

# Philosophy and Computers



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the *IoT*, seems to be an essential new development. Besides these networks there is a regularly renewed activity to form sharing networks to share “contents” (files, material and intellectual property, products, knowledge, services, events, human abilities, etc.) using, e.g., streaming or peer-to-peer technologies. In this way, currently, from a practical point of view, the internet can essentially be identified as a complex being formed from five kinds of intertwined coexisting networks: the net, the web, the social networks, the IoT, and the sharing networks.

Furthermore, as it is easy to see, especially in the case of social and sharing networks, the internet cannot be identified and its development cannot be understood independently from the historical-societal and cultural environment in which it is launched and used. Identifying shaping influences of certain social and cultural relationships on the formation of the internet makes it easier for us to consider and identify the opposite relationships—i.e., to study the social and cultural impacts of internet use. In other words, accepting the idea of the social construction of the internet as a technology can help us understand the social and cultural consequences of its use.<sup>2</sup> Thus, it seems to be useful to employ a social and cultural context in the examination of the nature of the internet.

Taking into consideration the praxis of internet use, its two important characteristics come into sight. First, it is obvious enough that the mode of internet use changes very quickly and in an almost unpredictable way. The reasons for this course of events can be associated with the second characteristic of internet use: internet users are typically not just passive acceptors of the rules of use prescribed by the constructors of a given internet praxis, but they are active agents.<sup>3</sup> In fact, in the case of the internet, the constructor and user roles typically interlock with each other.

In this way, in order to identify the very nature of the internet and its characteristics, we have to understand the emergence and formation of a complex of several intertwined coexisting and interacting networks shaped by experts and active users in the changing social and cultural environments of the late Modern Age. Over and above, we have to disclose and consider the social and cultural impacts of this complex being, and to study the meaning of the construction of the internet and that of the ubiquity of its human use.

#### **METHODOLOGICAL CONSIDERATIONS—TRENDS IN INTERNET RESEARCH**

Confronting these intellectual challenges, research on the internet had already been initiated practically at the time of the emergence of the internet. In the beginning, most research was performed in the context of informatics, computer sciences, (social) cybernetics, information sciences, and information society, but from the 1990s a more specific research field, “internet research,” started to form, incorporating additional ideas and methodologies from communication-, media-, social-, and human sciences. From the 2000s, internet research can be considered as an almost established new (trans-, inter-, or multidisciplinary) research field.<sup>4</sup>

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## *Toward a Philosophy of the Internet*

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The appearance and the extended use of the internet can probably be considered as the most significant development of the twentieth century. However, this becomes evident if and only if the internet is not simply conceived as a network of interconnected computers or a new communication tool, but as a new, highly complex artificial being with a mostly unknown nature. An unavoidable task of our age is to use, shape, and, in general, discover it—and to interpret our praxis, to study and understand the internet, including all the things, relations, and processes contributing to its nature and use.

Studying the question what the internet is and its history—apparently—provides a praxis-oriented answer.<sup>1</sup> Based on the social and cultural demands of the 1960s, networks of interconnected computers were built up, and in the 1980s a worldwide network of computers, the net, emerged and became widely used. From the 1990s the network of web pages, the world wide web, has been built on the net. Using the possibilities provided by the coexisting net and web, social networks (such as Facebook) have been created since the 2000s. Nowadays, networking of connected physical vehicles, the emergence of the internet of things,

It is not surprising at all that the new discipline faced serious methodological difficulties. Besides its trans-, inter-, or multidisciplinary ambitions, internet research is also shaped by the following additional circumstances:

i) The *historical, social, and cultural* context of the emergence and deployment of the internet. Elaboration of the basic principles of internet construction and the realization of these plans fundamentally take place in the late modern or postmodern age, in the second half of the twentieth century, in a parallel trajectory with becoming widespread and achieving a cultural dominance of the postmodern values and ideology.<sup>5</sup> Postmodern ideology is not shaped by (modern) sciences; it has a rather technological, more precisely, *techno-scientific*, background and preference. This way it is easier to understand postmodern constructions in a technological or a techno-scientific context.

ii) The “omnipresence” or *ubiquity* of the internet. Our experiences in connection with the internet are extremely diverse in quality and infinitely extended in quantity. The fact that the internet can be found in and has an impact on the whole human practice is a source of many methodological difficulties: findings of any meaningful abstractions about the internet, identification of real causal relationships, recognition of the borders of beings in an extended continuum, interpretation of the social and cultural effects of the internet, etc., are extremely difficult. The internet as a research object is a highly complex organization of numerous problematically identifiable complex entities.<sup>6</sup>

iii) A further difficulty is the essential *simultaneity* of the processes and their analyses, which means that the hard problems of participant observation will necessarily be present in the research procedure.

In response to these ambitions and difficulties, four different approaches to internet research have emerged in the last two decades:

a) *Modern scientific approach*. In this kind of research, the main deal is accepting the validity of an established (modern) scientific *discipline* to apply its methodology on the internet and internet use. An aspect of the internet or internet use is considered as a subject matter of the given science.<sup>7</sup> In this way the internet or internet use can—at best—be described from computational, information technological, sociological, psychological, historical, anthropological, cognitive, etc., points of view. This is a very popular praxis; however, such research is necessarily insensitive to the characteristics of the subject matter outside of their disciplinary fields due to the conceptual apparatus and the methodology of the selected scientific discipline, in this case to the specificity of the internet and internet use. Outcomes of these studies can be considered as specific (internet-related) disciplinary statements of which the significance on the specificity of the internet is not obvious at all.

When researchers in these disciplines consider one or another thing as an interesting aspect of the internet, their choice is more or less “evident”—i.e., it is a pragmatic presupposition on the internet. In this way it is almost

impossible to see the significance of the given aspect of the internet (and the given disciplinary approach) in the understanding of the internet. Without careful philosophical analysis on the nature of the internet, it is not trivial at all how relevant sociology, psychology, informatics, anthropology, or any other classical scientific discipline relates to its description.

Additionally, in this methodology the inter-, trans-, or multidisciplinary aspect of internet research is fulfilled in an indirect way: the big set of traditional scientific descriptions of the internet includes items from many different, but usually unrelated, disciplines. Taking into account some considerations of the philosophy of science, coexisting disciplines and their joint application to the fundamental conditions of the internet can perhaps produce much more coherent outcomes.

b) *Postmodern studies approach*: elaborating and applying a pluralist postmodern methodology of the so-called *studies*. Studies include concrete, but case by case potentially different mixtures of disciplinary concepts and methodologies that are being applied to describe the selected topic. Application of studies (e.g., internet studies, cultural studies, social studies, etc.) methodology results in the creation of a huge number of relevant but separated and necessarily unrelated facts. Most research published in studies are well informed on the specificities of the internet, so the selected methodological versions in the different studies can fit well to a specific characteristic of the internet or internet use, but the methodological plurality of the different studies prevents reaching any generalized, universally valid knowledge of the internet. Nowadays most internet research is performed in this style. Collections of studies<sup>8</sup> and articles in online and offline journals devoted to internet research (*First Monday, Journal of Computer-Mediated Communication, Internet Research, Information Communication and Society, New Media & Society*, etc.) can be considered as illustrative examples.

c) *Internet science approach* to the internet and/or internet use. Among researchers of the internet, there is a lack of consensus regarding how to best describe the internet theoretically, i.e., whether it is a (scientific) *theory* or rather a *philosophy* of the internet that is needed. Scientific theories on the internet presuppose that the internet is an independent entity of our world and seek for its specific theoretical understanding and description. Because of the complexity of the internet, it is not surprising that comparing these theories to the classical scientific theories have a definite trans-, inter-, or multidisciplinary character. They usually combine the methodological and conceptual apparatus of social-scientific (sociology, psychology, political theory, law, political economy, anthropology, etc.), scientific, mathematical, and engineering (theory of networks, theory of information, computing, etc.) disciplines to create a proper “internet scientific” conceptual framework and methodology. Some of these theories really fit into a recent scientific standard providing universally valid knowledge in the form of justifiable or refutable statements, with empirical background and philosophical foundations. Their empirical background frequently includes the above mentioned disciplinary or

studies—origin facts, and their philosophical foundations vary case by case.

Although attempts to craft an internet theory has been observable from a relatively early phase of the formation of the internet<sup>9</sup> the whole history of theorizing the internet is very short, so it is not surprising that there is no universally accepted theory. Based on their different theoretical/philosophical presuppositions on the fundamental specificity of the internet, recently Tsatsou identified three characteristic groups of theories.<sup>10</sup> In these groups of theories, the specificities of the internet are determined by (i) its technologically constructed social embeddedness, or (ii) the specific political economy of its functioning, or (iii) the formation of specific networks. In this way the internet is (i) a social entity, which is fundamentally technologically constructed, or (ii) a social entity which necessarily participates in the reproduction of social being, or (iii) a particularly organized mode of social being.<sup>11</sup>

The diversity of these typical theoretical approaches casts light on the shortage of internet science: there is no consensus about the fundamental specificities of the internet. In other words, the philosophical foundations of internet science, the foundational principles on the nature of the internet, are essentially diverse ones—and in many cases they are naïve, unconsciously accepted, non-reflective, uncertain, or vague presuppositions. Philosophical considerations on the nature of the internet and on the effective principles of internet science can usefully contribute to overcoming these difficulties.

This situation is practically the same as we have (or had) in cases of any kind of sciences: the subject matter and the foundational principles of a scientific discipline are coming from philosophical considerations. As an illustration we can recall the determining role of natural philosophy in the formation of natural sciences, or the role of philosophy of science in the self-consciousness functioning of any developed scientific disciplines.

However, scientific theories of the internet face additional difficulties if they want to reflect on the (pluralistic) postmodern characteristics of the internet, on the quick and radical changes in internet use, on the extreme complexity of this being, and on the necessary presence of participant observation. Recently, there is a better chance of producing acceptable treatments of these difficulties in philosophies than in sciences.

d) *Philosophy of the Internet* approach. Like the internet science, philosophy of the internet also provides a theoretical description of the internet, but it is a completely different theoretical construction—at least if we do not identify philosophy with a kind of linguistic-logic attraction, but we see it traditionally as the conceptual reconstruction of our whole world set up by critical thinking.

As Aristotle declared in his *Metaphysics*, there are two kinds of theoretical methodologies: the scientific disciplines describe beings from a selected aspect of them, but philosophy describes “beings as beings,” as a whole, considering them from all of their existing aspects.

In this tradition, focusing on a given being, discovering and disclosing all of its interrelations of everything else, and in this way, characterizing the being from all of its aspects, the philosopher builds up a complete world in which the given being exists. Philosophical understanding is proceeding on the parallel “constructions” of the “being as being” and the “whole” world.<sup>12</sup> An ontology created in this way is essentially different from the ontologies constructed in computer sciences. Currently, this Aristotelian style of making philosophy is not really fashionable, and, in fact, not so easy to perform, but it seems to be not impossible and perhaps even necessary if one wants to understand a new kind of being of our recent world, as the internet is.

So the crucial distinction between sciences and philosophy makes clear the different possibilities of science and philosophy in the theoretical description of the internet.<sup>13</sup> Considering further the science-philosophy relationships, it becomes obvious that there is no science without philosophy. Historically, (European) philosophy emerged several hundred years before science did; science does not exist without (or prior to) philosophy. Of course, this is absolutely true in case of any concrete disciplines: emerging scientific disciplines are based on and spring out from philosophical (e.g., natural-philosophical) considerations and they include, incorporate, and develop these contents further. What is a natural object? What is a living organism? What is a constitution? And how can we identify and describe their nature and characteristics? Any scientific understanding presupposes such conceptual constructions. However, these procedures sometimes remain hidden, and the given scientific activity runs in an unconscious manner. These situations provide possibilities for the philosophy of science to clarify the real cognitive structures.

Following these intellectual traditions, if we want to construct an internet science, we need some kind of philosophical understanding of the internet prior to the scientific one. What is the internet? What are its most fundamental specificities and characteristics? What are the interrelationships between the internet and all the other beings of our world? Only the philosophical analyses can provide an understanding of *the internet as the internet*, a theoretical description of its very nature, as a totality of its all aspects, as a whole entity.

These are the reasons that I have proposed for building a philosophy of the internet prior to the scientific theory of it.<sup>14</sup> First of all, taking into account the huge amount of its aspects, appearances, modes of use, etc., we should have to understand the nature of the internet and to suggest useful concepts, valid principles, and operable practices for its description. I have proposed to construct a philosophy of the internet in an analog manner as the *philosophy of nature* (or natural philosophy) was created before (natural) sciences.

However, besides this possibility, there are additional possibilities to contribute to the philosophy of the internet. Realizing the crucial social and cultural impacts of internet use, philosophers have started to consider the influence of internet use on philosophy.<sup>15</sup> Typically, they focus on

a particular aspect or side of the internet or internet use and put it into a philosophical context. In this way—doing research on the “philosophical problems of the internet”—one can identify the philosophical consequences of some kind of specificity of the internet or can disclose something on the nature of the specificity of the internet. This is the philosophy of the internet making in an analog manner as we used to make research in the *philosophy of science* or philosophy of language, or philosophy of technology, etc.

In the case of the natural philosophical type of the philosophy of the internet, we should have to create a complete philosophy in order to propose an understanding of the internet in our world, and an understanding of our world which includes the internet. In case of the philosophy of science type of the philosophy of the internet, we should have to apply, improve, or modify an existing philosophy in a sense in order to propose an understanding of a philosophical problem of the internet, and an understanding of a philosophical problem created by the existence and use of the internet. The latter type of philosophy is closer to internet science, while the former approach is closer to a real philosophy of the internet.

As I see it, the so-called philosophy of the Web (Philoweb) initiative is a representative of the “philosophical problems of the internet” type of research.<sup>16</sup> The typical analyses in their papers focus on a particular aspect of the internet (or the web) or focus on particular philosophical approaches (e.g., semantics, ontology) and try to conclude several consequences in these contexts.

Another important work in a similar philosophical methodology is provided by Floridi.<sup>17</sup> Floridi’s philosophical works, for example, describe the changing meanings of several classical philosophical concepts (like reality) because of the extended internet use and vice versa: internet use is taking place in a non-traditional reality.

Some additional philosophical approaches focus on more specific disciplines (e.g., computer-mediated communication,<sup>18</sup> ethics<sup>19</sup>) or problems (e.g., embodiment,<sup>20</sup> critical theory of technology<sup>21</sup>).

Summing up, the philosophy of the internet can be considered as a new field of culture, a recent version of philosophizing with the ambitions to build philosophies in the era of the emergence and deployment of the internet and internet use, and taking these new circumstances seriously. It necessarily has different realizations, with different ideologies, values, emphases, cognitive structures, languages, accepted traditions, etc. There are at least two metaphilosophical attitudes toward this new cultural entity: a) creating an original version of philosophy, taking into consideration all of the experiences in the era, b) modifying existing philosophical concepts, systems, approaches, and meanings in order to understand the emerging problems of the internet era.

## SPECIFICITIES OF AN “ARISTOTELIAN” PHILOSOPHY OF THE INTERNET

In the last ten to fifteen years, I have developed a natural philosophical type of the philosophy of the Internet which I call “*Aristotelian philosophy of the Internet*.” As an illustration of the above mentioned ambitions, now I will try to sum up its main ideas.

This philosophy of the internet has Aristotelian characteristics in the following sense:

a) It is clear from the history of (natural) sciences that natural philosophy has a priority to any kind of natural sciences. The most successful natural philosophy (or philosophy of nature) was created by Aristotle. In his thinking, a “division of labor” between philosophy and sciences was clearly declared: understanding the being as being, or understanding an aspect of a being. Historically and logically, in the first step we can “philosophically” understand a given being and its most essential characteristics, and in a second step, based on this knowledge, we can create a science for their further understanding. In the case of the internet, first we try to understand its nature and its most fundamental characteristics “philosophically,” and in the second step, an internet science can be created based on this knowledge.

b) In the Aristotelian view, beings (and the world as well) have a complex nature, and for their understanding we have to find a complex methodology. His crucial tool for this purpose was his causal “theory”: everything has four interrelated, but clearly separated, causes—the material, the formal, the efficient, and the final cause. Applying this version of causality, the complex nature of any beings (and the world) can be disclosed. In the case of the internet (as a highly complex network of complex networks) this is a very important possibility for a deeper understanding. Of course, the concrete causal contexts will be different related to the original Aristotelian ones, so we will use the technological, the communication, the cultural, and the organization contexts to describe the highly complex nature of the internet.

c) There are several additional, but perhaps less crucial, Aristotelian components in my philosophy of the internet. Aristotle made a sharp distinction between natural and artificial beings (especially in his *Physics*). Based on this distinction, the fundamental role of technologies—as creators of the artificial spheres of beings—in the human world is really crucial, so I tried to find a technological (or techno-scientific) implementation for all of the aspects of the internet. Moreover, in the “solution” of several classical philosophical problems, I followed the Aristotelian traditions—e.g., my interpretation of virtuality (which is an important task in this philosophy of the internet) is based on the Aristotelian ontology.<sup>22</sup>

It is clear at first glance that the internet is an artificial being created mainly from other artificial beings. This means that its philosophical understanding is necessarily based on the philosophical understanding of other beings, so it has necessarily a kind of “metaphilosophical” character.<sup>23</sup> The general view of the Aristotelian causality (in

the above mentioned way) can be considered as a metaphilosophical tool, which presupposes to understand and use philosophies of technology, philosophies of communication, philosophies of culture, and philosophies of organization for producing a complex philosophy of the internet. Additionally, it is useful to study and use the philosophical views on information, reality and virtuality, community, system and network, modern and postmodern, knowledge, human nature, spheres of human being, etc., in the process of constructing the philosophy of the internet.

As is clear from the statements above, this philosophy of the internet is not just about an abstract description of the internet, since it is included in and coexists with natural, human, social, and cultural entities in a complex human world. According to our research strategy, first, we examine the complex *nature* of the internet, and then we analyze the social and cultural *impacts* of its use. The two topics are, of course, closely related. The interpretability of social and cultural effects, to be discussed in the second step, requires a kind of understanding of its nature in which social and cultural effects are conceivable at all. In certain cases, this involves trying to make use of connections which are uncommon in the task of interpreting the internet. Thus, for example, we engage in discussions of philosophy, philosophy of technology, communication theory, epistemology, cognitive science, and social and cultural history instead of directly discussing the internet in "itself."

Taking into consideration the social and cultural factors which *define* or *shape* the nature of the internet obviously helps identify those social and cultural *effects that occur* in the course of internet use.

### ON THE NATURE OF THE INTERNET

In the "natural philosophical type" or the Aristotelian philosophy of the internet, the main task is to understand the nature of the internet and some of its essential characteristics. Below, a short outline of the components of this philosophy is presented in the form of theses.<sup>24</sup>

In the Aristotelian philosophy of the internet, we conceive of the internet in *four*—easily distinguishable, but obviously connected—*contexts*: we regard it as a system of *technology*, as an element of *communication*, as a *cultural* medium, and as an independent *organism*.

1) *Technological context*. I propose that we conceive of technology as a specific form or aspect of human agency, the realization of human control over a technological situation. In consequence of the deployment of this human agency, the course and the outcome of the situation seem no longer governed by natural constraints but by specific human goals. Human control of technological situations yields artificial beings as outcomes. With the use of technology, man can create and maintain artificial entities and, as a matter of fact, an artificial world: its own "not naturally given" world and she/he shapes her/his own nature through her/his own activity. Every technology is value-laden—i.e., technologies are not neutral; they unavoidably express, realize, and distribute their built-in values during usage. The internet obviously is a technological product, and at the same time

it is a consciously created technological system, so, like other technologies, the internet also serves human control over given situations.

However, the internet is a specific system of technology; it is an *information* technological system. It works with information rather than with macroscopic physical entities. As I see it, information is created through interpretation, so a certain kind of hermeneutical practice is a decisive component of information technologies. In consequence, information—and all kinds of information "products"—is virtual by nature. Though it seems as if it was real, its reality has a certain limited, finite degree.<sup>25</sup>

The information technological system of the internet—in fact, we can talk about a particular type of system, that is, network—consists of computers which are interconnected and operated in a way which secures the freedom of information of the individuals connected to the network: the control over information about themselves and their own world in space, time, and context.

Thus, from a technological point of view, the internet is an *artificially created* and maintained *virtual sphere*, for the operation of which the functioning of the computers connected into the network and the concrete practices of people's interpretations are equally indispensable.

2) *Communication context*. For the characterization of the internet as an element of communication, we can understand communication as a certain type of technology, the goal of which is to create and maintain communities. Consequently, the technologies of communication used on the internet are those technologies with the help of which particular—virtual, open, extended, online, etc.—communities can be built. The individual relationships to the communities that can be built and the nature of the communities can be completely controlled through technologies of the internet (e-mail, chat, lists, blogs, podcast, social networks, etc.). Communication through the internet has a network nature (it is realized in a distributive system); it uses different types of media, but it is a technology which follows a basically visual logic.

Thus, as regards communication, the internet is the *network* of consciously created and maintained extended plural *communities*, for the functioning of which the harmonized functioning of computers connected to the network as well as the individual's control over his own communicative situations are needed.

3) *Cultural context*. From a cultural point of view, the internet is a medium which can accommodate, present, and preserve the wholeness of human culture—both as regards quality and quantity. It can both represent a whole cultural universe and different, infinitely varied cultural universes (worlds).

Culture is the system of values present in coexisting communities; it is "*the world of*" *communities*. Culture is the technology of world creation. Culture shapes and also expresses the characteristic contents of a given social system. Each social system can be described as the

coexistence of human communities and the cultures they develop and follow. Schematically,

**society = communities + cultures**

The individual is determined by her participation in communities and cultures, as well as his contribution to them.

The internet accommodates the values of the late modern age, or the “end” of modernity. That is, it houses late modern worlds. Late modern culture contains modern values as well, but it refuses their exclusivity and it favors a plural, postmodern system of values. The way of producing culture is essentially transformed: the dichotomy of experts creating traditional culture and the laymen consuming it are replaced by the “democratic nature” of cyber culture: each individual produces and consumes at the same time.

Thus, from a cultural point of view, the internet is a network of virtual human communities, artificially created by man unsatisfied by the world of modernity; it is a network in which a postmodern system of values based on the individual freedom and independence of cyberculture prevails.

4) *Organism context.* From an organizational point of view, the internet is a relatively independent organism, which develops according to the conditions of its existence and the requirements of the age. It is a (super)organism created by the continuous activity of people, the existence, identity, and integrity of which is unquestionable; systems, networks, and worlds penetrating each other are interwoven in it. It has its own, unpredictable evolution: it develops according to the evolutionary logic of creation and human being, wishing to control its functioning, is both a part and a creator of the organism.

The indispensable vehicles are *the net*, built of physically connected computers, *the web*, stretching upon the links which connect the content of the websites into a virtual network, *the human communities* virtually present on the websites organized into social networks, the interlinked human things as well as the infinite variations of individual and social *cultural entities and cultural universes* penetrating each other.

The worldwide organism of the internet is imbued with values: its existence and functioning constantly creates and sustains a particular system of values: the network of postmodern values. The non-hierarchically organized value sphere of *virtuality, plurality, fragmentation*, included *modernity, individuality, and opposition to power*, interconnected through weak bonds, it penetrates all activity on the internet—moreover, it does so independently of our intentions, through mechanisms built into the functioning of the organism.

Thus, from the organizational point of view, the internet is a superorganism made of systems, networks, and cultural universes. Its development is shaped by the desire of late modern man to “create a home,” entering into the network of virtual connections impregnated with the postmodern

values of cyberculture. For human beings, the internet is a new—more homely—sphere of existence; it is the exclusive vehicle of web-life. Web-life is created through the transformation of “traditional” communities of society and the cultures prevailing in the communities. Schematically, web-life = “online” communities + cybercultures.

To sum up, the internet is the medium of a new form of existence created by late modern man, a form that is built on earlier (i.e., natural and social) spheres of existence, and yet it is markedly different from them. We call this newly formed existence *web-life*, and our goal is to understand its characteristics.

## SOCIAL AND CULTURAL IMPACT OF INTERNET USE

Based on this understanding of the internet, the social and cultural consequences of the internet use can be disclosed and characterized as crucial characteristics of the web-life. The following two analog historic-cultural situations (analogies can provide a useful orientation within a highly complex and fundamentally unknown situation) can be tackled in the hope of obtaining a deeper understanding of the impact of the internet use on our age:

1) *The Reformation of Knowledge.* For the study of the mostly unknown relations of web-life, it seems to be useful to examine the nature of *knowledge*, which was transformed as a consequence of internet use, its social status, and some consequences of the changes.

Inhabitants of the fifteenth and sixteenth centuries and of our age have to face similar challenges: citizens of the Middle Ages and modern “web citizens” or “netizens” participate in analogous processes. The crisis of religious faith unfolded in the late Middle Ages and in our age, the crisis of rational knowledge can be observed. In those times, after the crisis—with the effective support of reformation movements—we could experience the rise of rational thinking and the new, scientific worldview; in our times, five hundred years later, this scientific worldview itself is eventually in a crisis.

The *reformation of religious faith* was a development which evolved from the crisis of religious faith. The *reformation of knowledge* is a series of changes originating from the crisis of rational knowledge.

The scenes of the *reformation of religious faith* were religious institutions (churches, monasteries, the Bible, etc.). Nowadays, the *reformation of knowledge* is being generated in the institutional system of science: research centers, universities, libraries, and publishers.

In both cases, the (religious and academic) institutional system and the expert bodies (the structure of the church and the schools and especially universities, research centers, libraries, and publishers, as well as priests and researchers, teachers, and editors) lose their decisive role in matters of faith as well as science. The reformation of faith, ignoring the influence of ecclesiastical institutions, aims for developing an immediate relationship between

the individual and God. The reformation of knowledge creates an immediate relationship between the individual and scientific knowledge.

It is well known that book printing played an important role in the reformation of faith. Books are “tools” which are in accordance with the system of values of the world undergoing modernization. They made it possible to experience and reform faith in a personal manner as a result of the fact that the modern book was capable of accommodating the system of values of the Middle Ages. (But the typical usage of the book as a modern “tool” is not this but rather the creation and study of modern narratives in a seemingly infinite number of variations.)

In a similar way internet use plays an important role in the reformation of knowledge. The internet developed and became widely prevalent simultaneously with the spreading of the postmodern point of view. It seems that the crisis of modernity created a “tool” that fits with its system of values. It grows strong partly because of this accordance; what is more, people develop it further. However, at the same time, this “tool,” the internet, seems to be useful for pursuing forms of activities which are built on the postmodern world but transcend it and also for the search for the way out of the crisis. (Postmodern thinking was itself created and strengthened by the—more or less conscious—reflection about the circumstances of the crisis, as the eminent version of the philosophy of the crisis.)

On the internet, ideas can be presented and studied in a direct way, in essence, independently of the influence of the academic institutional system. There are no critics and referees on websites; everyone is responsible for his own ideas. The reformers diagnose the transformation of the whole human culture because of the internet use: the possibility of an immediate relationship between the individual and knowledge is gradually forcing back the power of the institutional system of abstract knowledge (universities, academies, research centers, hospitals, libraries, publishers) and its official experts (qualified scientists, teachers, doctors, editors). The following question emerges today: How can we get liberated from the power of the decontextualized, abstract rationality that rules life? In the emancipation process that leads out of the crisis of our days, the reformation of knowledge is happening, using the possibilities offered by the internet. We can observe the birth of the yet again liberated man on the internet, who, liberated from the medieval rule of abstract emotion, now also wants to rid himself of the yoke of modernist abstract reason. But his or her personality, system of values, and thinking are still unknown and essentially enigmatic for us.

The reformation of faith played a vital role in the development process of the modern individual: harmonizing divine predestination with free will secured the possibility of religious faith, making the development of masses of individuals in a religious framework possible and desirable.

However, the modern individual that developed this way, “losing his embeddedness” in a traditional, hierarchical world, finds herself in an environment which is alien, even

hostile to him or her. As a consequence of such fear and desire for security, the pursuit of absolute power becomes his/her second nature; the modern individual is selfish.

Human being, participating in the reformation of knowledge (after the events that happened hundreds of years before) is forced again into yet another process of individuation. Operating his/her personal relationship to knowledge, a postmodern individual is in the process of becoming. The postmodern personality, liberated from the rule of the institutional system of modern knowledge, finds him/herself in an uncertain situation: she herself can decide in the question of scientific truth, but she cannot rely on anything for her decisions.

This leads to a very uncertain situation from an epistemological point of view. How can we tackle this problem? Back then, the modern individual eventually asked the help of reason and found solutions, e.g., the principle of rational egoism or the idea of the social contract. But what can the postmodern personality do? Should she follow perhaps some sort of post-selfish attitude? But what could be the content of this? Could it be perhaps some kind of plural or virtual egoism? The postmodern personality got rid of the rule of abstract reason, but it still seems that s/he has not yet found a more recent human capacity, the help of which s/he could use in order to resolve his/her epistemological uncertainty.

From a wider historical perspective, we can see that people in different ages tried to understand their environment and themselves and to continue living by relying on abstract human capacities that succeeded each other. People in primeval societies based their magical explanation of the world on the human will—and we managed to survive. After the will, the senses were in the mythical center of ancient culture—and the normal childhood of humankind passed, too. Medieval religious worldview was built by taking into consideration the dominance of emotions—and this ended, too, at some point. In the age of the glorious reason, it was the scientific worldview that served the reign of man (rarely woman)—until now.

Today, the trust in scientific worldview seems to be teetering; the age of the internet has come. However, the problem is that we cannot draw on yet another human capacity since we have already tried them all, at least once. But have we? Do we still have hidden resources? Or can we say goodbye, once and for all, to the usual abstractions, and a new phase of the evolution of humankind is waiting for us, which is happening in the realm of the concrete?

2) *Formation of Web-Life.* In order to study the mostly unknown context of web-life, it seems to be useful to examine the nature of *human existence*, transformed through internet use and the consequences of the changes. Social scientists like Castells (2000), Wellman and Haythornthwait (2002), or Fuchs (2008) often characterize the consequences of internet use as pure *social* changes, including all kinds of changes into social ones, and disregard the significance of more comprehensive changes. We would focus on the latter one.



While using the internet, all determining factors and identity-forming relations change, which had a role in the evolution of humankind from the animal kingdom and in the process of the development of society. We can identify tool use, language, consciousness, thought, as well as social relationships as the most decisive changes in the process of becoming human and in the formation of web-life that has developed as a result of internet use.

The simultaneous transformations of animal tool and language use, animal consciousness and thought, as well as social relationships and the series of interwoven changes led to the evolution of humans and to the development of culture and society. Nowadays, the robust changes in the same areas are also simultaneous. They point in one direction, intensifying each other, and induce an interconnected series of changes. The quantity of the changes affecting the circumstances of human existence results yet again in the qualitative transformation of the circumstances of existence: this is the process of the *development of web-life*.

The material circumstances of tool making and tool use lose their significance and the emphasis is now on the most essential part of the process: interpretation. A crucial part of tool making is the interpretation of an entity in a different context, as different from the given (such as natural entities), and in this “technological situation” its identification as a tool. During internet usage, individual interpretations play a central role in the process of creating and processing information on different levels and in the information technologies that are becoming dominant. At the same time, the material processes that provide the conditions of interpretation are, to a large extent, taken care of by machines. Hermeneutics takes the central role of energetics in the necessary human activity of reproducing human relations.

The human double- (and later multiple-) representation strategy developed from the simpler strategies of the representation characteristic of how wildlife led to language, consciousness, thought, and culture. Double representation (we can regard an entity both as “itself” and “something else” at the same time) is a basic procedure in all these processes—including tool making—and an indispensable condition of their occurrence. The use of the internet radically transforms the circumstances of interpretation. On the one hand, it creates a new medium of representation in which—as in some sort of global “mind”—the whole world of man is represented repeatedly. On the other hand, after the ages of orality and literacy, it makes possible basically for all people to produce and use in an intended way the visual representation of their own world as well. Virtuality and visibility are determining characteristics of representation. We are living in the process of the transformation of language, speech, reading and writing, memory and thought.

“Traditional” human culture is created through the reinterpretation of the relations “given by nature.” It materializes through their perpetual transformation and it becomes a decisive factor in the prevailing social relations. The cybercultural practices of the citizens of the web are

now directed at the reevaluation of social relations, and as a result of their activities a cyber-, web- or internet-cultural system of relations is formed, which is the decisive factor in the circumstances of web-life.

The basically naturally given communities of animal partnership were replaced by the human structure of communities, which was practically organized as a consequence of the tool-use-based indirect, and language-use-based direct communicative acts. However, the control over communicative situations can be monopolized by various agents; as a result, it is burdened with countless constraints. The nature of the communities that come into existence under these circumstances can become independent from the aspirations of the participants: various forms of alienation and inequality can be generated and reproduced in the communities. The citizen of the web who engages in communication reinterprets and transforms communicative situations; above all, he changes power relations in favor of the individual: the citizen of the web can have full powers over her/his own communicative situations.

## CONCLUSION

Philosophy of the internet discloses that human existence is being transformed. Its structure, many thousand years old, seems to be changing. Built on the natural and the social spheres of being, a third form of existence is emerging: web-life. Human being is now the citizen of three worlds, and his/her nature is being shaped by these three domains, i.e., by the relations of natural, social, and web-life. Our main concern is the study of web-life, which has developed as the result of internet use. From the position of the above proposed philosophy of the internet—besides illuminative cultural-historical analogies—the following cultural-philosophical topics seem to have fundamental significance in the understanding of the characteristics of web-life:

- The *knowledge* presented and conveyed through the internet valorizes the forms of knowledge which are characteristically situation-dependent, technological, and postmodern. The whole modern system of knowledge becomes reevaluated and, to a large extent, virtualized; the relationship to knowledge, reality, and truth takes a personal, concrete, open, and plural shape. The significance of the institutional system of science is diminished. Instead of scientific knowledge, technological or technoscientific knowledge and the technologies of interpreting knowledge are in the forefront.
- Besides *culture* that is created by the communities of society, individual cyberculture plays a more and more important role. The traditional separation of the producers and consumers of culture becomes more and more limited in this process. Supported effectively by information technologies, billions of the worlds of the citizens of web-life join the products of the professional creators of culture. Cyberspace is populated by the infinite number of simultaneous variations of our individual virtual worlds. Aesthetic culture gains ground at the expense of scientific

culture, and imagination becomes the human capacity that determines cultural activities.

- *Personality* becomes postmodern, that is, it becomes fully realized as an individual, virtually extremely extended, and acquires a playful character with ethereal features. A more vulnerable post-selfish web citizen is developed, compelled by a chaotic dynamics. Web citizens are mostly engaged in network tasks, that is, in building and maintaining their personalities and communities.
- Besides the natural and the social spheres, a sphere of web-life is built up. Now humans become the citizen of *three worlds*. The human essence moves towards web-life. The freedom of access to the separate spheres and the relationship of the spheres of existence are gradually transformed in a yet unforeseeable manner. Characteristics of web-life are shaped by continuous and necessarily hard ideological, cultural, political, legal, ethical, and economical conflicts with those of the traditional social sphere.
- Web-life as a form of existence is the realm of concrete existence. Stepping into web-life, the “*real history*” of *mankind* begins yet again; the transition from social existence to web-life existence leads from a realm of life based on abstract human capacities to a realm of life built on concrete capacities.

NOTES

1. See, e.g., Hobbes’s Internet Timeline, 2018, <https://www.zakon.org/robert/internet/timeline/>; Living Internet, 2017, <https://www.livinginternet.com/>; History of the Internet, 2018, <https://www.internetsociety.org/internet/history-internet/>; etc.
2. The social construction of technology (SCOT) proposed by Bijker and Pinch (“The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other”; Bijker, Hughes, and Pinch, *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*) is a widely accepted view in the philosophy and sociology of technology and in the science and technology studies (STS).
3. Some relevant views can be found, e.g., in the literature of the so-called “user research.” See, for example, Oudshoorn and Pinch, *How Users Matter. The Co-Construction of Users and Technologies*; or Lamb and Kling, “Reconceptualizing Users as Social Actors in Information Systems Research”; or in a more concrete, internet-related context see Feenberg and Friesen, *(Re)Inventing the Internet: Critical Case Studies*.
4. As an illustration: during the last fifteen to twenty years, numerous research communities, institutes, departments, journals, book series, and regular conferences were established. The Association of Internet Researchers (AoIR) was founded in 1999 and currently its mailing list has more than 5,000 subscribers. Beside its regular conferences, the activity of the International Association for Computing and Philosophy (IACAP), the meetings of the ICTs and Society Network, and the Conference series on Cultural Attitudes towards Technology and Communication (CATaC) can be considered as popular research platforms on the topic.
5. Within the framework of a social constructivist view on technology, this is the obvious reason that the internet is imbued with and many aspects of its nature determined by postmodern values. Ropolyi *Internet természete. Internetfilozófiai értekezés.* (in Hungarian) (*On the Nature of the Internet: Discourse on the Philosophy of the Internet*).
6. It is a really significant circumstance that such outstanding experts of complexity as statistical physicists or network scientists regularly contribute to the “theory” of the Internet, e.g., Barabási, *Linked: The New Science of Networks*; Barabási, *Network Science*; Pastor-Satorras and Vespignani, *Evolution and Structure of the Internet: A Statistical Physics Approach*; etc.
7. Researches published on internet-related topics in the journals of traditional disciplines can be considered as typical candidates of this research category. See, e.g., Peng et al., “Mapping the Landscape of Internet Studies: Text Mining of Social Science Journal Articles 2000–2009.”
8. Hunsinger, Klastrup, and Allen, *International Handbook of Internet Research*; Consalvo and Ess, *The Handbook of Internet Studies*.
9. See, e.g., Reips and Bosnjak, *Dimensions of Internet Science*.
10. Tsatsou, *Internet Studies: Past, Present and Future Directions*.
11. See Castells, *The Rise of The Network Society*; Castells, *The Internet Galaxy: Reflections on the Internet, Business, and Society*; Wellman and Haythornthwait, *The Internet in Everyday Life*; Barabási, *Linked: The New Science of Networks*; Barabási, *Network Science*; Bakardjieva, *Internet Society: The Internet in Everyday Life*; Lessig, *Code Version 2.0*; Feenberg and Friesen, *(Re)Inventing the Internet*; Fuchs, *Internet and Society: Social Theory in the Information Age*; Fuchs, *Digital Labour and Karl Marx*; *International Journal of Internet Science*, etc.
12. On this Aristotelian philosophical methodology and its relation to the Platonic one Hegel presented some important ideas in his *History of Philosophy*.
13. According to my experiences, the communities of the IACAP and the ICTs and Society Network are the most sensible public to the philosophical considerations.
14. Ropolyi, *Internet természete. Internefilozófiai értekezés* (in Hungarian) (*On the Nature of the Internet: Discourse on the Philosophy of the Internet*); Ropolyi, “Shaping the Philosophy of the Internet”; Ropolyi, *Philosophy of the Internet: A Discourse on the Nature of the Internet*.
15. Halpin “Philosophical Engineering: Towards a Philosophy of the Web”; Monnin and Halpin, “Toward a Philosophy of the Web: Foundations and Open Problems”; Monnin and Halpin, “Toward a Philosophy of the Web: Foundations and Open Problems”; Halpin and Monnin, *Philosophical Engineering: Toward a Philosophy of the Web*; Floridi, *The Fourth Revolution: How the Infosphere Is Reshaping Human Reality*; Floridi, *The Onlife Manifesto: Being Human in a Hiperconnected Era*.
16. Halpin, “Philosophical Engineering”; Halpin and Monnin, *Philosophical Engineering: Toward a Philosophy of the Web*.
17. Floridi, *The Fourth Revolution*; Floridi, *The Onlife Manifesto*.
18. Ess, *Philosophical Perspectives on Computer-Mediated Communication*.
19. Ess, *Digital Media Ethics*.
20. Dreyfus, *On the Internet*.
21. Feenberg and Friesen, *(Re)Inventing the Internet*.
22. Ropolyi, “Virtuality and Reality—Toward a Representation Ontology.”
23. Notice that the collection of papers on Philoweb was first published in the journal *Mefaphilosophy* 43, no. 4 (2012). These papers are practically the same ones which are included in Halpin and Monnin, *Philosophical Engineering: Toward a Philosophy of the Web*.
24. For a more detailed discussion of the philosophical issues involved, see Ropolyi, *Az Internet természete. Internetfilozófiai értekezés* (in Hungarian) or its online English translation, (Ropolyi *On the Nature of the Internet: Discourse on the Philosophy of the Internet*).
25. Ropolyi, “Virtuality and Reality.”

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**LINKS**

- Association of Internet Researchers (AoIR) (2018) <https://aoir.org/>
- Conference series on Cultural Attitudes towards Technology and Communication (CATaC) (2014) <http://blogs.ubc.ca/catac/about/>
- History of the Internet (2018) <https://www.internetsociety.org/internet/history-internet/>
- Hobbes's Internet Timeline 25 (2018) <https://www.zakon.org/robert/internet/timeline/>
- Living Internet (2017) <https://www.livinginternet.com/>
- The ICTs and Society Network (2017) <https://icts-and-society.net/>
- The International Association for Computing and Philosophy (IACAP) (2018) <http://www.iacap.org/>
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