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OBITUARY

Nature, Science and Life in a Silent Universe: Bernulf Kanitscheider (1939–2017)

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With respect to his own person, Bernulf Kanitscheider never made a fuss. One exception is, however, the kind of intellectual biography figuring as an introduction to his writing *Die Materie und ihre Schatten* [matter and its shadows]. There, he reports on his childhood during the war and post-war period in Hamburg where his Austrian father was appointed meteorologist at the German Marine Observatory. He describes the influence of his mother who, as a physicist and biologist, introduced him to the exact sciences. At the same time, she was his partner at the piano when he started to learn playing the violin. School and university in the "ultra-catholic Tyrol", where the family had relocated later on, were conservative and—as Kanitscheider writes—of a "clerically induced neo-traditionality". Books from the domestic inventory such as those by August Messer and Walter Kranz about the history of Greek philosophy opened up new worlds of thought in which it was possible to think overtly in terms of atheism and materialism. Bernulf Kanitscheider began to study philosophy, music, mathematics and physics in Innsbruck. In the middle of the 1950s, the Innsbruck institute was characterized by Christian existential philosophy and German idealism, and Hegel's philosophy initially had a strong attractive impact on Kanitscheider.

The turning point was reached when Kanitscheider came across volumes of the journal "Erkenntnis" which Wolfgang Stegmüller had acquired for the library. Stegmüller had habilitated in Innsbruck and was appointed professor in Munich. The methods of logical empiricism, being targeted at the intellectual penetration of texts, at criticism and defence by arguments, were particularly attractive. They stood in high contrast to the way in which "the holy scriptures of classics were celebrated" during Kanitscheider's student years. Since a doctoral dissertation in the field of analytical philosophy was not possible in this climate full of conflicts, Bernulf Kanitscheider moved to "neutral terrain", as he writes himself. This is how he started to work on Indian, Chinese and Japanese philosophy which

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later on still flared up here and there in Gießen when students who were enthusiastic about things esoteric, transcended the limits of their knowledge in class. The topic of his dissertation, the conception of consciousness in Zen Buddhism, has also led to a reflection about the limits of rationality and about the question as to whether it is possible to justify rational access to the world without contradiction.

Already during his student years, but also afterwards when Bernulf Kanitscheider was an assistant and lecturer in Innsbruck, the university weeks of Alpbach in Tyrol resulted in encounters with Rudolf Carnap and Karl Popper. The situation improved considerably when Gerhard Frey was appointed to the newly established chair for philosophy of science and natural philosophy in 1968. Now philosophy of science and natural philosophy had become respectable and Kanitscheider could finish his habilitation thesis on physical geometry under Frey's sympathetic guidance. In 1974, Kanitscheider was appointed to a professorship for the philosophy of the sciences in Gießen which he held until his retirement in 2007. The Center for Philosophy and the Foundations of the Sciences to which the newly established chair belonged turned out to be a stroke of luck for him. Here he could, later on together with Gerhard Vollmer who was appointed to the professorship for philosophy of the biological sciences, build a repository of junior scientists based on the special status of the center within the university and thereby essentially shape its interdisciplinary character. Before long, a lively scientific and personal exchange linked him with Mario Bunge and Adolf Grünbaum who, originating from Cologne, emigrated to the US.

2

Bernulf Kanitscheider belonged to a handful of philosophers who, during the 1970s, revived the tradition of rational philosophy geared to the sciences, a tradition that had been lost by war and emigration and which tied up with the role models of early philosophy of science like Schlick, Carnap, Reichenbach and Popper, but also with critical realism and the natural philosophy of Fechner, Külpe and Becher. Among the companions were Erhard Scheibe and Lorenz Krüger. Their newly formed philosophy of science, connecting with debates of *Philosophy of Science* already established in the US, supplied philosophy with a stream of philosophically interested students of the sciences, especially physics, who, in the decades to come, contributed to lend a voice to a philosophy that was keyed to the sciences and that should fill the chairs for philosophy of science being newly advertised everywhere since the 1970s.

In his philosophical work, Bernulf Kanitscheider has always dealt vigorously with special problems of natural philosophy, e.g. with the knotty question of the origin of time's arrow or with the debate between the various interpretations of quantum mechanics while he could resort to a comprehensive and thorough knowledge of both, the history of physics as well as the most up-to-date developments in physics. Yet his philosophical interest was not primarily analytical. Instead, he agreed with Karl Popper, whom he knew and admired, about the idea that the aim of philosophy consists in a comprehensive *cosmology*, an understanding of the basic structures of the world grounded in natural science. This understanding should also guide the answer to the question about the place of man and human life in the world. The topical turn to practical philosophy which took some by surprise was, therefore, only logical from his point of view. Philosophy should span the whole of reality—in this respect Bernulf Kanitscheider was a "classical" philosopher—and from a naturalist perspective this had to mean to confront ethical and practical questions on the premise that we as humans are part of a universe in which no transcendent order of values is preordained. For him, therefore, it was logical to connect with the ancient naturalism and hedonism of Epicurus. At the end, Bernulf Kanitscheider came back once again to his early affection for mathematics and has intensively dealt with the philosophy of mathematics to which his last publications are dedicated. His position that one has to incorporate mathematical structures into one's ontology, if they are needed in physics, is a naturalist one from a methodological point of view. But the result is a moderate realism of universals transcending a purely materialist ontology.

3

In his books *Geometrie und Wirklichkeit* (Geometry and Reality 1971) and *Vom absoluten Raum zur dynamischen Geometrie* (From Absolute Space to Dynamical Geometry 1976), *Philosophie und moderne Physik* (Philosophy and Modern Physics, 1979) as well as *Wissenschaftstheorie der Naturwissenschaft* (Philosophy of Natural Science 1981) Bernulf Kanitscheider brought together the big questions of classical natural philosophy about the structure of space and time and the place of geometry in the description of nature with current developments within the philosophy of physics (especially quantum physics and its philosophical challenges) which, until that time, were largely determined by American philosophy. *Geometrie und Wirklichkeit*, his habilitation thesis published in book form in 1971, is a study on the question of the application of geometry that can still profitably be read today: What is the relationship between geometry and the real world? (1971, 15) Starting with a very broad fanning out of the concept which includes Euclidean axioms and perceptual space as well as the view of geometry as a relational structure, Kanitscheider discusses various empirical properties of geometries, e.g. the way in which the dimension of a space is reflected in our experiences in this space. Of central importance then are the concept of a manifold and the use of geometry in theories of relativity. Moreover, there are chapters with subitems, e.g. focussing on the foundation of constructive geometry in Dingler and Lorenzen or on finite geometries. Finally, the last chapter deals with the general problem of the application of geometry. Here, Kanitscheider opposes the conventional view of geometry as a scheme of order and representation which is neutral with respect to the ordered objects. Since Riemann, Kanitscheider contends, it is also possible to view the world of things and the geometrical structures in which things are "arranged" as mutually dependent; in the extreme, this also includes the case in which the geometrical structure itself coincides with the world of things (as in Wheeler's approach of geometrodynamics). To the question why geometry is applicable to reality at all Kanitscheider answers only cautiously in a realist way. The "ontological point of view" according to which geometry can be applied to reality because reality itself possesses geometrical qualities is "hard to justify" (1971, 354). This answer is insofar surprising as geometrodynamics has been presented previously as a kind of culmination in the evolution towards an ever-stronger substantial application of geometry in physics. Instead, Kanitscheider follows the answer of his academic teacher G. Frey according to which reality is "preformed" by the human mind all along—geometrical structures belonging to the conceptual armoury of this preformation—and therefore a fit between preformed reality and mathematical representation is the final result.

Vom absoluten Raum zur dynamischen Geometrie addresses the physical program of a complete geometrization of physics including all material interactions, a program that was shaped in the 1960s and 1970s, in particular by John Archibald Wheeler. Here, Kanitscheider takes a look at the "occurrence, the development and the first difficulties of the idea […] according to which space and later on space–time constitute the fundamental building material of the universe" (1976, 7). Plato, Descartes and pre-critical Kant are appreciated in the first part of the book in short sketches as precursors of the idea of geometrization. Thus, in Plato's *Timaeus* space does not play the role of a mere arena for material events, but—mediated by ideal geometrical bodies—that of a constitutional base for the various material substances. However, according to Kanitscheider, it is inappropriate to interpret the group theoretic representation of elementary particles idealistically under recourse to Plato, as Heisenberg tried to do. Rather, from his point of view Plato stands for the idea that "access to nature is only possible via the use of pure mathematical thought constructions" (1976, 16).

The "historical" observations very soon led to detailed small studies of the compatibility of absolute space with Newtonian mechanics (containing in part a host of formulae), to Kant's argument for absolute space on the basis of the distinction between left and right, to the problem of the realisation of the Mach principle in General Relativity (GR) and finally, to the question as to whether the "metric field" of GR has intrinsic *chronogeometrical* significance. Especially this latter question is of undiminished relevance from today's point of view. While he was writing the book, Kanitscheider had still to deal with the offshoots of a Reichenbachian conventionalism, represented in particular by the works of Adolf Grünbaum who, following Riemann's (1854, 23) famous speculation[1], championed the thesis of the *metric amorphousness* of (continuous) space–time: Since a space–time continuum cannot have an intrinsic criterion of congruence in contrast to a discrete space, such a criterion has to be supplied externally by a convention of congruence for material measuring rods. Only after such a stipulation about which bodies measure equal space or time intervals the g-field of GR can receive chronogeometrical significance.

In Grünbaum's (post-)conventionalism the influence of a strictly empiricist (or operationalist) theory of meaning for physical theories can still undoubtedly be felt. Here the view continues to have an effect that physical theories can only gain meaning by *coordinating definitions* such that, for example, it can be decided only through stipulations to be given independently from theory what is an "ideal clock" in order to subsequently give a definite empirical meaning to the geometrical expressions by assignment to ideal clocks. Kanitscheider, following Hilary Putnam, precisely attacks these empiricist preconditions of conventionalism in order to argue for a point of view according to which geometric entities and structures exist independently and carry the "ground of metric determination" already in themselves (although the specific *form* of this metric determination in GR depends on the matter content of the world). In a certain sense, theories are *autonomous* with respect to the meaning of their concepts and thus determine for their part what counts as an appropriate measuring instrument. For example, an ideal clock is every physical system measuring equally long intervals in accordance with the proper time determined by the metric field.

From today's vantage point, Kanitscheider took the "right" side here: empiricist/operationalist theories of meaning are equally rarely championed today as conventionalist conceptions of physical geometry. In the former case, the conception of "theory dependence" of the meaning of physical concepts prevailed, whereas in the latter it was the insight that geometrical conventionalism and GR are incompatible. This has been made clear in particular by the works of John Norton (1994, 159–167): putatively necessary

[1] Riemann (1854, 23): "Either the reality that underlies space must constitute a discrete manifold or the ground for the metric proportions must be searched for externally, in forces that have an impact on it and bind it".

"independent" preconditions concerning "universal forces" acting on measuring rods are "absorbed", as it were, by covariance, i.e. the special gauge invariance of GR; "conventions" concerning the congruence of measuring rods are already represented *within* the theory about the freely selectable coordinate systems.

On the other hand, the relevance of Grünbaum's question of what is responsible for the chronogeometrical significance of the g-field has by no means disappeared. Kanitscheider's treatment of the problem which concentrates on criticism of the philosophical background beliefs opens up the possibility of intrinsic chronogeometrical significance of the g-field because he can show that the rejection of this possibility rests on doubtful assumptions. But if one concedes this, *what* is it that constitutes this significance of the g-field? Wheeler's approach of *geometrodynamics* which Kanitscheider presents in the last part of the book under the title "empty curved space–time as building material of the world" does not give an answer to this question but makes such an answer only even more urgent. It is one thing that an ontological position can be justified according to which empty space-times can equally be conceived as ontologically independent entities. But it is another thing to make intelligible what this ontological independence is based on. Most recently, a debate has developed around the *dynamical approach*[2] in which the role of the behaviour of matter fields for the chronogeometrical significance of the g-field takes a central stage again. According to that debate, this significance may perfectly reflect an intrinsic property of the g-field which, however, is not necessarily realised, but constitutes a *contingent* property that is determined by the special behaviour of the matter fields. This constellation would restore an ontological dependence of the metric on the behaviour of matter, though, unlike the conventionalist conception, it would maintain the field-theoretic nature of the metric.

Through the discovery of the singularity theorems by Hawking and Penrose in the 1960s it became visible that the geometrodynamic approach, independently from all problems of implementation, reaches a conceptual limit and that GR must finally be absorbed by a theory of quantum gravity. It is remarkable—and exceptional at least in German speaking philosophy—that Bernulf Kanitscheider clearly denominates this tension and concludes his book with a detailed chapter on singularities in models of GR.

4

In *Vom absoluten Raum zur dynamischen Geometrie* a philosophical method is hinted at an idea which comes to light even more clearly in subsequent writings: philosophical history of ideas of physics being employed for the understanding of the philosophical content of modern theories[3]; based on historical precursors, Kanitscheider works out metaphysical guiding ideas[4] and shows that they are still contained within theoretical constructions of modern physics in a modified and refined form. With their help, specific differences existing between the precursor ideas and their modern successors may also be clarified. Like the readers of this book, hearers of Bernulf Kanitscheider's lectures will recollect that he would frequently use expressions like *chora* or *res extensa* side by side with tensor equations of GR on the blackboard. At least during that time, this was a somewhat unusual

[2] Brown (2005) conceives the chronogeometric properties of the g-field as dependent on the (contingent) Lorentz-invariant behaviour of matter fields.

[3] Quite a similar form of presentation can be found in Graves (1971).

[4] Kanitscheider follows Popper in that metaphysics in the best sense fulfils the task of generating fruitful basic ideas for future exact and empirically testable research.

procedure to make intelligible basic ideas of modern physics via their content with respect to their history of ideas.

As Kanitscheider writes in *Wissenschaftstheorie der Naturwissenschaft* (1981), the creations of the history of metaphysics do not only provide heuristic suggestions for science, they "rather represent empirically not yet testable *precursors* of scientific theories that, semantically speaking, already refer to the same ontological domain of objects." (1981, 10) Ultimately, from Kanitscheider's point of view, metaphysical precursors belong just as well to the big cognitive enterprise of rationally understanding the world as do historical precursor theories of science. In Feyerabend's and Kuhn's history of science analyses which were met with wide public resonance Kanitscheider recognized a threat for this picture of progressing towards an even more complete and coherent understanding of the world. If the truth claim of a scientific theory could "not be stretched beyond the framework of normal science within a paradigm" (1981, 12) and if the paradigms occurring in the course of the history of science could not be submitted in principle to an independent standard of their validity—as Feyerabend and Kuhn insinuated according to his point of view—the idea of scientific progress in the understanding of the world would be debunked as an illusion. Kanitscheider saw a way out of this dilemma in the theory of the stable reference of scientific concepts across theories that has been championed in particular by Hilary Putnam: Democritus and Bohr referred to the same atom with their theories. He conceived of the new causal theory of reference as an instrument to fend off the attack on the concept of rational progress in science. In this sense, Kanitscheider understood philosophy of science as a kind of ancillary discipline of natural philosophy: philosophers of science should develop explications of scientific concepts by the help of which reconstruction of the process of science as an integrative and progressive enterprise becomes possible. Therefore, neither in teaching nor in his publications, as in particular in *Wissenschaftstheorie der Naturwissenschaft*, considerations of philosophy of science ever occur in isolation of the discussion of epistemological problems of science.

Kanitscheider's understanding of how philosophy of science and natural philosophy should proceed is expressed in his concept of *synthetic philosophy*. In contrast to the term *analytical philosophy*, concepts should not *only* be clarified, but conceptual analysis and reflection should be joined and targeted on the material contents of science, as e.g. on the problem of the arrow of time, the causal structure of the world or the architecture of matter (1981, 25). In this context, Kanitscheider does also not shy away from using the expression of *worldview* whose pitfalls he knows as a matter of course. Ultimately, the concept of synthetic philosophy constitutes his way to connect with the program of the unity of science from the days of logical empiricism. Based on the idea of a synthetic philosophy, Kanitscheider wanted to revive the venerable discipline of natural philosophy: not as an autonomous access to nature founded on intuition *besides* the sciences, like in the idealist German natural philosophy, not only as an epistemological analysis of current scientific theories, but as an enterprise of mutual illumination between the history of philosophical thought on nature and the analysis of mathematical structure of today's theories which should uncover their hidden philosophical content. From the synthesis of the contents of various sciences, from physics to neuroscience, a scientific worldview was ultimately to result within which the issue of the place of man in the universe could be addressed: "Not least, natural philosophy thus conceived should and can help with shaping a philosophical worldview that is not only in line with the results of the sciences but depends on these and changes with them." (1976, 11)

5

By his books on the philosophy of natural science, Bernulf Kanitscheider frequently also addressed a public with intellectual interests and in the process dealt with interpretations according to which new developments in the sciences seemed to challenge a naturalist worldview, e.g. processes of the self-organisation of matter. Here, Kanitscheider points out that theories of self-organisation, as e.g. synergetics, via many examples show how the creation of order and structure can be explained without external intervention, solely based on the lawful interaction of the components of complex systems. Debates around the *Anthropic Principle* start with the observation of "fine tuning", i.e. with the statement that the constants of nature and the initial conditions of the universe take exactly those values that permit the emergence of human life in the universe, something which would not be the case with almost all divergent values. This state of affairs has been taken by various authors as an indication of divine design, the argument being that a designing act of creation by God is the best explanation of the special values of the constants of nature and the initial conditions. Kanitscheider shows that there are other options of explanation besides this design hypothesis that get along without supernatural forces. For this, he favoured a many-worlds hypothesis (1996, 113–127). In particular, the special features of quantum theory have been engrossed for ideological positions (Bavink 1933)[5]. With respect to the question of whether the observer or consciousness plays a special role in quantum theory, Bernulf Kanitscheider proceeded in a more sophisticated way. First, he distinguishes the physical findings from possible philosophical interpretations. Kanitscheider also made clear that the Copenhagen interpretation by Bohr and Heisenberg is not subjectivist, contrary to common conceptions (which have been also adopted by Karl Popper). Other, explicitly dualist interpretations of quantum theory rely on the mathematical analysis of the measurement process which John von Neumann had presented in his book on the mathematical foundations of quantum theory. Fritz London and Edmund Bauer concluded from the mathematical special features that measurement only leads to an unambiguous result if a living being equipped with awareness of self forces it by its perception. Other physicists afterwards followed this interpretation. In his "criticism of quantum idealism" (1996, 105), Kanitscheider showed that various arguments speak against this interpretation. London and Bauer need an ontologically dualist solution of the mind–body problem. From the point of view of a realist's theory of knowledge, one must distinguish in particular between the occurrence of a definitive pointer position of the measuring apparatus and the registering of this measuring result within the consciousness of the observer. According to Kanitscheider, such epistemological and metaphysical preconditions of physics have to be justified among other things by previous experiences and by their compatibility with scientific knowledge. Kanitscheider hoped to find the solution of the still unsolved puzzles of the quantum mechanical measuring process in physical programmes that consider the environment of the quantum system or look for physical mechanisms that can make the impression of an instantaneous collapse of the wave function intelligible. Recourse to a special role of consciousness in microphysics would not, however, be necessary.

[5] An early example is Bernhard Bavink (1933). In the 1980s, books by Fritjof Capra who legitimized his ideas by quantum theory among other things gained much public attention.

6

Towards the end of the 1990s, Kanitscheider extends the defence of naturalism against religious worldviews also to anthropology and into the direction of a life orientation based on naturalism. Bertrand Russell functions as a model for his religion-critical enlightenment attitude by which he pleads for an autonomous use of one's own reason. "Seen in this way, philosophy is theoretically the awakening of curiosity and practically an invitation to disobedience with respect to established norms, thus it is subversive in any case." (2007, 23) The turn to a comprehensive naturalism was fostered by the debate with sociobiology (e.g. with Edward O. Wilson's *On Human Nature*) and presumably by the exchange with his colleagues from Gießen holding the professorship of the philosophy of biology (Gerhard Vollmer, from 1995 Eckart Voland) as well.

The extension of evolutionary explanations to human action led Kanitscheider to a monist conception according to which humans are above all considered as beings of nature and the domain of norms should not be split off, neither epistemically nor metaphysically, from nature. Kanitscheider championed a hedonist variant of a doctrine of happiness which is only restricted by the prohibition of harming third parties. In particular, his advocacy of a very far-reaching liberalism concerning the ethics of drugs earned him a lot of contradiction. In his sexual and drugs ethics, Kanitscheider saw a consequence of a hierarchy-critical individualism and autonomous reason. Likewise, he wanted to make clear that emotions and "love, pleasure and passion" may well have their place in a worldview being determined by science and reason (2007, 19). These ideas "about a reason-directed, philosophical way of living follow the idea of eudaimonia of Greek antiquity, the idea according to which the most important thing in life is to meaningfully organise the short span of time being granted to us." (2007, 10)

7

During the last years Bernulf Kanitscheider returned to theoretical philosophy and took up once again the problem of the applicability of geometry in a new context. The question is now embedded in fundamental discussions of the philosophy of mathematics: What may a theory about the mode of existence of mathematical objects look like if the sweeping success of the application of mathematics in the sciences, in particular in physics, is to be made intelligible? A second question is of equal importance: How can the assumption of abstract objects like mathematical structures be reconciled with a naturalist or materialist worldview? Kanitscheider maps the question about the mode of existence of mathematical objects onto the old problem of universals and is getting close to a position that mathematicians like to call Platonism. The reasons for this stem from a naturalist methodology, according to which there is no privileged access to the world outside of the empirical sciences. This suggests taking seriously the view of many creative mathematicians (Kanitscheider mentions, for example, Kurt Gödel) in the first instance that they discover already existing truths and that they do not invent them. This leads to a certain parallelism of formal and natural sciences according to which the objects of mathematics are just as real as those of physics. However, an asymmetry cannot be overlooked from an epistemological point of view having to do with the perception of the respective objects. It is hard to conceive how a proper world of mathematical structures being causally inert, timeless and immaterial could act on the mathematical and scientific cognitive process in such a way as objects of physics can causally do in perception. A strong Platonism thus seems to founder at the task of explaining the applicability of mathematics. Kanitscheider assumes that a nominalism, as propagated by H. Field, cannot make intelligible the practice of the mathematized sciences either. Therefore, he follows the inevitability argument by Quine and Putnam according to which the mathematical parts of a physical theory are inseparably entangled with their total ontology, and therefore their mode of existence has to be interpreted just as realistically as that of the physical objects. We should take as existent all and only those entities that occur inevitably in our theories. In the end, Kanitscheider follows arguments for the view that material reality possesses an inner mathematical quality (similar considerations have been urged by Dirac in an article of 1939) (2017, 145). This immanent realism corresponds to an Aristotelian position (universalia in rebus). It must be specified, however, in order to cope with unrealized formal structures (e.g. from the realm of transfinite sets). In this way, Bernulf Kanitscheider sketches a road to a philosophy of mathematics that is both methodologically and ontologically compatible with naturalism.

Kanitscheider's methodological attitude is also shown in the philosophy of mathematics. An overview of various positions is more important for him than a lengthy defence of a single position. The observation of scientific practice is on an equal footing with philosophical standards. In the investigation a reconciliation is attempted between the conceptual considerations of professional mathematicians and the specialists of the philosophy of mathematics (2017, 145). Both books on the philosophy of mathematics are filled with relevant results of mathematical research from the past and the present. A level is targeted that builds a bridge between a general introduction and research literature. Kanitscheider also addresses popular misunderstandings that create a wrong picture in public, for example, when he examines in detail what really follows from Gödel's theorems and what does not.

The peculiarities of mathematical rationality are characterized because they belong to the scientific worldview. Analytical thought, however, has lost part of its influence in the public because it is not sufficiently keyed to content-related scientific problems and is too much formalized. "In spite of this, logical training, the capacity of conceptual distinctions and a rational attitude would be the best correction factors of emotionally overcharged social debates." (2017, 58)

8

Bernulf Kanitscheider's enlightenment-like engagement for a self-determined way of living to which no dogmas, but scientific experience and pragmatic reason lend the guidelines and his detailed investigations of foundational problems of physics and mathematics have a common root: his naturalist basic conviction. He champions naturalism in various forms that are related to each other (cf. 2007). On the one side, he agrees with Quine's position that there is no a priori foundation of the sciences, but philosophy and the empirical sciences continually merge into each other. Connected with this is the mistrust with respect to a philosophy of science that works without a thorough knowledge of the empirical sciences. A further step consists in the idea that empirical methods and empirical sciences suffice in order to capture everything that lies within the basic scope of knowledge. It is possible to know the world without any teleological and transcendent impact factors. All human activities can be understood as natural phenomena, and evolutionary considerations help particularly in this context. Naturalism is characterized by its aspiration to uniformity. Matter–energy and space–time are ontologically fundamental. Claims of validity have to be based on natural and scientifically ascertainable facts as well. In this way, a uniform, scientifically characterized worldview emerges that Bernulf Kanitscheider frequently and readily defended while exchanging arguments with theologians, among others. Bernulf Kanitscheider did not found a "philosophical school", but he had many students. From these students he never expected that they follow his views. When they embarked on different paths, and especially then, he fostered them with his never fading kindness and generosity. With Bernulf Kanitscheider German philosophy loses an influential figure that embodied philosophy's claim to the connection of theoretical penetration and practical orientation.

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