# Conversions of Space-Time
## On the transcendental phenomenology and ethics of digitality

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Abstract: The following theses address the questions of why, how and to what extent digitality can and should be made an object of philosophy. In arguing my position, I am combining the methods of Husserl's transcendental phenomenology and Kant's moral philosophy. Therefore, we must first briefly say a few words about these methods. Hence, in an initial step, the philosophical concept of a transcendental phenomenon will be clarified. The second step applies this concept to digitality and to the process of digitalization. In the third step, the essence of digitalization will be discovered in a specific transcendental operation with space-time, which I call conversion to data or datafication. The fourth step highlights ethical, political and anthropological consequences of digital datafication according to Kantian (i.e. transcendental) ethics. In particular, the constitution of subjectivity and the chance for subjects to remain autonomous protagonists play a significant role in the digital age. On this basis, my results mark the extent to which philosophy and ethics are a central and necessary partner in the discourse about digitalization processes.

Keywords: phenomenology, ethics, digital, big data, algorithm,

## 1. *What is transcendental phenomenology?*

Digitality can be explored, interpreted, and supplemented by philosophy using methods of *transcendental phenomenology* established by Husserl. In order to achieve this, the terms *phenomenon* and *transcendental* must first be clarified. The Greek word *phainomenon* can be translated as «that which appears». This translation often contains a reference to the underlying verb *phainesthai*, which roughly means «show oneself» or «bring oneself to light». So, at first glance, a phenomenon is something that shows itself in a particular way. The study of phenomena means to make room for the specific being of something. Now, how can we uncover phenomena in their very own mode of being and establish a concept for its appearance? This question drives Husserl's phenomenology. He

begins by pointing out that for this endeavor no specific categorical presuppositions must be made about phenomena. No scientific, historical, or psychological assumptions and traditions must simply be taken as given, known, evident, or valid. For, with such tacit assumptions and presuppositions, human cognition already forces the phenomena into restrictive modes of distorted appearances and impairs their ontological accessibility. This veils and alters the phenomena as well as their cognitive reception. It makes their «essence» inaccessible.[1] Phenomenology therefore is not the science of particular presupposed and generalizing frameworks of alleged facts, but a science of essence, in which every being shall be considered in its «own specific character».[2] According to Husserl, this initially requires a «refraining of judgment» on our part, which he calls *epoché*.[3] Phenomena only become accessible *as phenomena* through this *epoché*, that is in the refraining from dogmatically presupposed explanatory models, paradigms and judgments about their being. They can then appear as phenomena and show themselves in their essence. Thus, phenomenology is a science of pluralistic, multi-contextual, and individual appearances of their essence. For every being shows itself through *epoché* in its genuine way and is not inscribed in ready-made conceptual frameworks, explanatory structures or hypothetical models. Rather, the interpretation of a phenomenon is guided by its own occurrences. This allows us to reflect on our own cognitive, cultural, and scientific biases in the first place and distance us from them as much as we can.

Phenomenology therefore means not only describing a being but examining the different ways in which it can appear (one of them can be the mode of description as an object). Phenomenology is therefore a science of the multifaceted phenomenality, i.e. the ability of beings to show themselves in a variety of specific ways and cognitive states. This is not a new approach. We are on similar grounds as was already Aristotle with his science of «being qua being».[4] He proposed a science that does not classify being by ready-made objects and frames of certain sciences (e.g. the natural sciences), but rather examines it in its peculiar character as «being that is said in many ways».[5] Georgios Petropoulos recently emphasized the connection between phenomenology and ancient Greek philosophy.[6]

In any case, the question arises as to how a being qua being or a phenomenon is to be discussed in terms of itself. We require an open and significant criterion of cognition by which different modes of the appearance of being can be perceived. Otherwise, we always run the risk of getting stuck in the very biases and

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[1] E. Husserl, *Ideas pertaining to a pure philosophy and to a phenomenological philosophy*, First Volume (= Hua III/1), Martinus Nijhoff, The Hague, Boston, Lancaster, 1983, §1.
[2] *Ivi*, §2ff.
[3] *Ivi*, §32.
[4] Aristotle, *Metaphysic*, Green Lion Press, Santa Fe, 2002, 1003aff.
[5] *Ibidem.*
[6] G. Petropoulos, *Phenomenology and Ancient Greek Philosophy: An Introduction*, in «Journal of the British Society for Phenomenology», 52, 2, 2021, pp. 95-97. / cf. also K. Larsen, P. R. Gilbert (Eds.): *Phenomenological Interpretations of Ancient Philosophy*, Brill, Leiden, 2021.

dogmas that our *epoché* is supposed to clear out. With the question of such a criterion, we enter one of the most difficult aspects of phenomenology: its *transcendental* character.[7] This character means that by *epoché* our cognition does not simply and passively relate to given objects of consciousness but engages in the active exploration of the logic and manner of their very givenness. In doing so, it addresses its own cognitive modes as a part of the appearing phenomenon. Every transcendental philosophy since Kant has aimed at this undertaking. So, the question of transcendental phenomenology is *how phenomena are given to our cognition at all* and how they therefore become objects *for us* in the first place. In this context, Kant famously states: «I call all cognition *transcendental* that is occupied not so much with objects but rather with our mode of cognition of objects insofar as this is to be possible a priori.»[8] Husserl calls this *mode of cognition* the «intentionality» of consciousness and presents its exploration as the «principal theme of Phenomenology».[9]

In short, phenomena become phenomena by examining the way they appear in direct relation to our ways of knowing them or being conscious of them. Both, appearance and cognition, phenomenon and consciousness stand in a reciprocal interrelation. The modes of cognition determine the manners of appearances, and appearances determine the manners of their cognition. So, a brief definition of transcendental phenomenology is that it studies the manifold and grounding interrelations of cognition (i. e. intentionality) and phenomenon.[10]

## 2. *Digitality as a transcendental phenomenon*

In short, as phenomenologists we explore the appearance of the essence of a phenomenon by asking how it involves, underpins, affects, and alters our own modes of cognition and consciousness. If we regard this very exploration as already guided by the phenomenon itself, we enter the realm of transcendental phenomenology. So, if we can unearth *digitality* as such a phenomenological foundation of cognition and consciousness, we will have acquired it as a transcendental phenomenon and can ask about its essence and the nature of its influence on our modes of cognition.

In fact, the transcendental character of digitality can be deduced quickly. Let us therefore practice Husserlian *epoché*. Before we rashly turn to digitality in its socio-economic, technological, or cultural-political meanings, we address it as a mere phenomenon. We look directly at what appears in the process of the

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[7] E. Husserl, *Ideas pertaining to a pure philosophy and to a phenomenological philosophy*, §86 ff.
[8] I. Kant, *Critique of pure Reason,* Cambridge University Press, Cambridge, 1998, B 25.
[9] E. Husserl, *Ideas pertaining to a pure philosophy and to a phenomenological philosophy,* §84.
[10] For further reading on this matter see: A. Staiti, *Husserl's Transcendental Phenomenology,* Cambridge University Press, Cambridge, 2014. / A. Schnell, *The phenomenological (n) method (n),* in «Zeitschrift für Didaktik der Philosophie und Ethik», 3, 2018, pp. 8-18.

*digitalization* of being and how it affects our modes of cognition. In general, its appearance is repeatedly determined as «the conversion of analog data [...] into digital format» and the «process of converting analogue streams of information into digital bits that have discrete and discontinuous values or are based on two separate states».[11]

From a phenomenological point of view, the process of this *conversion* is crucial. For it shows the transcendental character of the digital, i.e. its grounding function for cognition and consciousness. To make something appear *digitally* means first of all to give it the form of *data*. This «enables analog information to be transferred and stored in a more convenient digital format while datafication aims at organizing digitized versions of analog signals in order to generate insights that would have not been inferred while signals were in their original form.»[12] Converting beings into the form of data therefore aims at giving them an *optimized form of representation for more efficient handling and utilizing*. Digitalization is an ontological conversion of being into usable data. This conversion has a transcendental character inasmuch as it brings forth new modes of cognition by datafication.

Digitalization means changing different modes of being into data. However, this also changes the modes of perceiving, knowing and handling said being. Thus, the phenomenon of digitalization transcendentally grounds the modes of its very own cognition by datafication. But in what way does it do that? We can highlight this with a simple yet efficient example of datafication: the development of mathematical notation systems. Through such systems, different mathematical forms of the expression and processing of information are created. Those forms «are introduced for particular, often very specific purposes».[13] One of the many forms of mathematical notation is finger counting. Anyone who processes a certain amount of information by counting it with their fingers utilizes it as data. They have *digitalized* the counted objects in the original sense (cf. Latin «digitus» = finger). Of course, if the amount of data becomes too large, they will not get far with ten fingers anymore and have to develop a better notation system. So, step by step, they will optimize their acts of converting objects into data. At some point in the historical process of datafication, this optimization also began to use the electrical current flow and its expression through binary notation systems. Hence, modern information technologies were born. In facing the mathematical datafication of reality, both Husserl and his successor Heidegger have worked intensively on the recon-

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[11] T. Gorenšek, A. Kohont, *Conceptualization of Digitalization,* in «International journal of Euro-Mediterranean studies», 12, 2, 2019, p. 94 f.

[12] A De Mauro et al., *What is Big Data? A Consensual Definition and a Review of Key Research Topics,* in «4th International Conference on Integrated Information. AIP Proceedings», p. 3.

[13] K Lengnik, D Schlimm, *Learning and understanding numeral systems: Semantic aspects of number representations from an educational perspective,* in B. Löwe, Th. Müller (eds.), «PhiMSAMP. Philosophy of Mathematics: Sociological Aspects and Mathematical Practice», College Publications, London, 2010, p. 235.

struction of the mathematical natural sciences as the primary focus on being in modern times.[14] In particular, the danger of reducing being to objects of mathematical natural sciences and therefore excluding or subordinating other modes of being to those sciences is repeatedly emphasized by both. Digitalization as a particular expression of the mathematization of being encounters the same potential peril.

As transcendental phenomenologists, however, we now ask what is revealed about the inquired phenomenon by our current investigation. Digitalization appears as an ongoing data conversion that increases its own usability and efficiency. Again, this is not a new thought. Already the Pythagoreans gave numbers an ontological function and thus the ability to generate a certain reality and mode of cognition.[15] A data system of information not only represents or symbolizes said information. It converts the mode of being of information by datafying it. Over the centuries, this conversion made a decisive contribution to the triumph of modern technological paradigms of progress, all of which are more or less based on the more efficient mathematization of being. For example, in the 17th century already Leibniz demanded a simple, concise and overview-like arithmetic symbol system as the basis of all scientific endeavor.[16] He calls this an *ars characteristica* and thus became one of the ancestors of the modern formalization of science. So, anyone who starts counting fingers to optimize the utilizability of being will thereby open up a process that entails the constant and further conversion of reality to data and the ongoing optimization of this conversion.

The phenomenon of digitality is, as we see, by no means new. It has been worked on and developed from many angles for thousands of years. So, let's go back to our initial question about digitality as a transcendental phenomenon and state: digitality means changing objective reality itself and turning it into *data* by utilizing and optimizing its modes of expression and representation. However, from the point of view of transcendental phenomenology, this has also a direct effect on the processes of cognition. For cognition is permanently connected to the developed data by using it for its own processes. Thus, the way in which data is expressed and processed also shapes the cognition and even the consciousness that relates to it. This is the transcendental character of digitalization. The conversion establishes data. Vice versa, the established data continues to shape its modes of conversion. Hence, this interrelationship also defines cognition and consciousness in their conditions, capabilities, and limits. In current research, for instance, this is related to the question of the digitalization of neuronal processes and its impact on human behavior.[17]

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[14] cf. E. Husserl, *The Crisis of European Sciences and Transcendental Phenomenology,* (HUA VI), Northwest University Press, Evanston, 1970, §2 / M. Heidegger, *The Age of World Picture,* in «Off the Beaten Track», (GA 5), Cambridge University Press, Cambridge, 2002, p. 57 ff.

[15] cf. A. D. Gregory, *The Pythagoreans: Number and Numerology,* in «Mathematicians and their Gods», Oxford University Press, Oxford, 2015, pp. 21-50.

[16] G.W. Leibniz, *Fragments on Logic,* Akademie Verlag, Berlin, 1960, §§90, 110, 451.

[17] cf. P. Beckerle et al., *The Incredible Challenge of Digitizing the Human Brain,* in «Frontiers

## 3. *Space-time as the medium of digitalization*

The interim result of our enquiry is: digitality is a subject of phenomenology because its modes of appearance can be grasped as manifold conversions of being into data. In this, digitalization performs an ontological act. It transforms being according to certain datafication standards, which are created during this very transformation. At the same time, it converts cognition and consciousness into data structures. This is the transcendental character of digitality. Processes of knowledge and consciousness are being digitalized and thus geared towards digital ontology. This happens, for example, through their integration into datafied amounts of information, their confrontation with multimedia forms of representation or through technologized communication and storages processes.

If we now look for the general medium of this manifold conversion, space-time itself appears as this very medium underlying all specific conversions. For space-time also contains the transcendental influence on our modes of cognition. Transcendental philosophy highlights spatiotemporal forms as a condition and basis for all our cognitive processes at the latest since Kant.[18] Husserl and Heidegger also emphasize time as a condition of all structures of consciousness.[19] Digitalization obtains its cognition- and consciousness-related character by ontologically transforming space-time. This happens through diverse types of data conversions. For example, if a very large amount of information shall be represented by ten fingers, such a representation requires other forms of space-time than a symbolic place value notation that operates with ten distinct symbols (e.g. 0-9) to depict a potentially infinite amount of data. Because in the latter system, the time required for the conversion of objects to data is considerably shorter and used more efficiently than when counting fingers. Likewise, from a spatial point of view, such number symbols are not tied to a specific body, as are ten fingers. Number notations can therefore be used anywhere. This simple example shows how space-time obtains different ontologies via different datafication systems.

If we now take a look at the binary notation system and its connection with the electric current flow in recent digitalization processes, the spatio-temporal conversion of being becomes all the more striking. In radically shortened periods of time, radically increased amounts of information can be processed and turned into data (for example by computational systems). At the same time, spatial boundaries are becoming less and less relevant due to multimedia forms of

in Psychology», 13, 2022, pp. 1-3. / D. Mehmeti, *Digitalization of the human mind,* in «ILIRIA International Review», 3, (1), 2014, pp. 83-88. / M. Korte, *The impact of the digital revolution on human brain and behavior: where do we stand?* in «Dialogues in Clinical Neuroscience», 22, (2), 2020, pp. 101-111.

[18] I. Kant, *Critique of pure Reason,* B 33 ff.

[19] E. Husserl, *The Phenomenology of internal Time-Consciousness,* (HUA X), Indiana University Press, Bloomington, 1964, §7 ff. / M. Heidegger, *Being and Time,* (GA 2), SUNY Press, Albany/New York, 2010, §61 ff.

representation and transmission speeds. This shows, by the way, the mutual connection between space and time from a digital point of view.

Digitalization is shaping space-time by converting it into data in different modes. Spatiotemporal phenomena are converted into utilizable objects of consciousness. Consciousness on its part becomes a consciousness of data structures. Kant subsumes this mutual transcendental connection between space-time and other cognitive categories in his concept of the «Transcendental Schema» (especially with regard to the dimension of time).[20] The cognitive processes taking place in space-time are determined by the established forms of space-time. The numerous consequences of this are a central subject of the philosophy of digitality. They appear, to give some examples, in current debates about *mind upload*,[21] *human enhancement*[22] or *digital bio politics*[23].

Now, in what particular way does digitality undertake a transformation of space-time? What is its specific transcendental character compared to other transcendental phenomena. For other such phenomena, e.g. language or art, also operate with modified space-time. In order to find out how they differ from digitality, its appearance may not yet be sufficiently uncovered yet. So, we must move on to differentiate between digitality and other phenomena. Up to this point we have seen that digitalization converts being into data through spatiotemporal representation systems. Being becomes utilizable for cognition in this process as well as cognition is grounded in datafication.

To further extend our grasp on this phenomenon, let us now ask: *why* and *for what purpose* is this happening? Here we step onto the ground of ethics, where we will find the distinctive criterion to differentiate digitality from other phenomena of spatio-temporal modification. Now, according to Kant, by inquiring the purposes of a phenomenon we ask about the so-called *imperatives* in it.[24] He speaks of an ever-inherent «purposive use» of our faculties when dealing with phenomena.[25] Now, such purposes are no longer just forms of the *being* of a phenomenon, but of *ought*. With its imperatives, a certain way of being of the phenomenon *ought* to be established. Digitalization contains such imperatives, inasmuch as it is a human operation or at least an operation partially involving human actions and decisions. So, since we have grasped the nature of digitali-

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[20] I. Kant, *Critique of pure Reason,* B 176 ff.
[21] The manifold aspects of this discussion are compiled in: R Blackford, D Broderick (eds.), *Intelligence Unbound: The future of uploaded and machine minds,* Wiley Blackwell, Chichester, 2014.
[22] The current one discussion becomes summarized in: W. Barfield, S. Blodgett -Ford (eds.), *Human Enhancement Technologies and our merger with machines,* MDPI, Basel, 2021.
[23] cf. V. Smirnov, A. Nekita, *The Media Scenarios of Digital Transformation of Biopolitics,* in E. V. Toropova, et al. (eds.), «Man, Society, Communication», 108, European Publisher, London, 2021, pp. 793-799. / B. Ajana, *Digital health and the biopolitics of the Quantified Self,* in «Digital Health», 3, 2017, pp. 1-18. / F Colman, *Digital biopolitics: the image of life,* in S. E. Wilmer, A. Žukauskaité (eds.), «Resisting Biopolitics», Routledge, New York, 2015, pp. 189-201.
[24] I. Kant, *Groundwork of the Metaphysics of Morals,* Cambridge University Press, Cambridge, 1997, B 37 ff.
[25] I. Kant, *Critique of pure Reason,* B 670.

zation as a conversion of spatio-temporal being into data, this leads us directly to the question of what the *ought* and *purpose* of this conversion is. What imperatives are implied in it? The previous analysis of digitality brought to light that its conversion and representation processes follow the imperative of the *utilizable optimization* via datafication. Digital acts bring about the *better* generation and utilization of data, i.e. ongoingly better conversions of space-time. This is already evident in the development from finger counting to symbolic notation systems. Digital optimization affects many areas of the human living environment, be it for example economy, consumption, production,[26] medicine,[27] or communication.[28] The *imperative* of a constant data-oriented optimization of spatio-temporal procedures is the criterion for distinguishing the digital from other phenomena such as language, art or religion. Certainly, they themselves can also be designed as ever optimized conversions of space-time, but they can also function in other modes. If they are datafied, however, they themselves become digitalized phenomena.

## 4. *Transcendental ethics in the digital era*

We see that the digital conversion of space-time to utilizable data is not only the subject of a theoretical consideration about certain structures of space-time. It is also a concern of practical philosophy and ethics, but not only of a specific ethical area (e.g. ethics of technology or ethics of media). Digitalization concerns transcendental dimensions of consciousness, knowledge, and cognitive processes and thus of the general grounds on which humans act. Therefore, it is a matter of transcendental ethics.[29] It asks: what *ought* to be done by digitalization? *For what purpose* and *whereupon* is space-time digitalized, i.e. converted to data, and how does it relate to human agency?

Now, according to Kant, the central concern of all ethics is to pose the ques-

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[26] Just two of many examples state that there seems to be «a positive relationship between digital transformation and both economic development and labor productivity», according to H. Aly, *Digital transformation, development and productivity in developing countries: is artificial intelligence a curse or a blessing?,* in «Review of Economics and Political Science», 5, 2020, https://doi.org/10.1108/REPS-11-2019-0145, (20.8.2022). / Also «digitalization will enable higher profits and revenues», according to S. Hoßfeld, *Optimization on Decision Making Driven by Digitalization,* in «Economics World», 5, (2), 2017, p. 128.

[27] «Digital technologies and the digital environment offer new opportunities for identifying needs and delivering health care» in «optimizing these goals», *Assessing the impact of digital transformation of Health Services,* Publications Office of the European Union, Luxembourg, 2019, p. 7.

[28] cf. L Oliveira, *Handbook of Research on Digital Communications, Internet of Things, and the Future of Cultural Tourism,* Hershey, IGI Global, 2021.

[29] By *transcendental ethics* I mean the Kantian concept of practical reason functioning as a grounding factor for the theoretical faculties of cognition and therefore assuming a transcendental character (cf. Kant's talk about a primacy of practical reason, *Critique of practical Reason*, A 215 ff.). I work this out in more detail in my paper *Towards a unity of theoretical and practical reason*, in «Open Philosophy», 5, (1), 2022, pp. 622–635.

tion of what *ought to be* and therefore what is *imperative* in the phenomena. The general imperative in the phenomenon of digitality is the constant utilization and optimization of space-time converted into data. Different specific forms of optimization are each the means of achieving the imperative of utilization of space-time. Therefore, from a Kantian point of view, the question arises as to whether the optimization of space-time can be the ultimate goal of our digital endeavors or whether it ought to have another goal for which digitality is merely the means. This question will lead us to Kants distinction between «hypothetical» and «categorical» imperatives, for optimization as an ultimate goal for human agency violates the humanity-formula of the categorical imperative.[30] It deems human beings as a means for datafication instead of its end.

To inquire this, we must first be clear about what is hidden in the phenomenon of digital optimization in purposive terms. Space and time are digitalized into multiple modes of utility and efficiency via datafication. The above-mentioned examples of a condensing of time resources through speed and of the expansion of space limits through transmission capacities are just two of them. Anyhow, being in general becomes *quantified* through its optimized transformation into data. This aspect is particularly evident in imperatives of data acquisition as *Big Data*, whose main features are usually defined as *volume, velocity* and *variety, (source-)veracity* and *(statistic) value*.[31] Hereby, speed, quantity, statistical significance and the like belong to the essence of digital imperatives. Heidegger saw this and already criticized the interpretation of being in terms of such determinations. He warned about the possibility that all other concepts of being could be supplanted or even destroyed by the dynamic of a more and more quantifying technologization of being.[32] Adorno and Horkheimer also highlighted this with their concept of «culture industry», that is a technologically grounded industrialization of cultural, anthropological and psychological dimensions on the basis of quantified amounts of data.[33] Step by step, qualities are transformed into quantifiable resources in the context of digital optimization.[34] Hence, as such a quantified relatability and interchangeability of data increasingly defies any essential qualitative differences, digitalization also brings about modes of a general consistency and non-contradiction of being. This is accompanied by the ideal of the abolition of errors and deficiencies within being. In short, imperatives of *ef-*

[30] I. Kant, *Groundwork of the Metaphysics of Morals,* B 66.

[31] Y. Riahi, S. Riahi, *Big Data and Big Data Analytics: Concepts, Types and Technologies,* in «International Journal of Research and Engineering», 5, (9), 2017, p. 525.

[32] M. Heidegger, *The Question concerning Technology,* in «The Question concerning Technology and other essays», Harper & Row, New York, 1977, pp. 3-35.

[33] Th. W. Adorno, M. Horkheimer, *The culture industry: Enlightenment as mass deception,* in «Dialectic of Enlightenment: Philosophical Fragments», Stanford University Press, Stanford, 2002, pp. 94-136.

[34] Hegel shows in his *Science of Logic* the extent to which quality and quantity are essentially interrelated. See: V. Kolman, *How to change quantity into quality? on Hegel's concept of measure,* in «Filosoficky Casopis», 3, 2018, pp. 325-348.

*ficiency* and *perfectionism* follow from the conversion of space-time into quantifiable data and its gradual extermination of qualitative differences.

This, for instance, can be seen in processes of *algorithmization*. In general, algorithms can be defined as procedures to derive or bring about a state B from a state A with a certain number of consistent steps.[35] Such states, however, are always already grounded by their presupposed consistency in order to relate them to each other. Their underlying consistency is brought forth by the conversion of space-time into quantifiable data. Thus, it is because of this already performed tacit conversion, that algorithms sometimes appear like «mystical beings» according to Peddle.[36] It seems as they unlock a secret consistency in reality when in fact they themselves digitally quantify reality and space-time to consistent data structures in the first place. Algorithms ground a reality that is to be predictable, forecastable, and therefore once again: utilizable. In addition, and on top of the advantages and disadvantages of algorithmization, a fiercely discussed problem lies in the question of whether even *decision-making processes* should be left to such algorithms of quantified data consistency.[37] From a philosophical point of view, this challenge contains the question as to what extent decision-making is or ought to be solely a matter of quantifiable data-consistency.

Hence, we see that the imperative of digital optimization is also accompanied by the imperative of predictability of spatiotemporal data phenomena. Concepts of *data mining* and *opinion mining* are extensively used for this in different fields, e.g. economics, politics, social behavior or art.[38] From a phenomenological point of view, this is also related to the idea of a constant availability, exploitability, and controllability of data for predicting the future and therefore an overall claim to *power*. For whoever possesses, controls and continuously is able to utilize data in a datafied reality is also able to shape said reality, to enhance or restrict the behavior of its agents or at least to react to predicted developments in advance. In contrast, those who do not own, control or even know of available data are at a disadvantage. Thus, certain hierarchies are established by datafication. Franklin concisely highlights the consequences of such a paradigm in his analysis of the «logic under which social

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[35] This is of course only a short definition and there is an ongoing discussion on the more specific definition of an algorithm in mathematical sciences, see Y. N. Moschovakis, *What is an Algorithm*, in «Mathematics Unlimited — 2001 and Beyond». Springer, Berlin, 2001, pp. 919-936. / J. Erickson, *Algorithms*, published independently, 2019ff., http://algorithms.wtf/ (20.8.2022).

[36] F. Peddle, *Philosophy and the algorithmic Absolute,* in «Science and Esprit», 73, (1-2), 2021, 269.

37 B. Mittelstadt et al., *The Ethics of Algorithms: Mapping the Debate,* in «Big Data & Society», 3, (2), 2016. https://doi.org/10.1177/2053951716679679 (20.8.2022). / A. Tsamados et al.: *The ethics of algorithms: key problems and solutions,* in «AI and society», 37, 2022, pp. 215-230.

[38] cf. A. Mosavi et. al., *Predicting the Future Using Web Knowledge: State of the Art Survey*, in «Recent Advances in Technology Research and Education», Springer, Berlin, 2018, pp. 341-349. / S. Mahmoud et al., *Predicting Future Products Rate using Machine Learning Algorithms*, in «I.J. Intelligent Systems and Applications», 5, 2020, pp. 41-51. / B. Janssen et al., *Algorithmic Ability to Predict the Musical Future: Datasets and Evaluation*, in «Proceedings of the 20th International Society for Music Information Retrieval Conference», ISMIR, 2019, pp. 208-215.

worlds are reconceptualized as information-processing systems».[39] He points out that such paradigms easily lead to a concept of a utilizable reality, «that can produce profit only by exploiting and disposing human life».[40] Marxist and anarchist theory in particular repeatedly emphasizes the dangers of digitality as the idea of complete control over reality by datafication.[41] Such an idea also raises the question: for whom is reality optimized and for whom is it not? Who controls space-time by digital means, and especially: who controls the space-time of others? This is directly linked to existential, socio-economic and anthropological questions.

Our brief sketch of the multiple implications of digital optimization imperatives is by no means complete or systematically exhaustive. However, it provides an insight into the complex connections and affinities between transcendental phenomenology, philosophical ethics, and digitalization. A philosophy of digitality must therefore be equipped just as much with the thorough analysis of its interrelation with consciousness, phenomenality and transcendentality as with general and specific ethical and cultural-anthropological areas. All of this comes together in the grasping of digitality as a purposive ontology of space-time.

Let us now return to Kant and repeat the question: can the conversion of spatio-temporal being into data find its own supreme imperative and purpose in the ongoing utilizable optimization of reality? With Kant the answer is no. Why? In short: because the imperative of optimization is not about human beings, but about data utilization. For, according to Kant, if human beings are converted to quantifiable data, they are used merely as means to external ends. This, however, contradicts the *categorical imperative*, which demands human beings as the ultimate purpose and end of all actions and therefore contains the goal of bringing about and securing their autonomy as acting subjects.[42] So the ethical question in processes of digitalization is: do human beings act only as a means to the end of optimized digitality or does optimized digitality act as a means for autonomous human beings as its end? The answer to this question spawns the purposive role and function of digitality in our world.

If digitality is supposed to advance the autonomy of human beings, it has to provide the means to make human beings ever more capable of acting as responsible agents. With Kant, we have to affirm the conversion of space-time into data where it brings about the «idea of the will of every rational being as a will giving universal law».[43] Or to put it more briefly: human beings have the purpose to mutually bring about their freedom as their ultimate goal. According to Kant, the categorical purpose for human beings is none other than endowing each other with the ability to responsibly explore what they ought to do when they engage in

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[39] S. Franklin, *Control: Digitality as Cultural Logic,* MIT Press, Cambridge, 2015, p. XV.
[40] *Ivi,* p. XVIII.
[41] cf. S. Zuboff, *The Age of Surveillance Capitalism,* PublicAffairs, New York, 2019. / R Hassan, *The Condition of Digitality. A Post Modern Marxism for the Practice of Digital Life,* University of Westminster Press, London, 2020.
[42] cf. I. Kant, *Groundwork of the Metaphysics of Morals,* B 66 / B 70 ff.
[43] *Ibidem.*

their autonomy. Digitalization can contribute to this with its many merits. However, if human beings in contrast subject their freedom to external purposes, their actions become ethically problematic. One of these external purposes is the conversion of being, including humans, to utilizable optimization as quantified data. For human beings then transform themselves and others to a mere means. Anyhow, human beings can only decide whether this is supposed to be the case by engaging in their own freedom. So, with Kant, setting the purpose of autonomous human agents is itself the first act of this very autonomy.

From an ethical point of view, digitality must therefore always be brought into a philosophical discussion with other areas of our digitalized life. This discussion aims at the question of what people ought to do with their ability to act, their autonomy and their subjective existence when they digitalize reality. Only then can they freely decide whether this ought to be. This is the underlying «categorical imperative» we ultimately are supposed to strive for, because it fulfils our own transcendental essence, according to Kant.[44]

If digitalization is used for endless optimization fantasies instead of this categorical imperative, it becomes a so-called «hypothetical imperative»[45] and converts human beings to quantified data. With Kant, hypothetical imperatives are not those in which human beings define themselves as autonomous and capable of acting, but rather as something to be utilized appropriately, skillfully or efficiently.[46] Humans then not only direct their actions towards usable optimization, they themselves become utilized and optimized quanta of data. In the end, this concerns their very being as a transcendental subject and ultimately an *individual person*, which shall be the last aspect we will now look upon.

## 5. *Subjectivity in the digital world*

The fruits and merits of digitality cannot and must not be dismissed. Never has humanity been so capable and competent in shaping, changing, and reflecting its spatio-temporal reality with its own transcendental capabilities. Digitalization makes an essential contribution to the ability to act autonomously if it follows the above-mentioned categorical imperative. As such a humanistic digitalization, it develops beneficial socio-economic as well as inclusive, pedagogical, intercultural, and anthropological consequences for human beings. For this purpose, however, it is of crucial importance from *which* and from *whose* imperatives digital areas of action are made available. The question always is: Who digitalizes whom and what for which purposes? Rowe, for instance, demands a «shaping (of) our algorithms before they shape us»[47] in pedagogical contexts.

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[44] *Ivi,* B 52.
[45] *Ivi,* B 40.
[46] *Ivi,* B 41ff.
[47] M. Rowe, *Shaping our algorithms before they shape us,* in «Perspectives on Rethinking and Refor-

From an ethical point of view, this demand is to be extended to all contexts of action within digitalized areas.

In contrast, if digitality is not understood as a means but as an end for human beings, it leads to the above-mentioned *dissolution of the subject*. The subject vaporizes into a manifold and utilizable amount of data. It ultimately even loses its subjectivity, identity and personality and becomes a variety of digits. Foucault, for example, prominently problematized the aspects of quantifying subjectivity and the underlying power structures of such a quantification. Digitalization is a manifestation of this problem with subjectivity.[48] The various contemporary discussions on digitally grounded trans- and post-humanism as well as digital cybernetics stem from this root.[49] Like all digital beings, the transcendental subject is converted from an autonomous purposive agent to predictable and utilizable quanta of space-time optimization. This then also contains the logic of political economy.[50] The homo digitalis is related to the homo oeconomicus. As a utilitarian rationalist aiming at an ultimately egoistic «rational choice and maximization»,[51] the homo oeconomicus represents the mirror image of the ideals of digital conversion and quantifiable optimization.

The transcendental conversion of subjectivity to quanta of data is also accompanied by the question of *who* remains capable of being a subject in this process of conversion and who does not. This shows once again that digitalization is just as much a matter of power structures. Anyone who can convert to data, utilize data, and dispose of data holds the capability to subjectivity in their hands – and with it the scope of identity, personality and even chances and limits of conscious agents. This aspect also touches upon the question: who attains consciousness of reality and to what extent? Different capabilities of experience, cognition and knowledge originate on these grounds. Data reality itself becomes a transcendental foundation of the individual possibility of consciousness, knowledge, experience and therefore the ability to act. Apart from its severe socio-economic implications, this is also linked to all the contemporary discussions of the impoverishment of knowledge and cognition[52] through digital information ontologies (they may be recommendation machines, filter bubbles, trackers, marketing algorithms, social media and the like). The control of datafied information and modes of its virtual and analog representation is related to the phenomenon of

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ming Education», Springer, Berlin, 2019, pp. 151-163.

[48] E.g. M. Foucault, *The Subject and Power,* in «Critical Inquiry», 8, (4), 1982, pp. 777-795.

[49] An overview on the debate: G. Benjamin, *The Cyborg Subject: Reality, Consciousness, Parallax,* Palgrave, London, 2016.

[50] A. Wittel, *The political economy of digital technologies,* in G. Koch (ed), «Digitisation», Routledge, London, 2017, pp. 251-275.

[51] S. Donnelly, *Homo Oeconomicus: Useful Abstraction or Perversion of Reality?,* in «Student economic Review», 32, 2018, p. 96.

[52] The potentially negative effects of digitization on knowledge and cognition processes are summarized in: E. Suroedova et al.: *The human impact in the age of digital transformation,* in «E3S Web Conference», 258, (3), 2021, https://doi.org/10.1051/e3sconf/202125807091 (20.8.2022).

space-time conversion. Ultimately, these challenges are all rooted in the issue of the dissolution of subjectivity and thus of the abolition of the autonomous individual capable of acting purposefully. Likewise, the fields of digital automation processes, artificial and environmental intelligence are further phenomenological manifestations of this problem of subjectivity. Thus, it is probably no coincidence that the triumph of digitalization technologies occurred with a so-called postmodern era, that «posits a fragmented self that has no essence, only images».[53] «Anything goes»[54] becomes the post-modern battle cry of a rejected categorical imperative. From this stem the dynamics of discourse domination and quantitative assertiveness, be it economic, political, or anthropological. They can all be read as an expression of the phenomenon of digitalization. In his essay on technology, Heidegger explicitly showed to what extent social and even supposedly natural behavior becomes an expression of underlying technological developments and their adherent world interpretations.[55]

### 6. *Conclusion*

Transcendental phenomenology can contribute as a strong partner for the issues of digitalization. If we understand phenomenology according to its basic meaning outlined at the beginning of our theses, the first task lies in raising the awareness for its ontological character. The digital converts space-time. It also turned out to be a transcendental phenomenon, i.e. it also founds and shapes our processes of cognition and consciousness of reality through this conversion. Philosophy has to constantly emphasize this and thus show that the conversion of space-time is our own act as transcendental beings and therefore our responsibility. Consequently, philosophy has not only the task of raising awareness of the ontological character of digitalization, but also of human autonomy as transcendental agents. Digitality is not only an external instrument, but a grounding perspective on the essences of being. Such issues can be made the subject of contemporary digital education and media as well as of political discourses.

The multilayered act of raising a theoretical awareness for the phenomenon then leads to the ethical dimensions of digitalization. For being aware of its transcendental character, the ethical aspects of subjectivity can be addressed. This allows the autonomous subject to inquire the conversion of space-time to data realities, its quantified algorithmization and its inherent Big Data imperatives. Subjects must be enabled to effectively state whether and to what extent different forms of data quantification ought to be. Digitally sophisticated subjects can be guided by philosophy to recognize and discuss the purposive scopes of

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[53] K. Allan, *The Postmodern Self: A Theoretical Consideration,* in «Quarterly Journal of Ideology», 20, (1-2), p. 3.
[54] P. Feyerabend, *Against Method,* verso, London, 1993, p. 19.
[55] M. Heidegger, *The Question Concerning Technology,* p. 13 ff.

digitalization. This is linked to the insight that digitalization is directly related to issues of autonomy, the ability to act, and the individual consciousness of human beings. Questions arise like: Who has a right to subjectivity? Who is allowed and who is not allowed to act as a subject? Who is and to what extend is someone converted to and processed as a data quantum? Who can convert whom? Who can even claim ownership and control of consciousness in algorithmized data forms (e.g. in measuring clicks and communication behavior, the length of time someone spends online or tracking their whereabouts by digital interactions)? Who can or should control information processes and global forms of knowledge? Who can or should be the agent of the conversion of space-time structures, be it through technological innovation, legal foundations or in economic contexts? For the digital access to space-time directly affects our capabilities to act and, vice versa, establishes further possibilities of such an access. This leads to concrete questions such as: What to do with the time resources freed up by digital innovations? What to do with the ongoing expansion of space (not as a cosmological, but a human factor)? Such issues even extend to questions of working hours, mental and physical health, access to forms of communication, cultural skills and the like.

The anthropological, socio-economic and political implications of all this constitute another aspect of a philosophical consideration of digitality. The imperatives of a society converted to mathematized or bureaucratized data become an issue. Also, virtual systems of discourse must be addressed in their mutual conflict over the supremacy over digital reality. Perfectionist ideals are just as much part of this dynamic as the dream of non-contradiction and consistency of data reality. If digitalized non-contradiction is applied to social or political processes this could lead to a (maybe violent) abolishment of discourse and participation. So, another question is whether reality should be made predictable by non-contradictory datafication at all, to what extent and by whom for whom? In general, this again relates to the problem of the dissolution of subjects as personal, political, social, and ethical agents.

These and other questions allow philosophy to engage in the phenomenon of digital conversion. Philosophy not only is a fruitful partner for digital phenomena. It also represents the responsibility to make sophisticated decisions about the future and the reality of subjectivity. Through its space-time conversions, digitality can further enable autonomous subjects, but it also can convert subjects into an optimization mechanism and ultimately dissolve them to different fields of quantified data. Accompanied by the philosophical raising of awareness, the supply with necessary information and the ability to take appropriate action, digitalization can widen the limits of human autonomy and existence. Thus, in respect to digitalization, the categorical imperative is to sustain and defend our transcendental subjectivity instead of externalizing it to the automated optimization of quantified data.