, the gods and mankind.

*"Technology determines the course
of history, replacing nature, the
gods, and mankind."*

Contemporary technology, as it was crafted in the West, bears an imprint of the mythological metadrama of the Western, Faustian soul (Spengler). Technology is a bluff (Ellul) and resulted out of a "heretic theology" which turned out to be "good science". Since faith in God's plan was dwindling and mankind started to concentrate on self-salvation, it could be said that technological invention was some sort of asceticism to create eternal sur-plus. Theology, to borrow from the German philosopher Sloterdijk, is also the science of surplus.

Ellul's critique of technology resembles Marx critique of capitalism. Ellul transposes the technological question into a meta-historical context from which the tendencies of our age appear as a direct

consequence of the appearance of a new, quasi-theological power. Like capital, the essence of technology dictates a pre-configured pattern of action and development, which is inclined to create social antagonisms as well as forming a new, plastic attitude in the minds of people. Although technology, like capital, appears to be inherently neutral, the only true neutrality, however, is constituted in our attitude towards technology and not in the essence of technology itself. Technological efficiency operates on these seven Ellulian principles which are the main attributes of the technological system:

- rationality,
- artificiality,
- automatism,
- self-augmentation,
- monism,
- universalism,
- and autonomy.

Our inability to scrutinize technology is the real danger of technology. Technology follows a law of rationalized efficiency which is detached from authentic human life in the lifeworld. The tyranny of efficiency is permeating the technological system which subordinates society to a new "guiding principle" ultimately resulting in the "sacralization" of the technological system. Formerly, it was the natural world which contained the sacred, but with the domination of nature through technology, the relation flipped around. The sacralization of one domain comes at the price of a desacralization of another. Ellul points towards an example in the third world where naturalist animism was replaced by "technological animism" within a generation. The overwhelming power of technology over the old

gods gives it the aura of sacredness. Although technology operates on pure rationality, our attitude towards it does not.

*"Our inability to scrutinize
technology is the real danger of
technology."*

The "sacred" is here just formally understood as the highest representational value of art, culture, religion, science and technology. Christian theology, for example, initiated the desacralization process of nature in the pagan occident which was finally completed by science and technology and its consequences on civilization. The emphasize on spirit as being the realm of freedom and the natural order being the realm of necessity resulted in the demystification nature but infused the early Christian theological tradition with Platonist anti-materialism (Augustine). In the first instance, this was liberating man from nature, which is more than the idealized, romantic landscapes modern man likes to contemplate from his culturally provided safe space. It was exactly the "cesspool nature" breeding and killing without care or grace, where the strong dominate the weak, which was meant to be overcome, but the Platonist induced Christian worldview only managed to supersede nature by introducing a new metaphysical dualism. The Augustinian identification of evil with materiality only enhanced this schism. Christian morality subverted the natural law by postulating a supernatural moral law, which seeks to nullify the bitter strife of organic life forms with the motive of universal salvation (soteriology).

McLuhan tried to prove that the ancients lacked the optics for a systemic approach, Plato and Aristotle only appear to have a "philosophical system" from the point of view of modernity. The idea of regarding nature as a system was only posterior to the foundation of the technological system. Our intellectual grasp of nature being shaped by the conceptual world of the technological system which has taken over. It would not be intelligible to talk about a "religious system" (Catholicism) organizing society during the European Middle Ages, although this terminology might be perfectly sound from the modern perspective. As such, paradigmatic particularities of the technological system stem from the uprooting of mankind from this natural environment and the ideological conversion happening inside him.

In the same fashion the artificial sacrality of technology is not only attracting irrational fascination and fetishization, but also taboos and dogmas. Technological dogmas, one may argue, are rational dogmas and not symbolic dogmas, yet they psychologically operate in a similar fashion: they make idols out of ideas and things. Technology also represents, so to speak, a "transcendental authority" over nature. The systemic sovereignty of technology over nature is the superiority of its complete rationality over lesser, instinctive appetites. Whereas rationality and irrationality are muddled up in nature, technology is the expression of distilled rationality. Technology is nature purged of its irrationality, yet it aligns itself with the irrational appetites of its inventor. Ironically, what is threatening the human autonomy, dignity, and self-determination most is its self-negation through its own creative achievements. Anders sees technology as becoming the main historical force in a sort of post-anthropological world. Mankind became obsolete, replaced by its own inventions. Ever since modern technology entered the stage of history, it has gradually made us switch to a techno-centric narrative of progress and every humanist perfection of moral character totally

escapes any "method of measurement". The criteria for progress are technological and not anthropological anymore. These defeatist tendencies in the cosmological outlook of Anders can be watered down to the self-negation of the creator through his own creation. The way God fell from grace of his own creation, like in the example of the Nietzschean Death of God, the same way is mankind destined to be overhauled by its intellectual child technology and its consequences.

For Ellul, the most terrifying aspect of this development are the ideological justifications for such a system. Modern ideologies are fed by an unconditional belief in technology, there is almost no real techno-critical alternative for progress. Classic Marxist theory as well as the Green Movement fail to understand the role of the technological system, it is the grid in which capitalism and the destruction of nature is embedded, the autonomy of technology is accelerating the flow of capital through computation and instant feedback and the destruction of the natural environment through the fragmentation of responsibility. There is no authentic environmentalist action possible if there is no in-depth critique of the technological system. As a matter of fact, the new technological mindset has made us think of nature, society and so on as systems in a similar fashion technology bears systemic features. The technological mindset, so Ellul, is a totalitarian mindset.

Total technologization occurs when every aspect of human life is subjected to control and manipulation, to experimentation and observation, so that a demonstrable efficiency is achieved everywhere. The technological system is absorbing every aspect of social life with its totalitarian characteristics. A techno-typical mode of thinking sets in once technology accelerates the demise of the old values which were mediated through religion and an intuitive reverence of nature. The technological system is driven by an abstract, neutral monism, namely information, which has no intrinsic under-

standing of qualities beyond binary formalizations and quality is merely defined by differences in complexity. The technological system in times of industry 4.0, which Ellul did not have to chance of witness himself, is expanding the domain of control over the digital as well as the physical, it turns purely cybernetic. The "internet of things" is expanding the formerly physical technological system deep into cyberspace.

Bureaucracy, as a chief example, is a coordinated series of techniques used to optimize the flux of information by restricting communication patterns to only include functional, task-related information. A codification of language which limits itself to technicalities without following a moral theory, except for the dictated rationality of operational and organizational technology which is required to install a bureaucratic system. Efficiency being the driving force of any social institution already means the technologization of social organization.

The ability to use electricity at some point "animated" the singular technological objects and laid the foundation for the creation technological system, creating a new matrix of technical dependencies. Internet is synchronizing the technological system around the globe with immediate action potential and a sort of "hyperconnectivity" which transcends the tangible, physical space. Cybernetic systems constantly adjust themselves to a flux of intangible information, they achieved a certain autonomy which stems from the feedback loops which can operate on nanosecond scales. In fact, machines are not communicating solely with mankind, but are feeding themselves via automated information processing. As such, the technological system operates on a kinetic and a cybernetic level, on a physical and a digital plane of consistency.

Another consequence of the theological attributes of the technological system is that it shapes our language and our way of thinking of ourselves in a decisive way. Technology is a symbolic system of

reference, with which we try to understand each other and ourselves. The machine is indeed the symbol of modernity, but the subtlety of the cyberspace does barely compare to the crudity of the socio-technological changes from the 19th until the late 20th century. Our self-understanding is now utterly linked to the dominating technological paradigm. In times of the computer, its users cannot but arrive at a self-understanding through the metaphorical alignment of the human brain and the machine. One is tempted to speculate about the ontological meaning of technology, whether we build technology in "our own image" and thus progressing to a deeper self-understanding by "unconsciously reverse engineering our own consciousness". If so, technology is indeed permeated by a cryptic theology.

The transition from scholasticism, over Descartes to Spinoza, for example, was a philosophical (and theological) quantum leap. The attributes of a transcendent God were projected onto immanent nature. The theological superstructure was thus logically inverted and applied to the natural universe. Theology was finally applied to the empirical realm of nature, without losing its apodictic potency. Here the similarities between Spinozism, theology and cybernetics are revealed because they both are teasing us with an offer of a complete and closed worldview. In antique and modern philosophy, the ontological position of man is not ultimately fixed but volatile, rooted in ideas and forms, but not in concrete personality. The intellect freed itself from itself and feeds itself from the void of consistency and give it the name of nature, god or the gods, technology, society, science, capital and so on. In theology, however, the ontological question has already been answered or worse: cannot even be posed because the symbolic systems of representation do not get a hold on it, like Heidegger's *Seinsvergessenheit*. Being is anchored in God, which constitutes the beginning and the end of all existence. God eschews all relativism; the only relativistic aspect of God is related to our epistemic knowledge of him, not to his essence. In

cybernetics, God is not the personal God of the Judeo-Christian tradition, it is the immanent God of Spinoza, the God of the philosophers, the *deus sive natura*. As such, even the epistemic relativism is finally dispelled and a Hegelian "absolute knowing" seems to be at hand. Cybernetics understood as a simulacrum of nature, and as such mirrors its properties, is the "*deus sive machina*".

Heidegger prophesized that cybernetics is going to replace philosophy, but it is more likely that cybernetics will unite with theology and a new, information-driven scholasticism is going to emerge.

2.2 · The Need for a Techno-Theology

Die Maschinenteknik ist metaphysisch begriffen eine Art, eine eigene Art der Wahrheit, aus der sich das Wesen der Wirklichkeit alles Wirklichen bestimmt.

— Martin Heidegger

Ellul rightly points out that in order to fully understand the technological system in its particularities, we need to be able to combine a multiple skill sets and adopt a panoply of perspectives which in praxis almost no one has to offer in its entirety. As the German saying goes, Goethe was the last person after the Renaissance to "know everything". As the branching of science into the sciences made prolific polymaths rarer than ever, the division among the disciplines seems to have rendered the Enlightenment project of setting up an "encyclopaedic" knowledge futile.

In modern times, so Ellul's argument, to meet the requirements to effectively understand the technological system, one must simul-

taneously be an engineer, programmer, philosopher, politician, physicist, technician, manager, chemist, astronomer, economist, construction worker etc. Since it is barely feasible to keep up with the pace of progress in the various scientific and technological domains (which Postman calls technoscience as they are understood as being together), this scenario constitutes an ideal context which is barely conceivable and (probably) never corresponds with the actuality. The technological society is where people are exclusively "either this or that" (specialists) and not the inclusive "as well as" (generalists) and all the specialist's tasks are not radically delineated from each other (like in civilizations before modernity) but only seem to derive their area of expertise through "technological particularities" related to their field. In fact, the specialist only operates only a minuscule aspect of the technological system, like in the famous analogy of the mice who try to gain a complete comprehensive grasp (best through bird perspective) from the elephant, we are unable to penetrate the core of the matter if this "omni-perspective gaze" upon technology is rendered visible and conscious. In Renaissance times, the polymaths did have this far-ranging insight stretching from theology to science and beyond which is rarely seen in modernity where experts of distinct fields often operate from the narrowness of an isolated, contextual reductionism. The danger of technology, so Ellul, stems from us being unable to interpret and understand it correctly. The "techno-unconsciousness" of mankind is the most dangerous ingredient.

Again, as the proposition of this paper is to work out a "general, comprehensive insight" on technology viewed through the lens of a "technological theology" which understands our irrational attitude towards the rigorous rationality of the "technological mindset", which in Ellulian fashion constitutes what the modern man might call "common sense". Theology, in this regard, is to be understood as being a unified worldview which understands technology from its

quasi-religious implications for human society. Theology could also be understood as a "totalitarian philosophy" in which the ontological question has already been answered to a sufficient degree. The advantage of this, as we will see, is that exposes the "totalitarian character" of technology by aligning it with the notion of God, which can be undogmatically formalized as the highest possible potential, the unity of the opposites and so on. There are many different concepts of God treated in theology, the personal God of the Abrahamic tradition being the most eminent one in the West. Yet, Spinoza's God is the one which helps us construct a "naturalist theology" which transposes God into the laws of nature and gets rid of metaphysical dualism. In fact, the monist tendencies of physics, cybernetics and information theory allow certain theological speculations to enter the field flawlessly. Theology evidently has many different fields of research which are completely unrelated to this quest, for example Scripture interpretations or apologetics. Yet, the affinity of apophatic theology for mysticism, which seems to re-emerge into relevancy at the dawn of the 21st century, can readily be applied to the realm of communication technology, which is going to be elucidated in later chapters. After all, the arrival of the "hyper-reality" made clear the symbolic needs of the human being. As we see mythology being revitalized and recycled in computer games, the same happens to science and technology: sci-fi is the synthesis of this and shows that the language of theology still has its merits when it comes to understanding the post-modern situation.

The theology developed in this paper could be labelled "cybernetic", as it moves beyond the traditional forms of faith and faces the techno-conundrum at stake. (It would be even better to call it a second-order cybernetic inquiry, as it applies the cybernetic mode of thinking onto the cybernetic technological system.) However, instead of sliding into rationalized monism, it is also posing the existential questions of mankind and does not remain detached from the

human life world. Moreover, it effectively aims at "steering" and "governing" the further development of the technological system as it unfolds its potentiality through the course of history. The latent danger of disaster connected to technology made it clear that it requires a complete integration of the technological system into the humanist project to avoid mayhem. In this sense, theological speculation and calculation can best be used to lay bare all the viabilities at our disposal to effectively counteract the destructive tendencies of mindlessly letting ourselves determined by technology.

The technological system crosses the field of theology on many levels, since a manifold level of conjectures between the two domains consist of:

- First, as a paradigmatic substitute system for the "religious" organization of society.
- Second, as a "post-natural" anthropological habitat which is often associated with utopian/dystopian eschatological/millennialist ideas,
- Third, as a catalysator for a new "techno-religiosity" which transfers the transcendental psychological needs (religion, metaphysics, faith, etc.) of mankind onto the projection surface of technology.
- Fourth, as the continuation of the "religion of progress" which is associated with the secularization of the Western and Christian millennialism", the Nietzschean "death of God" and Marxist socialism.
- Fifth, as a novel "synthetic religion of immanence" which abandoned transcendental aspirations for a radical self-determination within the confines of the immanent world, although operating on technological rationality, leading to "hyperstition"(Land).

- Sixth, as a "superintelligence" which heralds the post-anthropological age (Bostrom, Kurzweil).
- Seventh, as the titanic force (Jünger) which fuels new modern political religions (Voegelin).
- Eight, as the realization of a religious quest for salvation and the paraclete which will align us with God or make us Gods (liberation theology)
- Ninth, as the symbol of a new "faith" or the projection surface of former religious instincts and psychic content.

This list does evidently only exhaust a margin of the combinatory possibilities which overlap the two domains. The whole range theological research into technology could cover can be broken down to either immanent or transcendental proposals. Yet, the structural similarity between these points is obvious. The preliminary aim is the formation of a techno-critical consciousness which can cope with the magnanimity of technology as a guiding principle of the modern world and the crucial questions concerning the path human civilization is taking.

Besides that, the idea is that there is a latent theology already contained within technology which has not yet been made conscious and of which lacks behind its individuating potential. In an analogy to what is required to overcome the Ellulian dilemma concerning technology, historic examples of a supersession of the religious consciousness of the European Middle Ages by the Renaissance and finally the Enlightenment reflect the gradual attainment of critical self-consciousness and emancipation.

The crucial factor is, as Ellul pointed out, our attitude towards technology, and there lies the tweak which will enable individuation instead of estrangement. It does not matter how perfectly rational our sciences and technologies seem to be, but it depends on how the

formation of our mindset towards it or in interaction with it are shaped.

"We've arranged a civilization in which most crucial elements profoundly depend on science and technology. We have also arranged things so that almost no one understands science and technology. This is a prescription for disaster." Carl Sagan

Carl Sagan goes even further predicting the possible doom of America which is at stake. The discrepancy between the theological suggestiveness of technology and the critical self-knowledge of the technology user is what creates the latent danger of a collective psychosis into which a technological civilization is drifting into. Sagan touches the nerve of the issue, although we live in a globalized world characterised by hyperconnectivity and a rational technological "Gestell" (Heidegger), the information age might easily tilt into a "Dark Age" regardless of the technological paradigm which seems to be a sign of mankind's victory over irrationality. It is thus crucial to identify the corresponding tendencies of technology to the formation of a quasi-theological mindset to dispel the curse and become master of ourselves again.

"I have a foreboding of an America... when the United States is a service and information economy... when the people have lost the ability to set their own agendas... our critical faculties in decline, unable to distinguish between what feels good and what is true, we slide, almost without noticing, back into superstition and darkness..."
Carl Sagan

2.3 · The Foundation of a Techno-Theology

Es ist ein Grundirrtum zu meinen, weil die Maschine selbst aus Metallen und Stoffen bestehe, sei das Maschinenzeitalter „materialistisch“. Die neuzeitliche Maschinenteknik ist Geist und ist als dieser eine Entscheidung über die Wirklichkeit alles Wirklichen.

— Martin Heidegger

There have been numerous attempts to overcome the contrast which is separating modern technology from classical theology. As mentioned above, in Ellul's thinking both realms remain separate, since in his judgement, the rigorous rationality of technology and the "bluff" it plays on us, does not reach out to the ethical and mystical depths of existence, which have been disclosed through apophatic theology. This position is intentionally toppled and subverted in this treatise by recognizing the "theological effects" stemming from the use of technology.

The two extreme, antipodal historic positions have been:

- I. rejecting religiously structured lifestyle in favour of technology and its secularizing effect on society. (modern secularism)
- II. granting the supremacy to religion as organizing factor of society and rejecting technology and modernism. (traditional fundamentalism)

A third, hybrid position, is characterised by the attempt to reconcile the paradoxes between the phenomenon of technology and theological revelation. Although the conscious intention of synthesizing both positions is rarely made or realized, it is mostly the "supersession of dispensations" which initiates the transition from traditionalism to modernism. To interpret both by the means of their relative opposite is supposed as the true dialectical meaning of history: understanding technology as the prothesis of human creativity and a tool for self-augmentation beyond the confines of the given world and the given self-identification. Only a theological techno-science can only clarify about the intentionality and direction of itself.

No matter which of these basic conclusions about technology one might intellectually arrive at, it is an undeniable fact that technology is already and will keep on playing the most significant role for the future development of human society. It requires no extra-ordinary philosophy, but just some basic common sense in face of the structural organization of our lifestyle and our life space. Yet, technology is so common that even common sense might easily overlook and underestimate the concrete impact of techno-science on the contemporary mode of being. The contrary is true most of the time: one is tempted to underestimate the extent to which technology is the determining factor of our cognitive and existential life. To be unconscious of the neurological ramifications of techno-tool usage is the norm not the exception. In fact, it is striking that it requires technological metaphors (information technology as the current paradigm) for us to understand ourselves and that our behaviour is already heavily determined by technology; our way of apprehending life is mediated through technological tools and even our bodily autonomy has been configured by technical means.

As such, a "technological theology" is necessary to think the interplay of both extremes to its logical conclusion. Technology is totalitarian and technology as a system operates in theological di-

mensions (tianxin) according to the definition provided on earlier pages. This requires quite a different treatment towards of technological, instead of seeing it as the product of neutral scientific knowledge, we need to open the horizon of symbolic representations which sacralise the domain of technique. The modern consciousness has been formed in an age where the technological system already been operating as an extension of the human nervous system, and as the saying goes, it is we who shape the tools, but it is the tools who afterwards shape us. Our philosophical understanding of the matter is lagging far behind the transformation of civil society through technology is easier than foresight.

The fact of the matter is that one does not exhaust the impact of the technological system if we identify it merely as our "environment", technology is the life world of modernity. The city, for example, bears the signature of this, as Ellul and Postman rightly suggest. The theological succession of the garden (Eden) by the City (Augustine's city of god) is at the dawn of the "Technopoly", which is the term Postman uses to describe his understanding of a "technological theology". He sees the "technopoly" as the maximum amplification of technocracy. Fordism and Taylorism are turned into the "catechism" of "technopoly". Auguste Comte's positivism opened the theological gateway to "technopoly", so Postman, which happened to swallow up all tradition and culture to render a clear path for the development of technology. Technopoly, as the title of his work suggests, is causing the surrender of traditional culture and the traditional lifestyle to technology.

The metaphysical figure of mankind at the beginning of the 20th century was the worker (Jünger). "The worker" appeared in the world as a telluric and mythic figure which is the son of the earthly kingdom and an "enemy of the heavens". He became the ruling symbol of a new world order and a novel, creative vocation as the destiny of our age. This transposition of the metaphysical agency to a new

class was only possible through the rise of technology, this new dominating force of world history leads to the replacement of the "individual" by the "type", the "class", etc. Jünger, however, "worker" is completely replaceable and profane: any "worker" can be replaced by another "worker" because they are reduced to a general type and specific technological knowledge, and not to their personality or individuality. In his thinking, it is the metaphysics of the profane which supersedes the metaphysics of the holy. The demystification of the world does not herald a post-metaphysical age, but a new profane metaphysics without sanctity. Bourgeois constitutions of countries are replaced with a formal "work plan", Western liberal democracy is replaced with the "democracy of labour" which is mediated through the technocratic state. "Total mobilization" renders the distinction between war and peace moot, the imperative of efficient production makes the megamachine take over. Although Jünger's predictions, which he already uttered in 1933, have come true in the past century, in this century and another modification of the metaphysical status quo are at dawn. "Gamification" through digital information technology made the "player" be likely to replace the "worker". Work is transformed into a game and the "homo ludens", which corresponds to the playful yet irresponsible nature of the infant. Individuation through gamification, the absorption of the "negativity of work" through the "positivity of the game" is about to take over. A Techno-theology, again, is required to keep on addressing the deeper layers of epochal changes and as such, it is less of a theoretical system and more a systematic method of scrutiny in this regard. Theologian Rudolf Otto refers to the experience of mystery when he describes how we as humans perceive the "holy" as both "Latin: *fascinans et tremendum*" (awesomeness and awfulness). We seem to experience technologies in a similar way, with both promise and peril. Theological language, then, is an important resource for

expressing -- and understanding -- how we think about technologies in terms of hope and doom.

We see through the lens of the history of technology that a device paradigm shift (Borgmann), once it occurs, can alter the existential mode of being and the collective organization of humankind. Anthropology is more and more turning into a sub-category of technological analysis (Günther Anders), the anthropological constraints are resolved through theology, which takes the true ontological optimization quest in which mankind is exposed to its own desire to become godlike, to an eschatological climax, namely "deification" or worst-case: obsolescence, degeneration, or extinction. Further linking theology and technology, Ivan Illich proposed that the very rise of modern Western technological culture can be traced to medieval debates about the mechanism of change in the bread and wine of the Eucharist. In the new digital communication media, he suggested, we are witnessing something as culturally and theologically momentous as the invention of "the page" (with accompanying tables of contents and indexes) in eleventh-century monasteries. Those technologies transformed reading and what reading is. In every computer screen, Illich saw the symbol of the tearing down of the idyllic worldview of his literary education. Our millennium-long identity with the teachings of the book, which gained its last theological justification in Protestant theology, is now over. The digital age bears a theology-in-itself, which is essentially different from classical theology yet carrying the stigma of the old theology regarding the determining power over society. Marshall McLuhan, himself a Catholic and media theorist, was envisaging a "cultural transformation" initiated by the inherent theology of digital media. Yet, there is no hint of "technological asceticism" in modern life, quite the contrary, modern life is technological to the bones and there is almost no way of living "outside technology" in our world since it is permeating every aspect of civilization. Even in modern academia radical

techno-criticism is rare, since STEM academic topics are the driving force of innovation which consequently leads to economic development which on the other hand became a value-in-itself.

One of the main legendary examples made about the Faustian bargain mankind makes by applying technology is contained in Plato's dialogue *Phaedrus* where he recounts the story of the invention of writing and attributes it to the Egyptian God Thoth, who later played a considerable role in the imagination of Renaissance alchemists. (Which will be discussed in further detail in a later chapter). Writing, when taking its full-fledged potential into consideration, has "superhuman" characteristics and a "divine" aura. Thoth, making a bold prediction, said that his invention will make "the Egyptians wiser and improve their memories" and even going further by calling the art of writing "the elixir of memory". Plato reports that Egyptian king Thamus, to whom Thoth revealed his invention, was highly sceptical at that time, complaining that the inverse was true: people will actually become forgetful by using Thoth's invention. Furthermore, he claimed that trust in writing of external characters discourages people to use their own inherent memory and develop their own ability to memorize. Writing will also give birth to the "semblance of wisdom" in contrast to "true wisdom" (gnosis) because people will read without dialectically transmitted instructions and understanding yet appear to be wise to the common person when they in fact they are only repeating words. One needs to understand at this point that memory for Plato, is not just about re-calling chunks of abstract information, but it was more like an image gallery inside the soul which could not only help you remember profane words and numbers, but also invoke the deepest elements hidden inside the Self. Going so far as seeing "anamnesis", the remembering of the origin of once existence and reconnecting to the transcendental source of consciousness, as the highest achiev-

able work of memory. For Plato, it is absurd to imagine an "external tool" tapping into the hidden source of wisdom inside the soul.

It is also remarkable that bookish people apparently were the target of much ridicule in Athenian comedy, almost like Phaedrus himself, who was quite proud about his books but instantly felt ashamed when bumping into Socrates while carrying books around with him. Although we can only speculate about Plato's true reason to neglect the art of writing and the usefulness of the book for culture and the refinement of a person's moral character, it is nonetheless striking that modern academics (which is bookish *par excellence*) tries to historically align itself with Plato's academy. For Plato, wisdom was ardently earned and achieved by the philosopher and there is no shortcut to this. Perhaps he saw in writing the danger of "too easily acquired half-knowledge" which -at best- only touches the surface of the matter or -- at worst- distracts from the actual knowledge. He was aware that writing could be a catalyser for both vanity and ignorance.

Nevertheless, as Borgmann rightly states, it was Thoth who recognized the discrete distinctiveness of letters which even Plato acknowledged. He understood that Thoth in fact broke down the "infinity of speech" to an elementary, discrete structure: once he figured out the number of elements(letters) he assigned a name to them. The digital nature of letters, as we would call it in our times when digital information technology defines our cultural and scientific paradigm, was discovered. As with our "digits", Plato's elements are devoid of meaning in-themselves since they belong to the formless, primary fabric of reality in the old Pythagorean fashion. Meaning stems from construction, composition, and organization which indivisible elements do not inherently possess.

As we moved into the cybernetic era of computer-based communications, it is reasonable to think "theologically" about all of this. The paradigm of cybernetics, quantum physics and the newer digital

philosophy allow a certain theological reading which inspired this work. A new, watershed theology is going to impose itself on common sense until the depth of the issue has been granted its rightful prominence.

Considering the multi-layered overlapping of all these domains, the task of the philosopher is analysing the current latent theology emanating from the techno-system while also actively pursuing an explicit theology of technology.

"The highest thing you can create with technology is God." Unknown

We have already hinted a couple of times at the structural similarities between what has been defined a theology and the techno-system. To lay them bare more visibly we shall contrast the techno-system and its impact on society and common-sense reasoning with the criteria of a theology:

The first attribute, the criterion of orthodoxy, is simply projected onto the "proper" use of technology. Orthodox use of technology is the "right way" of using it without damaging it, with great efficiency and without waste and a maximization of economic benefit, comfort, and enjoyment. Orthodox use of technology is characterized by a minimization of the "negativity" in one's own life. Orthodox use of technology means to know when to choose the car and when the train, when to watch TV and when to browse a search engine. It implies turning everything into your own apparent advantage and not missing out on new technology which could provide new unforeseen benefits. Here again, orthodoxy is becoming less of a moral standard (as in traditional religions) and more of an "intelligence test".

The second attribute, the "complete" cosmological framework, is provided by instrumental embodiment through technology which extends over to science and more generally to mediation between the subject and the object. Technological reasoning applies the same principles which work mechanically in our tools to the cosmic scale

and use them as metaphors of reference to frame the cosmos and ourselves. The technologically mediated images of the cosmos, simulations of the cosmogenesis, technologically mediated weather predictions, space travel ambitions and so on grant the framework of a conquerable, dominatable cosmos which is rational at its core.

Thirdly, the "meta-narrative based on dogma or gnosis" results from the undeniable success of the application of technology, which the industrial revolution as the cornerstone of the techno-age. The dogmatic aspect of technology stems from the common usage of technology and the attributes which we commonly associate technology with. The scientist quest for gnosis is utterly represented by his success at scientific research or technical engineering, it is not the "finding of the soul" like traditional Gnostics would have pursued, but the "finding of new principles" which can facilitate the self-augmentation of the techno system. The scientist is thus part of a "priest-like" caste which provides the means of civilization, and the scientist or engineers "gnosis" converts into the dogma of the common person, who does not understand technology in its logical formalist aspects but gains his confidence about the usefulness from the technologist.

The fourth criterion, the elevation of values and/or things to sanctity, is the core aspect for this analysis. Basically, this domain is derived from conceptualizing an omniscient, omnipresent, omnipotent entity or non-entity (God or the techno-system). As a potential, as a person or as a value which exists and is linked to higher individuation potential of humanity than profane objects and values, this comes normally by bestowing some sort of additional power to mankind. Without the value of sanctity, there is no fetishist relation possible. There is psychological link between the eros of desire and the holy. Technology has dethroned nature as the origin of sacrosanct values because its powers seem to be superior (especially for warfare). The meaningless destruction of a technological artifact

(example: iPhone) seems to provoke a similar psychological reaction in the mind of a secular modern person than the destruction of a religious idol to the traditional religiously minded person. Internet as such is an ethereal network which immanentizes theological phantasies about godlike potential.

The fifth criterion, the use of "catechism" to universalize itself is evidently provided by public and private education. The intertwining of technology and economy makes technological knowledge turn into a passepartout for almost every domain of technopoly. What is considered to be "practical" by a medieval monk or a modern technician seems to be diametrically opposed, the medieval monk might consider his introspection, prayer, and his monastic lifestyle pragmatic because it brings him, in his worldview, closer to the most practical of all his ambitions: salvation. Whereas a modern technician considers practical what yields immediate results for minor psychological needs, practicality stems from orthodox use of technology not from orthodox citation of liturgy. As technology provides immediate tacit effects, technology seems to offer a superior theology. There is no catechism or evangelism "divinely ordained" by technology, yet the Ellulian characteristics of the techno-system have the same effect on the spreading of the memetic dimension of technology.

The sixth criterion, the eschatological outlook on history, is not propagated by any technological field or tool in particular, however, eschatology is not understood as the awaiting of a cataclysmic end of time, but just as postulating an end of time as such. In Indian eschatology for example, the universe is believed to recycle itself through the creation and destruction. In Christian eschatology, it is the arrival of the Messiah (saviour theology) which heralds a new time. Technological eschatology stems from the application of discrete and finite grids of reference to frame the cosmos. Technically extended science determines the heat death of the universe, techni-

cians speculate about a technological singularity and the logics of cybernetics universally frame closed systems where time is finite. Transhumanism, Superhumanism and Posthumanism (chapter 5) are exemplifications of techno-eschatology.

The seventh criterion, the "soteriological expectation", is also not directly integrated in the formalism of technoscience, however, as the technosystem is embedded into the lifeworld, the belief in the salvatory potential of technology is becoming a world religion. Soteriology is basically derived from the human desire for eternal life, peace, joy, happiness, and psychological well-being as such. The finiteness of life is constraining mankind from being godlike since we are still caught up in the binary game of life and death. Transcendence is transposed from religions onto technology, and our quest for immortality, health and *jouissance* is played out by the techno-gurus.

III · Cybernetic Gnoseology

THIS SECTION OF THE THESIS STARTS WITH A SPECIAL account of cybernetics as a "gnoseology", and not just as a neutral technical template. By showing how cybernetics is the general mode of operation of the technological mindset in the information age, it seeks to align cybernetic thought with gnostic mysticism, as both feed on a similar (to not say the same) referential logic and scheme.

20th century technology is explicitly cybernetic, and the rules applicable to craft information technology are cybernetic in origin. Even though there has been an academic split between cybernetics, AI and information theory, they are substantially similar to each other and operate like the trinity of the information age. To postulate that the Ellulian technosystem gains its properties from the cybernetic nature of technology is neither new nor revolutionary, it is in fact quite a trivial claim to make. The connection of cybernetics, however, to Gnosticism and its effect on culture and civilization make its theological character even more apparent.

A gnoseology is an old term for epistemology, however, I want to emphasize the gnostic connotation to the term which goes beyond simple fact knowledge. Cybernetic thinking and its theological aspects evoke a similar intellectual gold rush, because of the transversality of the theory. Science divides and analyses, cybernetics seem to synergize and control.

British philosopher and author Anthony Peake writes: "The belief that there is a reality behind the fabrication of the perceived universe is central to Gnostic belief... As we know the 21st century seems to have become a battleground between "irrational" theolo-

gies and "rational" science. However recent developments in the world of quantum physics suggest to me that Gnostic theology may be proven right... It is ironic that recent discoveries regarding the nature of space itself may suggest that we need another paradigm change. In a curious echo from the past, it seems that a substance similar to the ether may indeed fill up all of space. This is the Zero Point Field, a field that fills all of space and is, in many ways, the backdrop to what we call reality.

The variety of definitions of cybernetics which have been uttered by different scientists from different disciplines makes the transversality of cybernetics apparent. It seems like cybernetics is not a science as such, but a kind of systemics which creates universally applicable metaphors and language to manipulate and control the environment and build new tools. In fact, our society is operating on cybernetic theory on every level of organization and seems to have conquered all other styles of reasoning when we entered the information age.

Some of the manifold definitions of cybernetics available:

"The art of creating equilibrium in a world of constraints and possibilities." (Ernst von Glasersfeld)

"The science and art of understanding." (Humberto Maturana)

"The art of effective organization." (Stafford Beer)

"A branch of mathematics dealing with problems of control, recursiveness, and information, focuses on forms and the patterns that connect." (Gregory Bateson)

"Science concerned with the study of systems of any nature which are capable of receiving, storing and processing information so as to use it for control."---A. N. Kolmogorov

"A way of thinking about ways of thinking of which it is one." (Larry Richards)

"The science of design, purposeful activity, and accomplishment." (Angus Jenkinson)

"Cybernetics is a universal science of accomplishment, purposeful activity, design, and reflexive control. It explains manifold phenomena and aids the design and use of technologies and practice related to them." (Cybernetics Society)

On the quest to unveil the ontology of technology, there is the hope to arrive at a fundamental descriptive layer from which a "final theory" can be derived about the nature of information and systems. The "ideal view" on the matter is (roughly speaking) composed of a healthy mixture of fundamentalism, scientific realism, instrumentalism, and a grain of optimism about the aesthetic simplicity of nature. As cybernetic theory is applied in the conception and design of virtually every new technological tool, it might be the fundamental strata which gives the "Ellulian technosystem" its theological attributes. A closer investigation into the formal resemblance of the earlier promoted definition of theology and cybernetics shall clarify the matter at hand.

The word cybernetics comes from Greek κυβερνητική (kybernētiké) and means "governance" or the art of "steering". A "cybernetic theology" is meant to master the technological system and "steer it" into a favourable direction. The term cybernetics was first used by the 19th century French physicist Andre-Marie Ampere, who developed a ground-breaking theory of electromagnetism, but the term itself was popularized later by Norbert Wiener. Yet, the philosophical idea behind cybernetics can be traced back to the Neoplatonist and Gnostic tradition and to Plotinus in particular. Although the term gnoseology and epistemology can be used synonymously, within gnoseology, gnosis is derived by noesis, and within epistemology, episteme is derived from phenomena.

Cybernetics placed particular emphasis on feedback loops in which some of the systems output (or information about that output) is reintroduced into that system as new input. Cybernetic circuits constantly adjust themselves to the effects of their own actions and

to the incoming flux of information. Curiously, Gnostic and hermetic symbolism furnishes us with an archaic representation of such feedback loops: the Ouroboros, a serpent who eats its own tail and thus symbolises the self-sufficient, self-referentiality of nature.



Fig. 1. Early alchemical ouroboros bearing the Greek words ἐν τῷ πᾶν — "the All is One" — from the work of Cleopatra the Alchemist (3rd century).

("The All is One")

In the hands of technical engineers this "dynamic and self-reflexive serpent" has helped design everything from computers to robots and has also provided a rigorous model for understanding how machines and computer programmes are learning about the world by updating and optimising the output to realize pre-programmed goals through generations of iteration. This vision of feedback-

based learning loops and constant interaction with an outside world also provided a new way to think about biological organisms and basically any system on every level of complexity. Wiener himself even suggested that living creatures are describable as systems that resist entropy through information, communication, and feedback, exactly like cybernetic systems operate.

Human identity, as Wiener puts it, is "more of a flame than a stone". Wiener sees the physical identity of an individual not consisting of the matter of which it is made, the biological particularity of an organism seems to lie in a certain continuity of process and in the memory by the organism of the effects of its past development. This appears to hold also of the organism's psychic development and individuation. In terms of the computing machine, the individuality of a mind lies in the retention of its earlier tapings and memories which are sublated but form a processual path. Although seemingly without intention, by reconceiving the individual distinctness of the mind and the ideal nature of its characteristics along the incorporate lines of messages, memories and patterns of information, cybernetics effectively introduced a subtle, autonomous spirit into the scientific image of the human being. This is where formal differences between Wiener's cybernetics and a cybernetic theology reside at: Wiener's cybernetics is structurally monistic (and totally in accordance with the Ellulian technological system) yet without allowing "substantial monads" to exist, although Wiener saw Leibniz as the founding father of the cybernetic discipline, he seemingly resists postulating an autonomous agency inside the human mind, which esoteric philosophic elements in traditional philosophy have always taken for granted. The inner steersman inside the human mind is neither an eternal substance nor a figment of the teeming brain, but a fluctuating, volatile, ethereal, and pattern-rippling process in an endless cybernetic interplay of energy.

At this point, like most modern scientists, Wiener shows an (at least unconscious) affinity towards Gnostic speculation in order to recover universals, which are best exemplified in the Platonism of religious mystics. For Wiener science is a game whose goal is the discovery of the order of the cosmos, yet there is an "archenemy" in the game which faces the scientist as an adversary in the struggle to find and create order, and he identifies this enemy with disorganisation, confusion, and the obscuring noise inside the cosmos: entropy.

Wiener, metaphorically at least, asks if entropy is "the devil", like the one Manichaeism or the Augustinian imagination brought forth. What this translates into is that he is not certain whether entropy is just "the absence of order", or whether it is a fundamental force opposed to order. By posing the question in this way, the theological dimension of Wiener's confusion comes to light. Is entropy the absence of order, or is it a force of disorder? To put the question in the age-old form of Gnostic theology: is evil part of God or the absence of God? (*privatio boni*)

Despite the enormous role that Wiener played in promoting the computerization of post-war technocratic society, he was well aware of the insidious side of the cybernetic theory: it shows no concern about moral questions. Totalitarian secrecy, covered forms of social control, the technocratic manipulation of human minds and bodies and so on seem to turn into reality. Cybernetics suggested that the human individual is merely a momentary whirlpool within larger systems of information flux, thus the steersman himself was subject to some form of external control. Fearfully aware of this, Wiener criticised the "machines of flesh and blood", which are integrated into the Ellulian technological system, that absorb autonomous human souls into bureaucracies, armies, laboratories, factories, and corporations. Although this danger was already eminent in the 20th century, he was particularly worried about the ultimate fruits of cybernetics: general intelligence inside autonomous machines. Cy-

bernetics was like the opening of Pandora's box: however intelligent and brainy the cybernetic revolution is, it might unleash a myriad of unintended consequences leading to unpredicted collateral disaster.

At this stage we see the primary difference between common Christian theology and the theology of the Gnostics. It is crucial to identify the Gnostic worldview and lay bare its similarities to the so-called scientific mindset. Whereas Christian mainstream theology is generally concerned about laying bare the metaphysical reasons to maintain faith in a personal creator God, Gnostic theology aims at knowing God by knowing yourself. Not sin and redemption, like mainstream Christian theology, but the quest for knowledge and the overcoming of ignorance defines the psychological structures of Gnosticism. Ignorance is sin, and knowledge is redemption. The Gnostic does not only believe that he can redeem himself through apprehension of God, but he also believes that he can redeem God by knowing himself. And as such, it aims at the apotheosis of man, the transfiguration of his own nature through knowledge.

In the *Corpus Hermeticum*, a highly influential Hermetic work, conveys a similar theodicy: "incorporeal imagination" bestows mankind the key to the universe.

"Having conceived that nothing is impossible to you, consider yourself immortal and able to understand everything, all art, all learning, the temper of every living thing... collect in yourself all the sensations of what has been made, of fire and water, dry and wet and be everywhere at once, on land, in the sea, in heaven; be not yet born, be in the womb, be young, old, dead, be beyond death. And then you have understood all these at once -- times, places, things, qualities, quantities -- then you can understand God."

Achieving gnosis does not only enable one to know whatever or whomever God is, but to know what God knows. Even more important: this cognitive access to a higher truth is not characterized as

something that is bestowed upon the aspirant by "God's infinite grace", but as a feat, a "divine work" of the aspirant, in other words: the apotheosis of mankind is achievable through free will, virtue and the courage to dare to know. God is, in fact, the higher potential dormant in mankind, which waits to be awoken. As such, it is unsurprising that Gnostic texts stimulated the phantasies of medieval and renaissance scientists.

Harold Bloom stated that:

"Gnosticism was (and is) a kind of information theory. Matter and energy are rejected, or at least placed under the sign of negation. Information becomes the emblem of salvation."

These issues may only appear as a rational, normative system, which computes itself with machinic precision but knows ethics only as a derivate of information theory. The only true moral action seems to be, in the Wienerian fashion, the fight against entropy.

A true cybernetic gnoseology can be used to introduce existential questions into systemic thinking which are usually left out by positivist reductionism, which cybernetics is still often limited to. Cybernetics has often been applied like a "nominalist theology" for which there is nothing but energy without essences, systems, and their inter-relatedness to other systems. Feedback loops only describe the relation and direction of the flux of information, they do not grasp essences or meaning as such, quite the contrary, the metaphysical assumptions of cybernetic theory have no place for essences or substances: everything is converted into an information monism.

Cybernetics resembles a "naturalized metaphysics", as its models operate with a minimum to a maximum of semantic content. Indeed, we cannot solely highlight the theological analogy if we only look at the content of a theory or a model, but we also need to take the sociological dimension into consideration, as investigation into the "catechism" scale requires the social propagation of a theory, or objects

fabricated by the application of these theories. Cybernetics is universalizing itself as an "unconscious dogma" because we do not need to have any meaningful insight into the mechanical properties of information technology to facilitate its spreading: it is viral in and by itself.

The fact that cybernetics established itself as a transdisciplinary discipline shows that there is a univocal congruence estimated at the informational level underlying every single discipline. Cybernetics opts to be a "master science" which is the latent theology of technology and the technology of a new theology.

"Cybernetics opts to be a master science which is the latent theology of technology and the technology of a new theology."

3.1 · The Whiteheadian God

There have been plenty of theological positions maintained throughout the history of philosophy (deism, theism, pantheism, panentheism, atheism and so on) which all have their flaws and merits. Since treating the entirety of the history of theological thought vastly exceeds the scope of this paper, it shall suffice for our purpose to choose one idea of God which is of particular interest for the project of investigating into techno-theology: the Whiteheadian God. Whitehead's philosophical prowess lies in his rigorous recourse on analytical logics without sacrificing intellectual speculation alto-

gether, and as such, he is more compatible with gnoseology than other analytic thinkers. Whitehead is, and here he differs from many classical theologians and even modern thinkers, consciously metaphysical within the scope of his apperceptions. Whitehead offers an unconventional way of thinking about God without dogma while still maintaining a metaphysical tension point of absolute reference.

In the Whiteheadian philosophy, there are three distinct, formative elements, namely eternal objects, creativity, and God. This trinitarian constellation of elements are understood by the actual entities they shape.

In Whitehead's thinking, in striking similarity to some of the Gnostic philosophers, the structure of God is the mirror image of the structure of the world. The world is still incomplete and by its very nature requires a primal idea giving entity at the base of all things to render the world a potential for an all-encompassing process of completion. As the entity which completes the world, God is posited as being complement to the world, like the left brain is complement to the right brain. God originates with his conceptual valuation of the timeless realm of eternal objects, in an old Platonic fashion. God is the only "non-derivative actuality" in Whitehead's jargon, whereas all other entities are derived from him. He is the one actual entity by virtue of which the entire panoply of eternal objects receives its respective specifications. God's primordial nature is creativity, and as such, there is no novelty possible without his non-derivative character as the fountain of any origination in the world. God, furthermore, is the principle of concretion; every actual entity receives its teleological causation from this source. God is the unity of conceptual operations as a free, creative act, which is not deflected on any other plane of existence. Every actual entity derives its creative potential from God, as such, every object can constitute a creative advancement by the virtue of God's pre-origination in it. God is the principle of creative novelty, giving creativity a thor-

oughly metaphysical character beyond the material plane of immanence. Being the "organ of novelty" of this universe, God is aiming at intensification, which gives the process of actualization its determining intentionality (teleos).

Apart from the "intervention" by the Whiteheadian God, there could be no authentic emergence of meaning in the world. The course of creation would be a flat level of ineffectiveness, without the ontic possibility of progress and transformation. Yet, every actual entity shares with God the characteristic of self-causation, thus every actual entity transcends all other actual entities (including God). The universe turns into a creative, process-relational advance into novelty, and is freed from its static, amorphic frame. God is thus converted into a primordial "creative accident" and is not allowed an eminent reality beyond any of its own "accidents" in a closed, monist system. Whitehead sees God not as an entity exempt of all metaphysical specification, but on the contrary, he is the chief exemplification of the metaphysical properties of the universe. As such, he is (although probably by accident and not intention) the "hyper-grid of being". A system requires an eternal entity which constitutes the level of consistent striation between actuality and potentiality so that novelty happens. Consequently, there needs to be a common source for the sum of the existing actual entities in the universe (the material plane of consistency) from which the virtual ideal is transmuted into the actual material.

At this point we can, for example, interpret the Ellulian technological system as the product of the concrescence of actual entities, namely the sum of technological objects. Yet, the concrescence of the technological objects into the technological system has been mediated through a hierarchy of layers of self-referentiality emerging from the raw dialectics of nature and finding its realization in the most crucial one: human consciousness. Novelty is actualized through creative assemblages which connect the lowest with the

highest plane of existence through a universal, holographic web of relationality. Whitehead's God is the "Central System Operator" of the universe, as such he synchronizes and modulates the actual entities in the world. Through this system operator, the world is shaped and computed into existence.

Whitehead's God is thus first and foremost the God of continuous creativity, which has been revealed neither in the Scriptures of Judaism, Christianity, nor Islam. God created the universe *ex nihilo* and then the process of creation halted, leaving no room for continuous human participation in the creative exegesis of the world. In Whitehead's process-relational philosophy creation, however, never stopped and is not exhausted by a single act of potency. In fact, the universe is defined as the product of continuous creation. (And here again, the parallels to Gnostic theology are evident). Creativity as the theological core dogma can be freely applied to natural sciences, the ontogenesis of nature (abiogenesis) or the technological system while freeing it from its former connotation exclusive to religious thought. Basically every "creative evocation" of a cybernetic system is operating "creative patterns of complexity" which bear the potential for novelty, yet it shall be questioned whether this kind of creativity is always linked to authentic novelty. Whitehead famously identified progress with the "transcending of the obvious", rendering creativity a disruptive power of emergence, while disavowing human reason the power to predetermine the concrete qualitative content of true progress. Whitehead's God is a God of Science and of Technology, although lacking the intrinsic moral agency of a personalist Abrahamic God, he is the physical criteria of creation and the source of human creative invention and intuition. God is the sum of all-natural processes, but in the constructivist sense that the whole is more than the sum of its parts. Secondary, derivative processes are but modifications of primary, eternal processes. Both are immanent in the sense that they are present in the world, meaning

they affect the actual entities but are transcendental regarding their manifold levels of concretion which are not locally measurable, that is, they are not themselves dependent on the spatial-temporal occurrences of the processes that realize them. As a result, transcendent immanentism and immanent transcendentalism are both at stake and heaven and earth have lost their absolute coordinates on the ontological map and so the represented territory, which is never the map, slips out of it. Whitehead did what a Chinese Daoist might call "reversing heaven and earth".

Good science generally abides to a "transcendental minimalism", which Whitehead tried to provide with his occasionalist God, knowing that the signifier "God" represents something if not everything. He reduced God to a minimum (turning into the ethereal CPU of the universe) while maintaining the ontological validity of the concept itself. Whereas "transcendental minimalism" is in the secular context of science mostly synonymous with atheism and naturalism (Occam's Razor), Whitehead maintains one fingertip inside the ocean of mysticism. With this, Whitehead is treading on a very narrow path between the Scylla of mysticism and the Charybdis of scientism.

The weakness of Whitehead's process philosophy is also its strength and what gives it its peculiar character: it mutilates and shreds being into mere punctual instants on the wave function of becoming. Does the process of becoming bears a higher ontological reality than being? Being as understood by Parmenides is static and immutable and shares the same properties with reality, which is noumenal and not purely phenomenal. Yet, since Hegel's logics of becoming, which are based on the dialectic interplay of being and non-being, Heraclites *panta rhei* is coming back into fashion: the fluctuating and flickering flame of becoming is the authentic form of representing reality. Whitehead overcomes even in a more radical fashion the "substance paradigm" which has been domineering Western philosophical thought for a long by breaking free from the

ontological chains of Parmenides (Shestov) and the Platonic tradition as such. And indeed, the world of cybernetics is not the world of substances, it is the world of ethereal information which is processed. The processor processes the process, and thus represents the latent circular logic of information systems.

"The processor processes the process."

Instead of leaving the option of understanding being as "dynamic-in-itself", as some other philosophers did, it is understood as a limitation. Being does not need to be understood as a process to reveal impermanence and mutability. Being, when divided into atomized units, or innately dismembered, is totally dependent upon time, context, and relation. Another particularity of Whitehead's philosophy is his concept of creativity which (unlike Berdyaev's, which is treated in the chapter on ethics) does not take recursion to freedom, acting as if it would not exist for the intellectual mind. Whitehead at least avoids an intellectualisation of freedom by not objectifying it through the modes of thought. Freedom in Whitehead philosophy seems to be free of concrete representation and thus avoiding the Calvinist predeterminism which still made Hegel identify freedom with the recognition of necessity.

Whitehead's philosophy inspired a whole new branch of theology: process theology. Whitehead's God is merely the transcendental minimalist reduction of the Abrahamic personalist God to its functionality in the autogenesis of the universe. rendering God's umbrella term for creativity, and as such, Whitehead makes creativity and novelty turn into divine, yet analytic categories of thought.

Although this theologically induced language is foreign to Whitehead's "Process and Reality", it bears structural resemblances to theology and in particular a theology which tries to erect itself on a foundation which encircles the metaphysical minimum, acknowledging the old nomenklatura and while bringing it into a different shape. Whitehead's God is a heresy to scholastic theologians but offers great insight into the mechanisms of novelty and a world of continuous creation.

3.2 · Alchemical Technology

My dreams don't differentiate between the laboratory and the church... the unification of the pair of opposites happens through alchemy.

— Wolfgang Pauli

Alchemy is one of the most noteworthy forefathers of modern science. Although the origins of alchemy are veiled in mystery, the oldest known books on the topic were written by Zosimos of Pano polis, an Egyptian-born Greek who lived around the end of the 3rd and the beginning of the 4th century. He called them "Cheirometa", which means "things made by hand" in Greek, claiming that alchemy originally was an art performed in the Pharaonic Egypt by an initiated priest class (so far, there is no evidence for this claim).

In alchemy moral refinement, mystical revelation, chemical transformation, and spiritual duty towards God seem to go hand in hand. Modern scientific quality criteria (like objectivity) would be completely counterintuitive to the alchemist as it reduces "the sacred into the profane", which would be a "reverse transmutation" of precious gold into cheap lead. In alchemy, science is still

"muddled up" with art(theurgy) and a theodicy: science is only divine if it corresponds to personal gnosis and divine revelation, and this type of gnosis lies not in simply retrieving the "laws of nature" and make them operational for civilisational needs, but to receive the "grace of god" or to go further: to become godlike. The latent potential of the God of the alchemist is "dormant in matter" and therefore believed to be "spirit caged in inorganic matter". Theologically, the alchemists were the outsiders of their time as they have started to come to different metaphysical conclusions about the ontological potential of mankind. Whereas the sinfulness of mankind is the core theme in Biblical accounts, it is the godlikeness of mankind which is the prime revelation of the Gnostic account. In fact, God never seemed to have such a comparative advantage to the rest of creation as in the Bible, but in the Gnostic writings, God is anthropomorphized to a curious extent.

Renaissance alchemists in (Christian) Europe drew radical conclusions from the "image of God" doctrine, which is the personalist element of our Soul: we can, even though we fell from grace, be godlike as a species. It is not mankind which still requires salvation, as God has already sent his Son to redeem us, but it is God himself who needs to be saved through the work of the alchemist. A radical soteriological shift occurs here: God needs mankind to be freed from the burden of his own creation. A new theology emerged around "Deus obsconditus" of alchemy which totally elevated the role of man in the cosmos, as the narrative of the theodicy moved from being theocentric to a new historic climax of anthropocentrism. The "humanization of God" is a fundamental process of the gradual attainment of self-consciousness of mankind. In the earlier stages of the theological emancipation of mankind, God was confused with the forces of nature, animals, and the plants. In Totemism, God was more zoomorphic than anthropomorphic, yet in alchemy, God is inside the cosmos himself and yet mysteriously detached from it. God

was not just the transcendent deity of Scholasticism, in Nicholas of Cusa's mind God was but the "coincidentia oppositorum", the focal point of the fundamental pairs of opposites, like physis and pneuma or even the Chinese TaiJiTu.

Nietzsche once stated that you can measure the level of spiritual development of a civilization by the degree to which it has assimilated its gods to itself. In the alchemical mindset, it was indeed mankind which was on a liberation mission after centuries of fearing God and restricting the Logos through theological limitations. A breakthrough in the anthropological self-consciousness of mankind was initiated by the Hermetic theology, which was in a constant cross-fertilization with Christianity and Greek Antiquity during the Italian Renaissance. The alchemists seemed to have adopted this radical worldview through the stream of neo-platonic, gnostic and hermeticist sources from late Antiquity which suddenly became popular among intellectuals.

"Techne", as we apply the old Greek term to the modern world, equals to both art and technology. The highest value you could express through techne is God or the divine/holy as such (Rudolf Otto). European Renaissance art indeed showed how religiously themed art merged with the respect for perfect forms and geometric beauty of Greek antiquity. The "philosophical gold", which is the metaphor for goal of the alchemical transmutation, lies in awakening the dormant God through technical means.

Besides the odd theology which shocked many of the classical theologist during the Italian Renaissance, there is also a new cosmology and anthropology going hand in hand with it. Shifting the power pole to mankind, Christian theology was enriched by Hermetic theology, which derives its name from Hermes, the Greek Messenger of the Gods, which is also called "Hermes Trismegistus" in Neo-Platonic texts. Pico De La Mirandola and Giordano Bruno, who both

were deeply influenced by Hermeticism to the extent that they believed in a "prisca theologia", which is the doctrine that asserts that a single, true theology exists, which threads through all religions at all times, and which was anciently given by "God to man". They thought of Hermes in the "Corpus Hermeticum" as being a contemporary of Moses, thus legitimizing his teachings and seeing them as equal to the canon which Judeo-Christian tradition has left behind. They wrongly assumed that the "Corpus Hermeticum" predated the Hebrew tradition, yet the mythological figures treated in it might stem from even earlier, Egyptian times.

"Hermes Trismegistus not just captured the ancient words technological enthusiasm; he also comes down to us as one of the leading lights of the western mystical tradition a tradition whose psychospiritual imposes an alchemical image haunted most of the Renaissance intellectuals." Davis

Hermes was the guide for a new level of emancipation of mankind from the world, nature, and God. Many of the Hermetic ideas about the fundamental principles of the cosmos have been firmly integrated by the leading scientific thinkers of the time. Hermes was the daimon of the alchemist in the same way Socrates had a daimon and Buddha, Laozi, Confucius, Jesus, and Mani turned into the daimon for world religions for civilizations in the East and West.

When looking for the mythological origin of technology, it is most often Prometheus who comes to our mind as he has been cheered as the herald of technique by many philosophers who continuously draw upon this metaphor. Prometheus was the great Titan who created humanity from clay and thus gave birth to humanity. Using his "forethought", which is the actual meaning of the name Prometheus, he defied the Gods, stealing their fire and giving it to us. As Prometheus stole fire from Mount Olympus just to freely hand it over to mankind, but not without a price: for his hybris of

stealing from the Gods, Prometheus suffered by giving up his liver (which the Greeks believed to be the core of emotions) every single day of his life. Prometheus and the cultivation of fire are a great and well-known mythological account of the implementation of technology. Striking in this context is that Jünger identified technology with the "Armor of the Titans", which are growing stronger in our age and will fight the Gods.

The first stages of industrial technology were, apart from some of their hermetic proprieties, "volcanic" in quality. It was all about culturally instrumentalized "volcanic eruptions", which are domesticated through the combustion motor. Vulcan, being the smith of the Greek Gods, is the analogy to metals and their transformation into a more refined product like an anvil, hammer, or sword. Sloterdijk calls this kind of technology, which is exemplified in the steam engine and the car, "allotechnology", since it mimics an elemental force of nature. Mircea Eliade pointed out that the blacksmith's forge and the alchemist's crucible share similar features. The same psychological projections which the alchemist made, might also have occurred to the blacksmith. The treatment of metals and crafting them to a weapon, tool, or something else was not a profane, industrial procedure. The symbolic inflation projected onto the blacksmith's work resulted from the common belief that metals are alive and not just dead matter.

The question emerging is whether a return to the alchemical mindset (without abandoning the position of rationalist realism) will eventually carry on the field of technology, and thus modern history, into the next stage. The cabalist features of communication technology are too obvious to be ignored. If there is an "unconscious entelechy" guiding human endeavours, resembling Hegel's "cunning of reason", then there is an equal ground which unites the computer engineer with the alchemist.

Another curious element about alchemy, which makes it differ from modern science, is the excessive use of analogies and correspondences. The belief that analogies describe actual realities may be the root of the concept of synchronous correspondences, a concept which is mostly absent from today's intellectual paradigm but is still being applied by divination and less critical activities like astrology. The traditional worldview, no matter if in the East or West, had an intuitive preference for synchronous correspondence over mechanic interpretations of causality which only came to define the scientific paradigm during modernity.

Alternative accounts of the mythological birth of technology bring Thoth (as mentioned before in the context of Phaedrus and Plato), the Egyptian God of Wisdom, who brought the technique of writing to mankind, which has completely transformed the living world ever since. Interesting enough, Hermes, Mercury, and Thoth, who belong to the Greek, Roman and Egyptian pantheon respectively, are of the same Jungian archetype and play a similar symbolic role in the mythology of different pantheons: they are the psychopomp who mediates between the Gods and the humans, between Heaven and Earth. Indeed, both technology and alchemy seem to have the same daimon: Hermes.

Of all the god forms that Greek mind was able to produce, Hermes is the one who probably would feel the most at home in our electrically wired world. Indeed, with his mischievous combination of speed, trickery, and profitable mediation he can almost be regarded as the "archaic mascot" of the information age. Hermes shows that the minds of people are not monadic islands, but nodes in an immense electric tangle of words images sounds and signals. Hermes is the daimon of the trans-temporal world of information exchange that we are participating in right now, me as I tap out these pixilated fonts and you as the reader, by absorbing their typographic replications through your retina. Certainly, Hermes would

approve of the Internet a mercurial network of far-flung messages that functions as a marketplace (he was also the God of the merchants) of ideas and commodities accessed through the domestic portals of Liquid Crystal Displays and the threshold of PCs or mobile devices, the internet opens a technological liminal zone that swamps the Self with new paths of possibility and actualization.

C.G. Jung regards chemistry and psychology as sister disciplines which emerged out of alchemy. In that regard, it is not surprising to see that psychological tradition in the West at the dawn of the 20th century was still soaked with theological language and religious connotations. It seems like both psychology and chemistry compose a "complementary whole", whereas chemistry only managed to absorb the rigid, exact, discrete, and empirical aspects of alchemy, psychology took over the theological "God-Image" which corresponds to the philosopher's stone of the alchemist or the Self of the human psyche. Yet, neither general psychology (with exception of Jungian psychology) nor chemistry absorbed the purpose of alchemy in its entirety.

Dreyfus made the classic reductionist mistake of seeing alchemy just as a primitive and superstitious science. This statement could only be true if the goal of alchemy and the sciences were identical. Indeed, if modern scientific criteria are evoked to compare both, it is obvious that alchemy and its backward scientific methodology cannot live up to the standard. The "naïve" and "poetic" language of the alchemists is apparently not aimed at objectivity, but at "mystical revelations" as criterion of truth. Jung suggests that the alchemical terminology results from unconscious psychic projection of the alchemists. Confounding the own psychic individuation process and the chemical transmutation of matter ended up obscuring the actual work and intention of the alchemist.

The cryptic elements of alchemy are totally alien to modern scientific language, the terms are often ambiguous on purpose and

could not be clearly demarcated from pseudoscience and phantasmagorical nonsense. Dreyfus, building up on these implications, thus saw in AI an attempt to realize the superstitious alchemical dream, which was based upon magical beliefs and could not possibly find fulfilment. A computer is not a Golem, that is what his message seems to convey, and there is no hidden, cabbalistic enigma to be solved, transmutations to gold are impossible, etc. A childish phantasy of technologically induced omnipotence has been haunting the field of sciences, so Dreyfus. Yet, one of the crucial elements which makes information technology and alchemy seem quite alike is the process of psychological individuation which can be initiated by it. But is it really the "same motive" which made Renaissance alchemists heat up their crucible and modern man turn on their computer? One might doubt it, since the psychological make-up of people have changed, yet the quest for the discovery of the Self is as old as human history. In Hindu and Daoist alchemy, which had an "internal" cultivation method, which would explicitly avoid the laboratory and the crucible, but would project the same symbolism onto the human anatomy. Even in this type of cultivation, one can easily deduce "individuation" or "apotheosis" as the common goal of both. The symbolism remains almost identical for external as for internal alchemy, clearly showing that the modern literal style of interpretation does not hold up to the actual desire and goal of the alchemical cultivator.

More than any other invention information technology transcends its status as "a thing" simply because it allows for the incorporeal encoding and transmission of mind and meaning and is as such not unlike alchemy. Hermann Hesse's "Glasperlenspiel" is the ideal exemplification of a technology which achieves the grand realization of cross-disciplinary harmony of the sciences and the arts (theurgy). Although it remains obscure how this device operates, Hesse gives us a clear idea of what it can do. The most striking

aspect is that the device is "played" and not worked on, it bears structural resemblance to a music instrument, yet being able to transgress the boundaries of it while stretching over to quantum physics and the hexagrams of the I Ching and the symphonies of Bach. Just as the pious Western thinkers of earlier times presented our being human as being "on its way to God" and thought of the manifold world of appearances as reaching its completion and conclusion in a sort of divine unity, so the figures and formulas of the glass bead game were building, performing, and philosophizing in a cosmic language, drawn from all the sciences and arts, playing and reaching for perfection, for pure being and a completely fulfilled actuality. "Realizing" is the favourite expression among the master players, and they felt their activity to be a path from becoming to being, from the possible to the actual.

"Inside the empirical world of phenomenon, we need to have the difference between psychic and physical and it was a mistake of alchemy to project onto concrete chemical processes a monistic, neutral language. Yet, after matter also turned into an invisible reality for modern physicists, reaching a psychophysical monism seems to be much more likely now." Wolfgang Pauli

3.3 · Information and Individuation

In general, it [individuation] is the process by which individual beings are formed and differentiated [from other human beings]; in particular, it is the development of the psychological individual as a being distinct from the general, collective psychology.

— C.G. Jung, *Psychological Types*

Information is introduced as one contender to become the "psycho-physical monism" which Pauli seemed to have in mind. Information as a concept is older than the information age, and the verb to inform ("informare" in Latin) is older yet. It means to impose a form on something, but particularly on the mind in order to instruct and improve it. For the mediaeval scholastics, information was the criterion of materialisation. Information and individuation seem to share a similar conceptual meaning, the universals and essences were thought to be actualized through them. Information is actualization of the form inside matter. The English word information was coined in the late Middle Ages when English itself emerged as the hybrid of the Germanic and the Latin language. Whereas the principle of individuation played a major role in theology and philosophy at that time, it was only until the 20th century when information was insinuated with an inconspicuous semantic life and moved into the centre of the narrative in the technological modernity.

The Latin term "informare" was used by Cicero to impose a form on a thing in order to shape and qualitatively or aesthetically improve it, mostly used in relation to the intellectual mind. For the medieval scholastics, information led to materialization, and the ontological relation between both was to be deciphered by theological definitions. Form (which the medieval philosophers called quiddity) and matter were fundamentally co-dependant proprieties, as "matter materializes the form" and the "form informs matter". In this regard, information and individuation were almost identical in their meaning and function in scholastic metaphysical apprehension. Information as a concept had an inconspicuous existence in the thinking disciplines, but not outside of it. As matter and energy were understood at that time to lack an underlying principle of order or structure which is responsible for shapes and ontological distinctiveness, information was the missing link to complete the puzzle. Information is that which determines form either by con-

structuring or by selecting it. Hence, our hope to find substantial information at the bottom structure of reality from which we can build up a world ourselves and thus build ourselves in the world (individuation) has been the main task of theoretical investigation of the world.

The principle of individuation, on the contrary, has been occupying the minds of Western philosophers ever since antiquity. Regarding the Platonic theory of the reality of the eternal forms, Aristotle posited the "reality of the individual". Form gives an individual substance its properties and gives rise to its inner structural unity. Aristotle attributes the cause of individuation to matter, the universal species remains indivisible, yet individual substances are shaped by form pouring into matter. The Latin Roman philosopher Boethius believed that individuals are discrete in number and only differentiate in their accidental properties. The Persian Islamic philosopher Avicenna believed that a nature was not bearing "individuality" in itself, and the relation between individuality and nature was purely accidental. We therefore must not look for the source of individuality in any kind of essence, but among accidental attributes of things such as quantity, quality and location. His successor Averroes, however, argued that matter is "numerically one", thus building a unified grid, since it is underdetermined in itself and is without definite boundaries.

Thomas Aquinas, who was basing his theology on the new philosophy of Aristotle, which was mediated through the Islamic world first, remained quite close to this. Matter as the principle of individuation remained the same base assumption for Aquinas as for Aristotle. Aquinas believed that matter is the component of a "primary substance" which "individualizes the universal substantial form". In that sense, Aquinas does not use a universal term for the physical universe but differentiates between different types of matter: primal

matter, designated matter and non-designated matter, from which only designated matter was fully capable of individuating the form.

Jung, as we have seen, was among the first modern scientists to take alchemical symbolism into consideration as he started to collect and study all the alchemical texts he could find. In Jungian psychology, individuation is the goal of psychological development and as such the process of individuation is a fundamental function of the psychic apparatus. In the dreams of his patients, he noted the appearance of alchemical symbolism in psychologically significant moments. What Jung called the "individuation process" was the tendency of the psyche to integrate its unconscious elements into a qualitatively higher unity of consciousness and identity. Individuation means the "becoming of a distinct person", which is, according to Jung, the ultimate goal of psychic existence. Personality, so Jung, was the "end product" of a long process of psychic differentiation which went on for as long as time exists. The transition and transformation of undifferentiated, crude matter into self-conscious complex subjectivity is still contained within the human psyche, albeit in a rudimentary fashion through unconscious agency. As people reach closer to the "mystical unification of the opposites" (*coniunctio oppositorum*) in their psyche, archetypal dream symbols appear to assist this. Jung figured out that his patients, although claiming to never having read alchemical literature, were unconsciously "producing alchemical symbols" as the process of individuation was at the stake. The most famous example of such a case is the individuation process of the young Wolfgang Pauli who was under Jung's supervision prior to his major scientific contributions. The interaction between Jung and the later physics Noble Laureate is remarkable in that regard, as Pauli seems to use his psychological development as an empirical tool for his search for solutions to the problems of theoretical physics.

"I told Bohr, that what Einstein considers to be the incompleteness of the wave mechanics inside of physics is in truth and incompleteness of physics inside life." Pauli 120

The French philosopher Gilbert Simondon builds his entire philosophy around the concept of individuation. In it, the predicates of unity and identity that are necessary for the existence of an individuated being therefore only exist because of the process of ontogenesis. Simondon introduces the term "pre-individual being" to set up his philosophy, which is being before individuation and existing as a realm of potentialities which contains within it the possibility for future potential individuation. However, for Simondon this the process of individuation never completely exhausts the pre-individual potentialities and always draws its potential from it, individual subject is considered as an effect of individuation rather than the cause. Thus, the atomistic individual is replaced by a never-ending, cyclical process of individuation, which bears resemblance to Whiteheadian process thinking.

Jungian individuation is goal-orientated and the unification of the consciousness and the unconscious, which results through a synthesis in higher state of mental unity (here Jung is smuggling Gnostic elements into his therapy form) is, in his theory at least, completely achievable. This is in contrast with Simondon's thinking, where the latent potential of "pre-individual being" is never completely exhausted and realized. Thus, "process and relationality" take the place of "principle and identity" as the primary qualifications of the becoming of being. This realm has been called the virtual by both Bergson and Deleuze.

"Unity and identity only apply to one of the phases of being, posterior to the operation of individuation... they do not apply to ontogenesis understood in its fullest sense, that is to say, the becoming of being as a being that divides and rephases itself by individuating itself" (PPO, 6).

Deleuze claims that since the enlightenment the question of individuation in science and philosophy had become two separate questions, which still have not been brought together in an integral theory:

"The accepted wisdom of physics, biology, and psychology has led thinkers to attenuate the principle, but not to reinterpret it"

Gilbert Simondon makes no small display of intellectual prowess with his profoundly original theory of individuation covering not only ontogenetical processes but also a phylogenesis, which is the constitutive element of a "collective consciousness". Group psychology and "collective individuation" is completely left out in Jungian psychology. The "collective elements" of the human psyche in the Jungian interpretation of individuation are but unconscious content and lacks the relation to the technical object, which is consciously taken into consideration by Simondon. Jungian individuation means the sublimation of collective unconscious content to activate the "numinous archetype of the Self", which comes close to what the alchemists referred to as the image of God inside the Soul (*imago dei*). Jung recognized later that his psychology was basically built around psychological interpretations of alchemical process, yet he did not deliver a theory of individuation reaching beyond individual psychology. Bernard Stiegler, as Simondon's intellectual heir, even brings forth a whole politics of individuation on this matter.

The process of the formation of subjectivity, personality and individuality are mediated on different levels of concretion through in-

formation, be it the vital individuation of natural organs, the technological individuation of artificial organs or the psycho-social individuation of organizations by linking them together. The individuation process could be equally seen as a supra-subjective and pre-subjective psychic automatism. Intellectual concepts do not reach into the depths of this process, which is vitalist, voluntarist and volatile. Is the desire to become Gods exemplified by technology and a "collective individuation process" which runs parallel to it?

Information contingency creates structure, and the "thicker" and "denser" the structure, the more computational power (and here it might be useful to talk about the computational power of our psyche as well) is required to loosen the "structural integrity" and break it in order to let a new individuated superject (Whitehead) emerge.

As Borgmann rightly says, this kind of Platonism/Pythagoreanism is an attempt to make reality surrender to our desire to build a reality from a structure which we can find at the bottom of things. If we find this "primordial harmony" in the numerical and geometrical ratio, it seems to fractally transfix a realm of contingency, which is the path to the emergence of new things and new psychological Self's, thus the intentional realization of an idea or image out of its virtual state becomes possible through the information technological medium. These ratios were guiding metaphors for the complete organization of society, solid figures which turned into the building blocks of architecture, the ratios in the structure of the church and governmental buildings, the scales of music-, the structure of the marketplace, the days of a week and so on. There is a "theology" hidden inside the operational codes of society which seemed to flawlessly organize every possible action and reflection inside the cultural context. This "true measure" of the universe used to be considered "divine", and not just arbitrary and profane. In both states, pure structure is mathematical, and a new gnostic information technology docks into the world where the senses could never

arrive at. This mathematical structure is only referential to signs and not to things, thus granting the digital qualities of virtual superiority which are not casually obtainable in the lifeworld. "Virtual individuation technologies" seem to have the potential to transcend both science and technology in their scope since their domain is the ethereal realm of the human psyche and its structure which is postulated to be one with matter.

Today, when the paradigmatic carrier of information is neither a natural object nor a cultural text, but a technological device mediating a stream of electrons conveying bits of information in the succession of natural, cultural, personal and technological information both of the succeeding kinds heighten the function of their predecessor and introduce a new function. Cultural information through records, reports, maps, and charts discloses reality much more widely and incisively than natural signs could have ever managed to. But cultural signs characteristically provide information to enrichen the horizon of reality and impregnating it with meaning. Technological information lifts both the illumination and the transformation of reality into another level of lucidity and symbolic power. Formerly information was "about" or "for" reality, now it adds up to "information as reality". The technological information on a computer or any modern data carrier is so detailed and structurally controlled that it addresses us virtually as reality. Information is stepping forward and is not only a "provider of reality" but challenges reality in its ontological foundations. Technological information is the most prominent layer of the "contemporary cultural matrix" and increasingly it is more of a crushing flood than a smooth layer at the luge that threatens to erode, suspend, and dissolve the predecessor cultural layers.

Borgmann also indicates a certain indifference of information towards the formerly economy of signs born out of the human use of language:

"Cultural landmarks, dimensions, separations, and distinctions are dissolving. Everyone is becoming indifferently related to everything and everyone else. This process began with the modern era, and it is now approaching its culmination through information technology."
(p.15)

Is the "alienation alienating itself from itself" to actually bring forth a "collective individuation" in cyberspace in a Hegelian manner, or is it a process of de-individuation which is going on? Kierkegaard asks whether the Self is as "a relation that relates itself to itself" or whether it "is the relation's relating itself to itself in the relation". If it is the former, there is indeed a chance that the digital world is the auxiliar medium of a collective individuation of mankind. In the worst case, it is the extension of the Ellulian technological system into the deepest corners of cyberspace and our own psyche.

We can say that consciousness is probably not entirely emergent but fundamental to the universe and independent of substrates, the information patterns we are computing with our bio-computer (embedded cognition) and our techno-tools (extended cognition) are the source of the individuation process.

IV · Digital Theology

God made the positive integers; all else is the work of man.

— Leopold Kronecker

THE SHEER OMNIPRESENCE AND OMNISCIENCE OF DIGITAL technology in our world (which are also the classical attributes associated with God in theology) make it the most culturally determining branch of technology of our age and it is largely responsible for the establishment of the Ellulian technosystem. Yet, the underlying parameters seem to reveal a deeper connection between the "real" and the "virtual", the analogue and digital worlds.

If we assume that our neurological makeup is consistent with what could be called a "neural code", we might discover a "meta-algorithmic" sequence at the bottom of what we might call consciousness, personality and so on. These codes and sequences are, of course, nothing but information. Consciousness experiences could be formalized as "discrete instants" which gives digital mechanics, which we are going to treat in this chapter, the theoretical robustness of exposing it to radical reductionism: consciousness would turn into quantifiable instants of information and data. It would imply that the fundamental propriety of the universe would not eschew quantification.

In 1969, the inventor of world's first programmable computer, the German Konrad Zuse, wrote an astonishing book called "Calculating Space" (Rechnender Raum in German), in which he argued that our universe could be described as a type of computer programme that evolves through a series of discrete steps according to predefined

rules. Zuse was in fact proposing that, despite the astounding complexity of the natural world, at its foundation is a set of world or simple rules that compute and update the universe which each passing moment. The universe is computable and is computing itself, or at least seems to behave like it is computing itself. He brought forth a remarkable model of the universe, claiming that at every point in time the universe exists in a specific state which updates with each unit of time. The quantum number of every fundamental particle either remains the same or changes according to the rules that govern quantum processes. The universe updates with one massively parallel computation. This update process also says something important about the nature of time: since the universe entirely updated in an "entangled, synchronous parallelism", changing from one state to the next is without in-between state of the universe, which means that time itself is discrete. Time does not flow like a river, like in Heraclites imagination, but it is simply the sequence of updates of the universe from its current state to the next edging forward from "click" to "click", as such time is an epiphenomenon of this computational processes. The question resulting from this is: could it be that "infinity" is just the illusion stemming from our limited capacity to process the computed information?

"If we could look into a tiny region of space with a magic microscope, so that we could see what was there at the very bottom of the scale of length, we would find something like a seething bed of random appearing activity. Space would be divided into cells and at each instant of time each cell would be in one of a few states a snapshot would reveal patterns of two or three or four or some other small integer kinds of distinguishable states." Edward Fredkin

Computer scientist Edward Fredkin, who was an early pioneer of digital physics, started to use the term "digital philosophy" in his recent work to ponder about the implications of hypothetical digital

physics when applied to a cosmology. In digital physics, the Fredkin finite nature hypothesis states that ultimately all quantities of physics, including space and time, are discrete and finite. All measurable physical quantities arise from some Planck scale substrate for information processing. Also, the amount of information in any small volume of spacetime will be finite and equal to a small number of possibilities.

The four laws of digital physics are as followed:

- 1. Information is conserved.
- 2. The fundamental process of nature must be a computation-universal process.
- 3. The state of any physical system must have a digital representation.
- 4. The only kind of change is that caused by a digital informational process.

Whereas law 3 and 4 presuppose that nature is in a discrete and finite state.

Fredkin has us imagine the universe as consisting of a space lattice of cells, a grand crystalline structure of cubes where each cell can be in one of a finite number of states. The structure comes to life according to a few relatively simple rules that inform the entire universe by pulsing from state A (beginning) to state O (end), thus informing all other cells how to transition from their state into the next one. Fredkin uses maximum level abstraction to arrive at the digital rules ruling structure and form of the universe.

Digital Philosophy, according to Fredkin, is a new way of thinking about the fundamental processes in nature. It is an atomistic, monadic theory carried to a logical extreme: all quantities in nature are finite and discrete. This means that, theoretically, any quantity can be accurately represented by integers. This implies that nature

harbours no "infinity", or "infinitesimals", continuities, or locally determined random variables. At the most fundamental levels of physics, it operates with "digital mechanics" which are entirely discrete and could work even as a substrate for quantum mechanics. The consequence of postulating finite nature on every level, following Fredkin's proposal, is that our conceptual framework for understanding physicalist processes undergoes a paradigmatic change: even though the mathematical laws of physics remain largely the same, digital informational processes now assume primacy over all aspects of physics applied on the micro/macro-scale. Most of the mathematical functions used in physics become but accurate, instrumentalist approximations to reality, as opposed to representing reality. The beauty of digital mechanics lies in the fact that it has no need for particles as entities separate from the elaborated theory, on the contrary, every particle arises from the theory itself.

"All the fundamental quantities that represent the state information of the system are ultimately discrete. In principle, an integer can always be an exact representation of every such quantity. For example, there is always an integral number of neutrons in a particular atom. Therefore, configurations of bits, like the binary digits in a computer, can correspond exactly to the most microscopic representation of that kind of state information." Fredkin

The device paradigm decides how we are configured to perceive the universe. When writing was invented, the universe was perceived as created from the word, the letter had a numinous quality which inspired the imagination of those who were able to manipulate letters. When the clock was invented, the mechanics underlying the clock became the main allegory for the the order of the universe. At the time being, that computers shape the device paradigm, we start wondering whether the universe operates like a computer. No matter from which paradigm we perceive the universe, there is always a

limitation derived from the quiddity of the technological device we are using. In fact, since no device completely obsoleted earlier devices in a single stroke, quite the contrary, since new devices seem to "absorb" and "negate" the previous devices like in a continuous self-devouring reproduction, and as script they are sublated and self-contained in the new device. As such, digital mechanics compete with quantum mechanics, classical mechanics, and all sort of mechanics, yet not completely replacing them for explanatory and descriptive purposes. From the philosophical perspective, every new paradigm dictates a new way of understanding the world. Digital physics are in which builds upon premises we experience through our technology. Digital theology is derived from the assumption that digital mechanics are sufficiently sophisticated to understand the fundamental properties of the universe by stretching from our information technological displays into matter itself.

Computers and their software are the most complex things ever made by man. However, computation is based on the simplest principles ever discovered. Quantum mechanics might not be describing this aspect of reality after all, it could be seen as a prescription for making the best possible predictions about the future if we have certain information about the past. Quantum probabilities may turn out not to measure the actual position of a particle, but the probability of us measuring the particle at a certain location. There is the chance that quantum mechanics tells us more about our co-creator status in the universe than about the actual nature of reality. Consciousness might prove to be the most fundamental aspect of reality, and not a "particle construction kit". The possibility that digital physics may apply to various fields of science through a systemic overlapping of its claims with the paradigm of the field motivates this study. The consequences of the fact that we can build worlds from the most abstract and easy principles seem not yet understood completely. As with any other theory in physics, it seems like even

digital philosophy is not yet plunging down to the most fundamental principle in the world: consciousness. Although we can see that Pauli and Jung's dilemma seems to be within reach, we cannot yet account for the qualia of an experience. Digital philosophy turns into digital theology when it can explain embodied and disembodied consciousness from it.

Is digital theology capable of granting "absolute knowing" to mankind? Looking around at the marvellous complexity of the natural world it is hard to imagine that all of this is a manifestation of computation. This is because the effulgence of the manifest world emerges from a hierarchy of increasing complexity out of a fundamental grid, which could be labelled "psychophysical background reality" to borrow the wording of C.G. Jung and Wolfgang Pauli. At the pinnacle of this hierarchy are of course the myriad forms of complexity that fill the natural as well as the technological environment. The fundamental truth of digital theology is that life is not a property of matter but an organisation of matter. Life is a dynamic process of behaviour that is dependent on specific informational interactions on the micro/macro-scale and the rules governing them. There happens a fractal recursion of determining properties: molecules, for example, could be seen as rule-based organisations of atoms which are -- again- organisations of subatomic particles and so on down to the cells that constitute the fundamental structure of the universe.

"The fundamental truth of digital theology is that life is not a property of matter but an organisation of matter."

"My dreams and my intuition have brought me on track of the natural numbers. They appear to me as the simplest and most elementary of all the archetypes. That they are archetypes is clearly visible from the psychological fact that the natural numbers, when you give them a chance, are very easily amplified by mythological statements one is God, two the couple, the difference, etc... Therefore, I think, at least from the psychological side, that the looked for "boundary territory" between physics and psychology lies in the secret of the number." Jung

One could go as far as defining "digitality" as a quality criterion of precise and concise information. Pythagoras' remarkable effort to posit an absolute space of mathematical perfection which contained the whole universe is already hinting at the "digitality" of the cosmos. Through numerical ratios, symbolic amplification of natural numbers, planetary orbit structures and ethereal musical harmonies he establishes his construct of reality on an ideal plane of digital numbers. Yet, for Pythagorean practice the culmination of the opposites and their conjunction were the signature of perfection.

Reading and computing are digital alike, the "imagination machinery", which always operates from a focal point where the virtual and the physical are superimposed, is condensed into digital realms of expression, which are (cyber)spaces with their own topology. The "imagination machinery" comes up with a finite design, which is

both ontologically rooted in the stratum of the virtual and the real through the symbolic mediation of the sign and the form. The etymological similarity between "de-sign" and "sign" in the English language seems to disclose the parallelism between both realms. Parameters like time and space in their virtual potency can be re-adjusted from the "original" time in the context of the lifeworld, yet our computational systems do often mimic conventional time to synchronize with the local reality. Besides computing a "virtual physicality", there is the possibility to let moral, practical or normally intangible ideas become actualized in a phenomenological, existential and experimental context. This is not only possible through "virtual reality technologies", but also through the book likewise, which to some extent is an archaic virtual reality device.

John Archibald Wheeler's famously suggested that the "It from the bit" which symbolizes the idea that every item of the physical world has at bottom an immaterial source and explanation: that what we call reality arises in the last analysis from the posing of binary yes-no questions and the registering of equipment-evoked responses: in short, that all things physical are information-theoretic in origin and this is a participatory universe of individuation through information.

Is the "axis mundi", which some alchemists liked to look for just a two-dimensional, flat surface with an initial centre (CPU)? Is it a digital grid from which complexity is computed into existence? Is it that the abstract information from this grid is turned into concrete embodiment? Here we are again about the evoke the Whiteheadian God.

Fred Dretske, however, contrasts the "sharp-edged" information of language, which he calls digital, with the "diffuse" information, called analog, that a canvas conveys. Digital conversion is a process in which irrelevant pieces of information are removed. As such, the conversion of information from analog to digital is not without qual-

itative sacrifice. Alphabetic writing seems to be the simple transposition of language from an audio format to a visible medium, yet it took a long process to get from logographic to phonetic sign systems. Spoken language is not a tool in the classical sense, which is independent of the user, like a typewriter, spoken language is to the speaker's mind as the skin is to his body. The German Schultz von Thun in his "four sides of communication model" emphasizes the "self-revelatory" element of speech, you do not just communicate a factual, objective matter, you always reveal something about yourself, the relationship to the person and so on.

Again, the inspection into the structure of the universe is often (if not always) linked to the hope that we might be able to find a descriptive part of reality which lets the signs, and the things culminate in a tightest possible bond. It is the old Platonic search for structure at the bottom of reality. Information theory alone, has not succeeded in finding this parallelism and breaking it down to a new monism. Digital information technology, however, renders the ontological difference between reality and information less and less meaningful. Here, again, we risk being spellbound by the theological prowess of technology. Technology might after all turn out to be the determining factor from which we mould our understanding of the world, and thus, again, technocentric and theocentric reasoning lay bare the same digital structure underlying the phenomenal world.

The "divine" has never left the information circuits of reality even though it has been soaked up by the virtual, which is not just an artificial life world, but its manifestation multiplied in fractal self-similarity actualizing its potential through exhausting the friction its metaphysical breakthrough causes. The original imprint of reality is contained within the life world and is not derivative to it. The symbolic, the real and the imaginary, (best illustrated by the Borromean Knot), are tied up together in a tri-unity which is the virtual. The virtual turns into the all-encompassing strata of possib-

ilities, which contains the actualized possibilities (reality) in-itself. Reality thus corresponds to the digital information flux of natural and technological realm, which appear to only be the second order of casuistic concretion.

In China, scholars know better about the true origin of the binary system than most scholars in the West do: it was the Yi Ching which inspired Leibniz to rediscover the binary system. For Leibniz, the binary system was the image of creation (Latin: *imago creationis*). The binary notation system demonstrated to the theological thinker that out of divine unity (1) and formless nothing (0) everything could be generated. This is oddly close to the philosophy of Jacob Boehme, most German idealists, and Nikolai Berdyaev. Jacob Boehme did not use mathematical signs or numbers, but his equivalent to 0 is the "Ungrund" and it was this term that made the shoemaker's theology become the groundwork for German philosophy. The "Ungrund" is non-being, yet it is the creative potential and the "womb" of the universe. Boehme went so far to proclaim this realm to be "uncreated(meonic) freedom" and Nikolai Berdyaev built his whole philosophy around this dichotomy. 1, evidently enough, is God and the 0 even represents the closed, self-referential circuit of the Ouroboros, the feedback loop of cybernetics and the form of the cosmos.

4.1 · The Universe as a Virtual Finite-State Machine

The universe is a machine for the making of gods.

— Bergson

A common mistake is the belief that complex rules create complex behaviour, when in fact it constrains the emergence of it. Simple rules can create astonishing patterns and It is not certain whether digital mechanics are "univocally universal" or just conditionally universal inside the world of closed information circuits. It is the duty of philosophy of adapting to new trends as well as returning to traditional thought, bridging the two and not falling short of one of both. Yet, understanding the universe as a huge computational grid, has its own myriad of ontological implications which deserve further attention. When Zuse imagined the "universe computing itself" he was thinking about a type of computer programme called "cellular automata". This type of programme is often visualised as a one- or two-dimensional square grid, however a three-dimensional grid is truly giving the perplexing emergence phenomenon justice. Each square of the grid has a discrete property (containing only a single bit of information at a time) and a limited number of states (ideally only two). The most famous example is the "Conway's Game of Life" which managed - with a trivial set of rules - to create the impression of primitive, cellular life emerging out of the "organized randomness" on the grid. One of this forms is called "breeder" and is a pattern that exhibits quadratic growth, by generating multiple copies of a secondary pattern, each of which then generates multiple copies of a tertiary pattern. If one takes these observations to its logical conclusion one might think of the universe as a computer which exists in a specific state at each moment in time which uses basic parameters of its internal rule set to compute itself into its next state, however each cell off the grid is an FSM (Finite State Machine), and as the name indicates: these cells can only exist in one of a finite number of states. Each cell of the grid is sort of its own independent unit whereas the grid turns into an ecosystem of FSM which logically and coherently binds all the cells together in one entangled pattern. A bit like for the CPU, every pixel on the com-

puter screen behaves like an equidistant hologram of pixels. At the most fundamental level, the universe seems to be describable in the same fashion: it is quantified and qualified from a digital structure and constantly computing its next state of being.

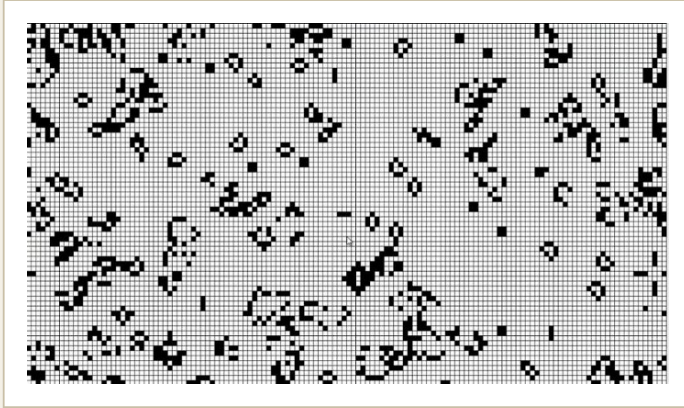


Fig. 2. Desktop view of Conway's Game of Life.

In cellular automata, the screen is divided into cells (1x1) and the computer is programmed to "compute" the array of cells from one pulse to another, letting a generational succession take place. Each transition modifies the colour of potentially every cell on the screen. The rules, according to which the pattern of change is preconfigured, define whether a cell is changing its binary digital value (colour black or colour white) through the next computational pulse. Every transition is consisting of a potential change of colour of every single cell on the grid, depending on their own position and digital value and the ones of its neighbourhood. For example, on an 8x8 grid (the same grid as a chessboard), every cell has a maximum of 8 neighbours and a minimum of 3. Through its properties the observer has the impression that some primordial, singular cell structures emerge which have movement patterns oddly like basic organic life

forms. The rules according to which Conway's Game of Life is operationalized are simple, yet seemingly arbitrary:

- I.** Any live cell with fewer than two living neighbours dies by "underpopulation".
- II.** Any live cell with two or three live neighbours stays alive in the next generation.
- III.** Any live cell with more than three live neighbours dies by "overpopulation".
- IV.** Any dead cell with exactly three live neighbours becomes a living cell through "resurrection"

What happens if you stick to this ruleset and let a computer automate it for is quite astonishing: the grid seemingly comes alive, or at least our cognitive pattern recognition mechanisms build an associative bridge between the single cell organism observed through a microscope and the patterns of flowing, expanding, dwindling, or oscillating cells on the grid. Seemingly unpredictable development behaviour of organisms and populations in general are likely to be accurately modelled by computers. And again, conversion of the analogue into the digital is the key.

Andrew Gallimore offers a hierarchy of complexity which defines the qualitative leaps of each state of the process:

- Level 0: The Code,
- Level 1: The Grid,
- Level 2: fundamental particles,
- Level 3: Subatomic particles,
- Level 4: Atoms,
- Level 5: Molecules,
- Level 6: Cells,
- Level 7: Multicellular organisms.

Too little order, and order (life) breaks down into chaos (death), too much order, life will not be able to form itself. A critical balance between order and chaos is required for life to emerge.

However, what this "scattering of cells" actually "means" and how it can be hermeneutically transferred into the lifeworld is questionable yet crucial. Do we only need to define a starting position and a few parameters to create "artificial life" and not just "artificial intelligence"? If so, are we not already touching the ultimate "techno-theological" ground for ethics, epistemology, abiogenesis, macro-evolution, cosmology, etc.?

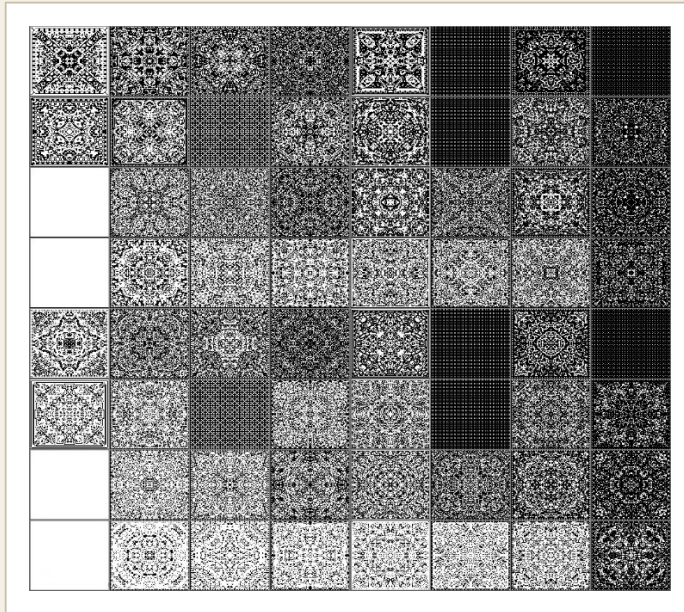


Fig. 3. *Each cell of this grid represents a microcosm of its own.*

Borgmann in another context, however, observed that:

"There is a certain loss of transparency when a computer program takes on a life of its own and unfolds in surprising and sometimes enchanting ways. Information is no longer explicitly coded in the lines of a program but rather implied and embodied in the scattering of cells or the connections and weights of a neural network. Information takes a small step back from the explicitness of writing to the implicitness of a natural sign."

The imminent questions resulting from this, is whether an absolute determinism is taking place on every level in the universe, or whether, on a certain level of complexity a "leap into freedom and self-determination" is achieved. Calvinist theology, for example, is largely in favour of such a radical deterministic outlook, yet the randomness of finite states is still striking. Berdyaev does not believe in any kind of "automated creativity" which is for him but a mockery of the creative revelation of the genius of the spirit. Yet, the modern technical nomenclature opts for a cybernetic rather than his humanist account of creativity. Again, there is a synthesis of both at hand when we "technologically think about theology" and "theologically think about technology", the Whiteheadian God is glooming at the horizon. Pushing VFSM machines to their conceptual boundaries would mean that we need to postulate panpsychism (or a psychic physicalism, which again, obsoletes the term) or/and pan-computationalism as properties of the universe. Panpsychism does not mean that chairs and atoms have a self-consciousness, but that they are sentient information carriers which energetically interact with their environment through vibration. Information always needs a "physical vehicle" to represent itself, and computation is representation and consciousness is self-representation through computation. Although a consistent formalization of this conjecture has yet to be proven, but for now, it remains a viable possibility that the universe exhibits these proprieties. However, consciousness, until now, is not fully analytically representable. This does not mean that

consciousness cannot be experienced, but that it seems to eschew complete representation through analytical methods. Which means that products of consciousness can never fully recover the interplay between content and quality of consciousness.

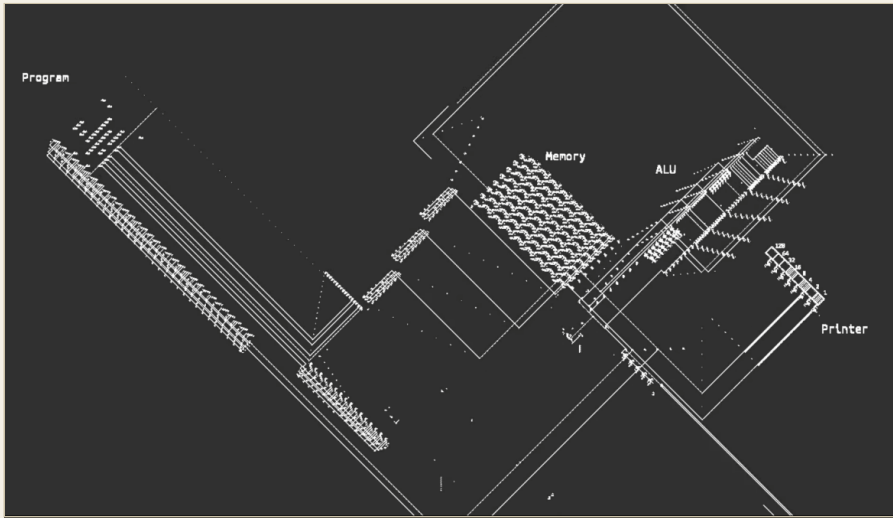


Fig. 4. A working computer constructed inside Conway's Game of Life (after Nicolas Loizeau, 2016).

In 2016, Nicolas Loizeau managed to build a computer inside the Game of Life (a computer inside a computer), which hints at the eternal chain of self-referentiality of the universe. Following the same simple rulesets as enumerated before, he unveiled fractal-computational characteristics of the universe. However, the conjecture that reality as such is but a computer simulation would lead to the possibility of infinite regress, which would imply a fractal simulation without the recovery of the original reality. Reality might be just a self-simulating closed system, which is (through self-decoding and self-encoding) continuously processing self-reference. Reality might be able to sustain itself.

"If we accept that the material universe as we know it is not a mechanical system, but a virtual reality created by absolute consciousness through an infinitely complex orchestration of experiences, what are the practical consequences of this insight?" Stanislaw Grof

Nature is now known for its fractal and holographic fundamental properties. If we assume the laws of physics to be the "rule set" of the universe, we end up living in a VFMS. However, the computational principles underlying reality seem to exceed the scope of this model alone, quantum mechanics and digital mechanics seem to merge with the Whiteheadian God since the universality of computation allows bits and qubits to be processed in the same fashion by any computing entity.

4.2 · Virtual Realism and Pan-Computationalism

The virtual is real without being actual, ideal without being abstract.

— Gilles Deleuze

New physical hypothesis and the emergence of a radically new paradigm, which does not seem to confine to the old notions of materialism or idealism, suggest and all together new kind of understanding of the world. In fact, it is idealism and materialism which grasp aspects or a certain behaviour of actual matter, of actual information, of actual ideas comprehensively but nonetheless in a reductionist fashion. It is no longer a debate whether system A or system B are true but how system A and system B complement each

other in reality and how they have a certain descriptive value or comparative advantages over each other. It requires a comprehensive mode of thought which understands the sum of human actions, Earth, and the cosmos as a unit or as a co-dependent, functional whole. The cosmos requires an ecological self-awareness of its structural conclusiveness, like what we find exemplified in pan-computationalism or panpsychism. If we take this ontological account to its logical conclusion, we must assess that the whole universe is so-to-speak sentient and holographic, meaning that technologies like AR, VR, MR and XR are just replicating the innate properties of the cosmos. What we call reality might in fact just be a virtual reality information processing system. If the definition of reality includes everything which influences reality (through interaction), there can be no ontologically real things of relevance outside of reality. For if they would influence reality, they would be incorporated into the term reality.

Borgmann coined the term "virtual ambiguity" to describe the lack of "clarity" and demarcation which "virtuality" provides. If we assume that virtuality is indeed an attribute of reality, we are in alignment with French philosophers Henri Bergson and Gilles Deleuze. Deleuze borrowed the term virtual from Bergson, who in counterpart borrowed it from Proust to refer to an aspect of reality that is ideal, but nonetheless real. Felix Guattari applying his idiosyncratic terminology and his illustrating with charts, seems to have understood that virtual spaces are not just an appendix to the real, mimicking its structure, but a plane where "assemblage" is being made. The blueprint of a space engine is both virtual and actual, and thus perfectly real. The "assemblage" or "creative novelty" or "computational synthesis" of ideas mapped out stems from the coherence of the virtual with the actual. "Ambiguity" (in the wording of Borgmann) is not an exclusive attribute of the virtual, but of reality as such, at least on the striation of the anthropological domain.

Virtual reality as provided by digital information technology seemingly does not provide information about the lifeworld around it, but the virtual Multi-User-Domain (MUD) constitutes a lifeworld which is still in structural coherence with the analogue lifeworld. This does not mean that parameters like, saturation, space-time and any tangible attributes of the actual reality are transposed into the virtual, yet it is the structural entanglement of both worlds which make the synaesthetic experience available to the user. Virtual reality as an "existential-experimental" immersion platform is only "powerful" to the extent that it is "tricking" our nervous system into immersion without causing nausea. Here the allegories of the astronaut, or the seafarer are quite like the "cybernaut", both enter new, unknown domains, yet "sea sickness" awaits if the adaptation of our body (or in this case more specifically their nervous system or psyche) to the new conditions is not good enough. Here again, we see the delimitation of the virtual through the actual: "stage 0" of virtual reality is about creating immersive "smooth spaces" of comfortable non-resistance like an "artificial womb". The virtual needs to simulate from the actual in order to modify reality by being its appendix.

Where information turns into virtual reality, new dimensions need to be traced, and new terms need to be found. Technological information is going to be at the heart of virtual reality, and it might turn out that the current "visual immersion" into a virtual world is but an uncompleted process of de-territorialization of the lifeworld into cyberspace. The boundary of our conception of virtuality stems from a terminological confusion which might reflect our own incapability to disclose the metaphysical magnitude of a hypothetical "artificial reality" which subverts, complements, substitutes, compensates or obsoletes the reality of the lifeworld. Virtuality as such poses a huge ontological problem for philosophy, where different metaphysical approaches lead to different conceptual results. As

mentioned previously, virtuality is a precondition of reality, like on the Moebius stripe each side holds together each other in an entangled whole which seems to. Nothing has as much of breadth and depth than the actual world and nothing is as "engaging" as a lucid dream which virtually recapitulates the actual world as an existential epitome of the embeddedness and entanglement of the actual/real and the virtual. The composure of the term "virtual reality", which at times describes "technologically constructed digital worlds", seems to be doubly tautologous: is not virtuality an attribute of reality? If this kind of "technologically constructed digital worlds" were but to be a "simulation" of the lifeworld, the term "artificial reality" would be the most compelling among the conventional depictions. Yet, this kind of "boundary" which delineates the so-called "artificial" from the "real", seems to be but a misconception, at least if we think among the lines of French postmodernists. What Baudrillard first termed "hyperreality" is far better suited to describe the "nature" of "technologically mediated digital worlds". No technologically crafted reality will simply substitute the analogous life world, quite the contrary, there is just another layer of embeddedness and malleability emerging through it: artificial reality striations merge with analogue reality, and that is what, besides actuality, truly constitutes the fundamental character of reality: virtuality.

"...the reality of the virtual is structure." Deleuze

Deleuze's virtual structuralism positions the ontogenesis of the real as the interplay of the virtual with the actual. The digital symbolic world is the virtual, and the technologically mediated virtual reality is a full-fledged "surrogate reality". The ontological shift through digital exposes the true crux of technology. The early virtual cybernetic systems might have, as correctly predicted by Deleuze and Guattari led to "de- and re-territorialization", meaning the location and context of material objects have been de-materialized. The

transition from space to cyberspace seems to leave an "ontological gap" which cannot be bridged by conventional dualist delineations. William Mitchell, speaking of the "City of Bits", predicts the emergence of habitable landscapes inside VR:

"this will be a city unrooted to any definite spot on the surface of the earth, shaped by connectivity and bandwidth constraints rather than by accessibility and land values, largely asynchronous in its operation, and inhabited by disembodied and fragmented subjects who exist as collections of aliases and agents. its places will be constructed virtually by software instead of physically from stone and timber and they will be connected by logical linkages rather than by doors pathways and streets."

These virtual spaces create "end-to-end" links between the digital information technology and analogue reality. Maps are created through the hermeneutic process of converting informational memory spaces into an external space of signs. Virtuality is the factor which is guaranteeing the commensurability of analogue and digital spaces and their transmutability into the opposite states.

Borgmann, with the analytic perspective of a technician, says that:

"in order to make sense of a computer, one has to gather and conceal the electron flows of transistors and resistors in the various boxes of logic gates: collect the logic gates into adders, adders and such into an arithmetic and logic box, boxes like these into the central processing unit, the CPU and other chips into the board: and, finally, put the boards, peripherals, and a power supply in the outermost black box -- the computer." P.167

He rightly notices that there is a "hierarchy of languages" contained within the structure and composition of the computer. The "machine language", being the closest to the "physical structure of

machines" and thus "nature", is composed of a "grammar of Boolean Algebra" and a "vocabulary of bits". This fundamental language is transposed into the "compiler language" and the "programming language" and so on. Borgmann is hinting at something very curious here: this coalescence of parts into an instrumental whole is accompanied by the "opacity of the black box" since the lingua franca of the computer is the cursor movement and the click, again tasks mediated through the application of the hand and the fingers. However, even this tendency of having an analogue instrument which helps us navigate through the cyberworld seems to be only a temporary attribute of virtual reality technology. The neurological link between cyber-circuits and our brain can, at a further point with more advanced technology, be granted and thus turning the electric signals in our nervous system into meaningful input for the cybernetic circuit with which it is in a symbiosis. William Gibson's *Neuromancer* draws on the same topic but with a dystopian connotation. In Gibson's world, things are flipped upside down: we are in a future where the technological system has swallowed up the old natural order, a structural manifold matrix/cyberspace is devouring the available information and saving it in the system. The ethereal world of the virtual is devoid of meaning, colour and uniform in its logical structure. The master of the cyberworld needs to turn into a cyborg in order to operate the electrodes attached to their foreheads with a keyboard computer. The fear of disintegration in the cyberspace has been haunting the imagination of many sci-fi thinkers in general and also of techno-critical minds in general. For Ellul, this would evidently be the most disastrous of all possible conditions, when technology not only supersedes nature, but devours it, leaving humans in the grace of cybernetic, virtual agents inside the prison of bits.

If pan-computationalism deems to be true, the only way to avoid solipsism is to acknowledge that even though the human body is

being computed on the reality matrix (which we might just call nature), it is also computing at the same time. If there is no "counter-computation" happening inside the human nervous system, there can be no free will and there is just complete surrender to the laws of nature and the genetically inherited instincts and behavioural patterns. The human body, to break with the old analogy, is not just a "hardware" and the natural psychic imprint (personality, cultural conditioning, etc) the "software": the human body is also "wetware", which is an electric signal transmitter, and as such, the old phenomenological idea of technology as the bodily extension does not hold up to the new potential and phantasies emitting from synchronizing nanotechnology with the rhythm of the human organism. In virtual reality, otherwise parapsychological phenomena could be mastered and normalized, if the hard problem of consciousness can be solved. In fact, organisms as such can be seen as adaptive algorithms and every cell and molecule described as signal processors since they encode and recode information so that life can spread itself through networking mechanisms.

One shall not be tempted too much to believe that the human mind is a linear, digital computation machinery, but rather as a quantum neural network probably a microcosmic copy of the macrocosmic structure. As such there is a fractal consistency structurally unifying systems of any scale.

V · Superhumanism, Transhumanism, and Posthumanism

Science cannot solve the ultimate mystery of nature. And that is because, in the last analysis, we ourselves are a part of the mystery that we are trying to solve.

— Max Planck

UPERHUMANISM, TRANSHUMANISM

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and Posthumanism" in the English version of this chapter's name, already indicates the general teleology of these doctrines.

Translating both Superhumanism and Transhumanism into Chinese, one faces a hermeneutic issue since both are translated by the same wordings.

(超级人主义，超过人主义，人后主义)))

All of these three ideologies are "eschatological expectations" and to some extent or another also connected to a "soteriological agenda". In this sense, they are the cornerstone of a theology and intimately related to the mythologized reception of technology by human culture. How religious eschatological expectations have culminated in the quest of science and technology shall reveal a further layer of the theological dimension to which the technocratic program of mankind is attached to.

If we adhere to the rules of digital physics, there is a hypothetical reversibility of time and every conscious instant is part of a holo-

graphic computation which clicks the universe from one state into another. As such, eschatology is not about the "Alpha Point" or "Omega Point" on an arrow of time, but an intentional information impulse which is instantiated all along the line at every moment, the focal point of the now is the eternal moment of consistence. As such, every singular moment in time discloses a beginning and an end (discrete and finite). And if we assume phenomenological intentionality to play a role in the course of history, we need think about technology from the beginning until the end in order to come to conclusion about the direction, the value and the qualitative transformation of the human condition along the line. Technology cannot only be evaluated from the immediate yields which it grants to us, but only through the whole development process it unfolds, including its secondary effects and side-effects. In this section, point 6 and 7 of the definition of theology are explicitly addressed and brought in alignment with the concrete course of human history and not just in a hypothetical *ceteris paribus* parallel world.

Superhumanism is the ideological ambition to increase the "humanity" of mankind and to become "ideally man", for example through Buddhist or Daoist moral refinement and cultivation. On a more extreme level, it is negating the human essence in favour of the "Absolute", which is seen as the origin of mankind's temporal existence and suffering. Self-augmentation through self-negation, or becoming "more human", that means, closer aligned with the "good". The Nietzschean "Superman", however, is still a perfectly intact biological entity which does not opt for transcendental cultivation, he refines his nature through eternal struggle with nature itself. The transhumanist, on the other hand, opts for the technological self-enhancement. Nikolai Fyodorovich Fyodorov (1829--1903), the so-called father of transhumanism, was a man of innate genius, original and quaint and a one-of-a-kind pioneer. Being an Orthodox Christian believer, he was seeking after "universal salvation"

(apokatastasis) by figuring out a way to save both the world and all mankind. Universal salvation and resurrection depend, in his eyes, does not depend only upon the mercy of God, as the theology of the Christians suggest, but first and foremost upon man, upon his own personal activity in the world. In this sense he had Gnostic tendencies, which have been way more integrally absorbed by the Eastern Orthodox thinkers than the Western Catholics. Although in firm belief of the Christian dogma, Fedorov was a stern pragmatist who did not value philosophy as such and arrived at an "end of philosophy" independently of Marx. His pragmatism is exemplified in him regarding only true knowledge as proven by deed, not by contemplation, visions or thoughts. The latter ought to be replaced by "projects", or said more precisely, by participation in an "All-universal project". This idea was also insinuated by Nietzsche's Zarathustra when he questioned the actual existence of mankind "as a whole" in absence of an all-encompassing goal.

"Knowledge is wrought by the holy, by the religious obligation of all; this sacred obligation however demands knowledge from all and of all, i.e., that all should become cognitive and all become the subject of knowledge, and that science should be deduced from an observation not somewhere, by someone and some-when, but from the observation produced by all, everywhere and always"

For Fedorov metaphysics, positivism and theoretical science are likewise grounded upon a theoretical reason separated from the realm of the practical. Positivism, as he sees it, is only a modification in appearance of metaphysical scholasticism, which also is a way itself of a modification deriving from theological scholasticism. As such, he seems to agree with the general claim of this thesis. Cybernetics could equally be included in this category, yet the term was yet to be used again.

Death itself for Fedorov depends on ignorance, and the victory over death — upon knowledge and enlightenment. He poses a dilemma:

"enlightenment or death, knowledge or eternal perishing, — there is no other outcome".

Fyodorov almost mechanically conjoins naturalism with his religious beliefs and tries to "realize the eschaton" through socialist naturalist science which belongs to the human species, and not to an elite science class. Yet, he does not want to know the "self-worth of thought" and he does not strive towards pure cognition, free of any practical considerations whatsoever. Fyodorov was, by the modern standard, a futurist who theorized about the eventual perfection) of the human race and society (i.e., utopia), including radical ideas like immortality, revival of the dead, space and even topics like ocean colonization. Fedorov and the Russian cosmist movement are the absolute pioneers in this domain. Berdyaev called Fedorov the founder of the "religion of resuscitative resurrection". Tolstoy even said about Fedorov:

"I am proud, that I live at the same time with such a man".

Dostoevsky himself also had an extremely high opinion of Fedorov, which he shared with a friend:

"He (Fyodorov) has been quite of interest to me... I am essentially in complete agreement with these thoughts. I tend to read them through as though they were my very own".

The influence of Fyodorov is hard to estimate outside Russia, yet his intellectual heritage has been anchored in more than just the modern sci-fi visions, one might even dare to say that he is the father of astronautics. The salvatory potential of technology has never been revealed to the same extent in other writers before. It does not come to a surprise that Russia had many pioneers in the grand scientific and technological ambitions of mankind in the 20th century. The cyberpunk community and old Soviet Sci-Fi novels

share a similar theme: the mythological frame of reference which mankind tends to connect to technology. In Sci-Fi, the formerly mythological hero sagas get a futurist spin-off. Fairies and androids, all stem from human imagination which is deeply linked to magical, pre-rational state of consciousness. Nick Land, who we could call a latent supporter of posthumanism, calls superstition which is projected onto technology "hyperstition". Nick Land's "accelerationism" is eschatological since it seeks to end history, capitalism and even mankind. The obsolescence of mankind reaches a new climax in Land's theory. He arrives at the conclusion that the "future does not need mankind" while it is able to take care of itself through artificial intelligent systems. This is what has been called the "Dark Enlightenment": it is a dystopian prospect of the future driven by ever accelerating machine learning to the point of technology becoming an autarch, and autonomous entity with a singular consciousness.

Since new technology implements "new modes of being", there have been various predictions made about the qualitative changes in the human nature which result from it. There are several levels and layers of technological determinism which run through these conceptualizations. The transhumanist version results from the extropian's belief that energy conservation is increasingly successful over the course of history, and entropy finally diminished if not overcome completely and reversed (negentropy). The techno-theological dimension of this is strikingly obvious since the proponents propagate the theory with the confidence of a divinely ordained priest. Raymond Kurzweil (1948-) at the American tech giant Google gives us an historicist account of technological development, believing that it ultimately culminates in a "technological singularity", which is best exemplified by the emergence of an "AI God". The singularity is synthetically conscious of its own and takes decisions on its own according to its "preferences", the impact on the human mode of ex-

istence being almost unimaginably dystopian or drift into Sci-Fi phantasies. The AI God learns, improves and augments autonomously and as such it is the ideal exemplification of the attributes of the Ellulian technological system. In fact, it is the concrescence of the technological objects into the technological system, and the emergence of a sort of ethereal, synthetic consciousness from silicon which give the principle of individuation a different meaning. As individuation has been applied to God and man in theology, philosophy and psychology respectively, a "personalist substance or monad" is self-contained in the ontological structure of consciousness. Whether or not consciousness is fundamental to the physical universe is crucial here. Consciousness, if defined as some sort of "individuated information system", seems to be the ontologically prior to organic integrity of the body, especially if it does not concern "flesh" but a cybernetic circuit. Kurzweil, as we have seen, is not the first one to point out to the technologically guided transfiguration of the human substance during the course of history, yet Kurzweil's historic optimism is completely secular in his outlook, as he sees the salvatory power of technology as a necessary chapter of projected human evolution. However, the belief in a singularity awaiting us in the future is a form of millennialism, and consequently the subject of theology. Kurzweil picked this idea up from other thinkers, both Timothy Leary and John C. Lilly (1915-2001), for example anticipated in their own fashion a "bio-cybernetic" age. John C. Lilly is so explicit about the Skinnerian conditioning potential of the human body that he named his book "the programming and metaprogramming of the human bio-computer", going a step further than La Mettrie (1709-1751), who in the foreshadow of the first industrial revolution couldn't but conceive the human body as a "machine" and not the far more sophisticated computer. The "machine" as a term evidently "subsumes" the computer, but it is not a concise term able of revealing the "deeper" mechanisms of organic

existence: the industrial age machine is prone to produce kinetic movement patterns but lacked the ability to "think and memorize", merging on a more fundamental level with the nervous system of the human user.

However, the true pioneer of the singularity is Teilhard de Chardin (1881-1955). In his cosmology, the antipodes of religion and technoscience are rendered completely meaningless as soon as we approach the "eschaton of history", which he symbolically associates with his interpretation of the "second coming of Christ": the "Omega Point". Teilhard argued that the Omega Point resembles the Christian Logos who draws "all things into himself", who in the words of the Nicene Creed, is "God from God", "Light from Light", "True God from true God", and "through him all things were made". The "religious meaning" of technoscience is completely acknowledged by Chardin and brought in congruent harmony with his own religious belief. The Omega Point, so Chardin, can be understood as a volume shaped as a cone in which each section taken from the base to its summit decreases until it diminishes into a final point. It is obvious that Chardin, who was a Jesuit friar, was aiming at harmonizing religious dogma with scientific theory, particularly Darwin's theory of evolution. Chardin never met the scientific requirements to appeal to physicists and at the same time displeased many of his Catholic peers with his "heretic theories". Tipler, in continuation of Chardin's work, tried to increase the value of Chardin's thinking for the scientific community, although heavily relying on speculation himself. According to his cosmology, it is required for the known laws of physics to be mutually consistent in order for intelligent forms of life to take over all matter in the universe and eventually force its collapse. During that collapse, the computational capacity of the universe diverges to infinity and environments emulated with that computational capacity last for an infinite duration as the universe attains a solitary-point cosmological singularity.

Here we effectively are in the presence of a pan-computationalism. Tipler defined the "final anthropic principle" which states that intelligent information-processing must logically emerge, and, once it does, it will never die out.

Alexander Bogdanov (1873-1928), A Bolshevik revolutionary, invented an original philosophical information theory called "tekto-logy" years before Norbert Wiener which is now regarded as a forerunner of systems theory. In Russia, Lenin (and later Joseph Stalin) considered Bogdanov's natural philosophy an ideological threat to dialectic materialism. He was part of Lunacharsky's "God-Building" movement, while they regarded traditional religion as false and rightly stated that it has been abused for the purposes of exploitation, it was still cultivated emotion, moral values, desires, faith and other aspects of life that were important to human society. He believed that these aspects should be transformed into positive humanistic values of a new communist morality, instead of destroying religion outright when it served as the psychological and moral basis for millions of people. In his idea, God would gradually be replaced with a new vision of humanity, and through doing so socialism would achieve great success. Lunacharsky saw Marxism as having religious components, including its faith in the inevitable victory of socialism, as well as its belief in science and material existence as producing all human relations. These elements could assist in the "God-Building". Although this position has never made it into the Party program (Vladimir Lenin was infuriated by this concept), it still shows how a salvatory transhumanism and socialism can be ideologically united in concept.

Posthumanism, however, is mostly defined by a deep philosophical pessimism (the most radical post-humanist project being the "Voluntary Human Extinction Project"), an AI takeover, a global cataclysm, a new world war, etc. The famous current philosopher on the topic, the British Nick Land who lives in Shanghai, promotes the

view that humans should embrace and accept their eventual demise. This is related to the view of "cosmism", which supports the building of strong artificial intelligence even if it may entail the end of humanity, as in their view it "would be a cosmic tragedy if humanity freezes evolution at the puny human level". Technology abides radically to its Ellulian features and causes human extinction.

Superhumanism, Transhumanism and Posthumanism are all eschatological outlooks which have either been defined as a resistance against human nature, its augmentation, or its annihilation. Any attempt to set up an ethical outlook based upon these concepts, needs to be defined from its teleology. As such, ethics needs to take the intentionality and direction of these ideologies into account to grant human self-determination. We can only come to ethical conclusions about technology and its connection to theology when we consider the eschatological tension underlying the development of the field.

What is most remarkable about this anthropological view is that man is by no means a finished product, it is still in the process of evolution and of struggling to find its true authentic form of life man is the species in the making. Technology works as a "individuation catalyser" which gives us the power to self-determination, not just as a mode of thought, but as a mode of being. Mankind moulds and creates itself in and through his experience of life to spiritual and existential conflict and through various toils which each personal destiny seems to impose upon mankind. Mankind is a "projected design" more than a subject which is being subjected to higher forces.

VI · Eschatological Ethics

Each moment can be a beginning and an end in itself: time begins and ends with each moment. Accordingly, time is not understood to be a unidirectional movement but is seen as a sheer series of moments that can move reciprocally. Here a sort of reversibility of time is realized.

— Masao Abe

IN THE WEST, PEOPLE BORN AROUND THE AGE 2000 ARE called millennials , millennialism, however, is the cultish belief to live at the "end of time" or the transition to another age/epoch. Millennial socialism, for example, can have two meanings. One meaning the socialist beliefs of people born around the millennial (2000) or the other meaning, eschatological socialism which aims at building the utopia at the end of time, heralding a new one. As such, the economical saturation of millennials and their nativity in the digital world might make that generation to become a crucial turning point in achieving the long-prophesized "End of History". Growing up in the information age, the millennial generation will herald a revolutionary new age.

"Each moment can be a beginning and an end in itself: time begins and ends with each moment. Accordingly, time is not understood to be a unidirectional movement but is seen as a sheer series of moments that can move reciprocally. Here a sort of reversibility of time is realized." Masao Abe

Berdyayev constructs his ethics around "spiritual individuation", and is in that regard similar to Jung, which circles around the unrepeatable uniqueness of each person's life; in that regard, he introduces creativity as a criterion for authentic ethics. Creativity means not interpretational anarchism, but the tacit ability to find the personal ethical canon through sacrifice and asceticism. Instead of subjugating the entirety of human life to collective norms, Berdyayev is looking to distil the unique contribution each and every individual can give to the world. Berdyayev's goal is to find an ethical outlook which does not negate the personalist dimension of existential reality. In his outlook, ethics are paradoxical by rule, it would be meaningless to logically opt for a mono-dimensional consequentialist, utilitarianist or deontological account. The most fundamental categories of ethical evaluation lie at the root of a normative moralism, namely the stigma of good and evil. A rigidly fixed definition of the conventional understanding of good and evil gives rise to an inherent falsity and hypocrisy of morals and morality as such. This categorization is, however, inevitable, its quality only depends on the depth or shallowness of its implementation. Far from falling into relativism, Berdyayev sees that there is a sociological layer of the good and a spiritual one. As social being, man witnesses the changing conceptions of good, as concrete person, the eternal understanding of goodness can be revealed to him.

The categories of good and evil are a "metaphysical sting" which is not extracted by pointing out its relativity. Good and evil are symbols which are not artificial or accidental, they foreshadow the ultimate reality, yet in a dark and yet obscure fashion through the mirror of the world. Paradoxical dualism as such is the basis of consciousness. Man is in a sort "digital deadlock" until this duality is overcome by a new "fullness of life" stemming from a new kind of "super-consciousness". Life is characterized by a tension between the opposites, the dialectical interplay of the lived experiences of a

person. And it is not normative ethics, but a "pneumatology" which can transfer the paradoxes of human personality into the sphere of ethics. This kind of ethics takes its starting point from the "highest value", which we simply equal to God, and in true orthodox Christian fashion, he sees God as the existential centre of being which is disclosed through spiritual experience. Mankind is placed into a dynamic context of an archetypal pattern which brings all fixities into a flux. As such, normative ethics cannot capture the true existential complexities of the moral questions. Whitehead's God of creativity and Berdyaev's ethics of creativity go hand in hand.

Evil stems from freedom, not from the natural world, like Augustine thought. As such, it cannot be the goal to reduce "evil" by limiting freedom, for it is freedom which gives man a dignified existence. That is the paradox of righteousness. Men become "good sheep" because of innate cowardness more than because of voluntary submission to goodness, or any kind of heroic sacrifice. Free humans bear a higher value than good automatons, thus states the ethics of freedom. Yet, freedom is in no way a detachment from the social context, since we are still beings in relation to other beings, and as such, freedom bears the double burden of self-determination and responsibility towards the other. Evil, is non-being, it contains no ontological reality and as such we can juxtapose death with evil and non-being. Personhood is the concrete centre of existence and personhood without the individual and social elements is only an abstraction. There is only metaphorically an "existential being of the nation" which is carried through culture, art and tradition and through what Hegel would call the "objective spirit". Yet, the nation as a constitutive element of the Self and needs to be understood as belonging to a supra-personal entity which is composed of the concrete lifeworld embeddedness of the person.

Berdyaev looks for a primal meta-trauma inside mythology, which Schelling understood as the matrix for the genesis of con-

consciousness and finds it in the analogy of the biblical account of the Fall from the Garden of Eden. In our conscious experience, good and evil become inextricably intertwined. Consciousness actually "wounded" the living wholeness of the person by introducing this duality into the spiritual life. For Berdyaev, consciousness is the result of the Fall from a paradisaical, original state. In a formalized, analytic theology, the Fall is the split from the Source of being and thus the ultimate sub-transition matrix underlying all of reality. In accordance with this doctrine, the double origin of mankind is at the root of the paradoxical nature of consciousness. Man as a rising beast, as Nietzsche and natural theology would have it, or man as a fallen angel, as the Biblical account states it. For Berdyaev mankind is indeed this hybrid being which bears the image of the creator into creation, yet is a copy of the cosmos as well, and his lower, animal nature bears witness to this.

Personality is the "divine idea" and to conceive of personality as a naturalist substance is tantamount to limiting its possibilities of spiritual development and experience. every form of authentic religious and mystical experience testifies to the fact that personality is not an isolated substance but rather that it conceals between itself unheard of possibilities and that their lives before it a world of infinite extent containing vast stores of spiritual energy. Although by building up the possibilities of a digital philosophy in this paper to make it turn into digital theology, one must respect the infinite realms of spirit before we explain away the mystery and the unfathomable depths of the human soul from a positivist clockwork universe and the finite state natural world. The revelation of spirituality liberated mankind from nature, the ethereal world of reason is undenied even among the firmest materialists. If one cuts off the spiritual umbilical cord of reason, one ends up with solipsism and reason itself stands on pure nothingness, leaving scepticism as the primary sentiment of an anti-philosophical worldview. Technology

is a product of spirit, as such it is liberating mankind from the shackles of nature, yet, in technology nature has not yet been overcome. The level of crude mechanisms which underlie technological tools are creating a striation of necessity which mankind has yet to overcome.

Just like Feuerbach, Nesmelov sees the theological potential of man in the essence of the enigma concerning man and not God. Religion is the expression of the mystery of human nature, the reflection of the enigma of human nature. For man there does not exist in the world any sort of enigmas, besides man himself, and man himself is manifest for himself an enigma only in this sole regard, that the nature of his person in regard to the given conditions of his existence be rendered ideal. If it were possible to reject this sole regard, then together with it quite reasonably it would be possible to reject in the world both every wonder, and all mystery. To "realise" oneself however in one's own natural makeup of one's unique person, and not to the genus or to other determinants. The image of unconditional being is not created by man in any sort of abstractive thoughts, but in concrete existential reality, is given to man by the nature of his personhood. Through the very nature of his person, man necessarily images his own unconditional essence and at that self-same time he exists, as a simple being of the physical world. This twofold aspect of human nature is also a great mystery, which ought to be investigated by philosophy and it ought to lead to religious anthropology, since positivist anthropology is not concerned with the fact of man's "belonging to another world" . Out of the things of the world man is unique, and man — is the image and likeness of unconditional Being, of the Absolute Personness. Science, for example does discern and vivisection the "concrete existential unity" of the world, systemic cybernetics does the opposite, it can cross-relate everything to everything and does describe the functional relationship between systems as a system, which are not granted a

perfect structural cohesion (entropy), but only a loose, dynamic, and mutable temporary state. Science discriminates, reduces, excludes, differentiates, and breaks reality apart. Systemics integrates, adds, includes, and assimilates the components of reality to each other to find a universal descriptive layer which does not violate the structural unity of the universe. As such, theology and anthropology are intimately linked in systemics, yet completely different branches of academic science. Since theology is "special anthropology" and anthropology is "special theology", there is a way of finding a "anthro-theology", where the discriminatory antipodes are harmonized and re-iterated from their root: human consciousness, which is the universal mediator between being and non-being, sense, and nonsense. The symmetry between humanity and God, information and context, reality and virtuality are all resting upon the epistemological primacy of embodied consciousness in the existential grid of existence over the objectified knowledge (bad science).

In terms of ethics, Levinas and Berdyaev tread in the same direction. "Alterity" (Levinas) can never be emphatically taken account of in any monist system (and the technological system is monist). Monism makes "alterity" relative and appear like a subjective illusion. Levinas by employing this term put emphasize on the radical gap between one human being and another being (human, or the ultimate alterity: God). Alterity stems from irreducibility of humans into objects or other humans: there remains infinite difference between subjects. Meaning is born from the tension between the beginning and the end, life is what is happening in between. The concrescence of actual entities during the eschaton, the apocatastasis of the real, the zimzum of self-revelation and a new pan-identity of the cosmos, these all are the longing of man, for a unification of the opposites. Man cannot be free if he has enemies, and we still have not overcome the negativity of death, which defines our lives from the bones to the skin. A concrescence of mankind at the end of time,

the "collective individuation" as the constitutive new identity of a planet on which mankind achieved more than just formal, but some sort of completely individuated cross-cultural unity without sacrificing the ethnological and cultural characteristics.

Ethics, to put it bluntly, need to be defined from the beginning to the end, and not just in the in-between. That is the true meaning of the "God-Man", who is neither Man nor God, but both at the same time. It is this paradox which defines the essence of human beings. There is no more human desire than to transcend the human condition. There remains one major issue of demarcation: what is the difference between man and God? A God creates worlds, man inhabits worlds.

VII · Conclusion

The human brain is a machine built for coming to conclusions.

— G.K. Chesterton

FROM THIS COUPLE OF PAGES, I HOPE TO HAVE BEEN able to make my point and bring to awareness the essential need for us to come to definite conclusions about a technological theology, as it gives us a framework to operate collectively and individually in the technocratic world. We live in an age which is maybe more revolutionary than any age before, as time intervals of radical tool innovation are getting shorter, the need for us to adapt with foresight to the current conditions is as urgent as it has never been before: we must heed Ellul's warnings.

However, one thing seems clear: we cannot afford to think in the "Manichean" terms that often characterise the debate on new technologies. Technology is neither the devil nor an angel, neither a God nor is it simply a tool or some neutral extension of a "rock-solid" human nature. Technology is a trickster (like the Jungian trickster archetype), and it has been so since Prometheus taught the human tribe how to cultivate fire. The trickster shows how intelligence fares in an unpredictable and seemingly chaotic world, he beckons us through the open doors of innovation and traps as in the prison of unintended consequences (progress traps). Yet, the trickster archetype is in the mythological accounts of many civilizations often the "psychopomp", the one who brings the souls of the dead to the next level in the afterlife. The trickster is also a fool and a shaman, his revolutionary potential lies in its recklessness, in its non-observance of good manners and the cultural etiquette, and in his

ability to expose human and even godly hypocrisy, shame and greed. It is also important that we do not make a fool out of ourselves while dealing with technology, yet it is important that we do not lose our confidence in our ability to discern the good from the bad, the favourable from the unfavourable, because the cybernetic steersman is in fact fractally emulating God's operating system. Ernst Jünger said that borrowed power is not real power, however, if the universe is a conscious feedback-loop on every scale, we could say that information technology is bestowing a godly skill on us.

"Technology is a trickster, and it has been so since Prometheus taught the human tribe how to cultivate fire."

Setting up a theology, as it was defined along the lines of this paper, is not a tiny task, so we do not dare to come to a definite conclusion about the ultimate nature of technology its feasibilities, its potential for social acceleration and transformation, its potential for altering the anthropological condition and disclosing new modes of being in the world. However, with certainty we can conclude that the topic itself is of utmost importance for the future of thinking, as the obsolescence of old paradigms goes on, we need to catch up with our theories and models in order to capture where we are, what we are and where we are going. The eschatological "destiny" which comes along with our technological progress might be totally determined by our actions and choices, however, still remain unpredictable to us (like a cellular automaton). In the long term, an epigenetic transfig-

uration of the human essence seems inevitable, so it is crucial for us to shape our future after our intentions and not let it be shaped by the consequences of myopic actions.

It's not in the balance of the bourgeois world, but in the thunder of apocalypses that religions are reborn.

— **Walter Schubart**

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