

BOOK REVIEW

Giacomo Borbone and Krzysztof Brzechczyn.
Idealization 14: Models in Science

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The post-Kantian era has brought a widespread conviction among scientists as well as scholars of philosophy that human knowledge—including the most advanced and revered version of it, named “science”—is not an exact reflection of the world as it is. *Das Ding-an-Sich*—the “Thing-in-itself”—appears more unreachable than ever before, as if the expansion and deepening of human knowledge—whether of nature’s molecular structure or of the remotest corners of our solar system—even aggravates the intuition of the unbridgeable discrepancy between the real but secret configuration of the universe and the body of scientific knowledge, which Man has built up over the centuries and which has allowed him a firm—though far from almighty—grasp on the internal natural processes. Moreover, not only the natural sciences, but even the social sciences appear to depend on mentally projected concepts, structures, and patterns, as they help Man better understand the cultural world that He himself has made.

Giacomo Borbone and Krzysztof Brzechczyn, the editors of the fourteenth title in a series of Poznan Studies in the Philosophy of the Sciences and the Humanities on modeling and idealization, may have aimed at a perfectly representative range of essays on the topic. While the volume may well fall under its own rule and be itself considered as the product of an idealization process, it seems the product may achieve its implicit objective to illustrate, deepen, and disseminate knowledge on a commonly overlooked phenomenon, even in academic circles. At any rate, the currently presented collection of essays is varied and well structured, consisting of a part on idealization in general, another on idealization in the social sciences—particularly economics, sociology, and linguistics—and still another on the humanities, including philosophy. The editors offer themselves an introduction to the work in which they explain the theme and its implications. Grand “connector” of all essays is the work of the contemporary Polish philosopher of science, Leszek Nowak [1943-2009]. It is hardly exaggerated to say that every essay—while highlighting a specific aspect or development of it—covers in the first place the philosophy of Nowak before anything else. Since every essay can be read as an entity on its own, the major philosophical insights of Nowak are being explained repeatedly. A professor at Adam Mickiewicz University, Nowak spent considerable attention to methodological issues in philosophy. He was also the founding editor of the series Poznan Studies in the Philosophy of the Sciences and the Humanities, a series he has guided as editor-in-chief until 2006. Nowak was also a visiting professor at the University of Catania, in Sicily, Italy, which is where editor Giacomo Borbone is

teaching. Borbone obtained his doctorate of research in 2010 on the philosophy of Nowak, while editor Brzechczyn obtained his PhD degree in 1995, on the Cascade processes in historical development, under the supervision of Nowak himself. Not surprisingly, several contributors to the present volume are connected with universities where Nowak has been teaching, and where interest in the philosopher's work and thought has obviously been kept alive, also given the transformation in the study and teaching of philosophy in postcommunist Central and Eastern Europe.

A reader of any of the three parts of the work can expect to be confronted with a generous amount of ideas and concepts, methodologies, and their respective fields of application, in which the importance of models and idealization is continuously underscored. For sure, the non-initiated reader would render himself a great service by getting familiar with Nowak's terminology and the specific meaning assigned to some terms. However, the more diligent reader, who goes through the entire volume, will definitely be helped by the different and complementary presentations given of Nowak's thought in the various contributions.

Going over the collected essays, the reader will face a discussion on scientific theories, theoretical terms, and the ontological status of their references from Part I. Xavier de Donato Rodriguez and Jose L. Falguera start from the viewpoints of Stephen Hacking and Nancy Cartwright, who maintain the belief that theoretical entities have spatiotemporal references, while the theories themselves of which they are a part have none. We will come back on this point later. Other interesting presentations include the categorization of scientific laws, so that—for instance—Newton's laws are not put together with Marx's theory of value. The next entry, by Lidia Godek, highlights the concept of idealization in Max Weber, which is said not to be naturalist and essentialist like that of Nowak, but instrumentalist. Godek states that Weber took a clear stance against positivism as the universal applicability and the empirical verifiability of Weber's ideal-types has been questioned by scholars. Weber emphasized the one-sided character of human cognition, as far as not every object becomes an object of science and not every possible perspective is actually being used in the investigation process. It will depend, instead, on what the researcher identifies as problematic, or on what he finds to be culturally significant. In a next stage, the researcher proceeds to the discrimination between relevant and trivial aspects in a phenomenon. This occurs on the basis of relative importance given to certain relationships over others, again in function of preliminary value-axioms and assumptions. The ideal-type is a reductive presentation of the object of research to its primary or 'important' characteristics. In the final stage, the researcher confronts empirical cases with the ideal-type and assesses similarities and deviations from it. When performing modeling, the researcher applies abstraction. This may occur either as generalization or as idealization. The former takes a kind of bird's eye perspective, limiting itself to the general characteristics of the object. The latter, however, works through deformation, leading to an abstract typical concept—in contrast with the abstract generic concept. Both conceptual formulas can be called real-types, as they result from an inductive process starting from observed phenomena. The group of generic concepts does not find favor in Weber's eyes, since those concepts tend to be too general and, therefore, devoid of content, given the importance of what is concrete or particular in the social and cultural sciences. So, real-types tend to be

ontologically and epistemologically “closed” concepts, while ideal-types are “open.” Preferring the ideal over the real-type concepts, Weber goes for an instrumental approach, perceiving the construction of concepts as a means rather than as a goal in itself.

So, on the methodological level, the positions of Weber and Nowak are fairly similar: it is about deformational modeling and abstract conceptual constructions. The construction of an abstract model of a particular phenomenon through the mapping of relevant factors and their hierarchical ordering according to their status of significance (this is whether they are of primary or secondary importance) is what Nowak presents as “idealization.” This essentialist approach is pursued because of the substantive interconnection of objects which it is expected to underscore. Weber, however, goes beyond this level and represents his ideal-types as an illustration of the conceptual interconnection of problems; therefore, in function of human discursive cognition rather than of objective structure. Importance-based differentiation of factors is not applied on an objective, but on an inter-subjective basis. Starting from a confrontation between the understanding of idealization in the respective Weberian and Hegelian traditions, Lidia Godek underscores Weber’s view that cognition is never presupposition-free. For Weber, idealization is rather a construction of ideal notions, while for Hegel, idealization is conceived as a goal-oriented discrimination between relevant and trivial aspects in a phenomenon.

After a presentation of the distinction between a rational act and a habitual-rational action with their ramifications, Part Two is introduced with essays on idealization in the fields of economics, historical-comparative sociology, theory of science, and linguistics (especially the transformational-generative grammar of Noam Chomsky).

Part three applies the method of Nowak to the field of the humanities or the social sciences, for the sake of methodological monism, or—perhaps—methodological naturalism, since the move implies the application of a common method in the natural sciences to the realm of their “social” counterpart. Such move requires a few interventions, of course, since the highly formalized, mathematical discourse of the natural sciences cannot simply be transferred to the field of the humanities without adjustments, given the qualitative nature of the discourse, especially in philosophy and metaphysics, as underscored in the contribution of Krzysztof Kiedrowski. This pertains to the so-called “negativistic unitarian metaphysics.” Metaphysical categories—characterized by means of natural definition—are introduced into a system through the method of idealization (therefore “deformation”) and concretization (as the successive, gradual elimination of that deformation). This reflects the thesis of essentialism, in which both primary and secondary factors of reality are considered (also called the “essence,” in contrast with the “phenomenon,” as idealization aims at the identification of the “essence”).

Piotr Przybysz applies the Nowakian method of idealization and concretization on the work of John Rawls, who is believed to have applied Nowak’s method in his research activities. Rawls’s so-called “original position,” which is the situation of choice of principles of justice, is believed to be the result of an idealization process. Zenonas Norkus focuses on scenario planning, as is sometimes used—among others—in strategic management. Based on inductive modeling, scenario planning is a form of analytical narrative or a complex story, that results from discursive idealization, rather than from more conventional scientific prediction, unlike other practices that are more directly related to science.

As last contributor, Piotr Szwochert puts historical narratives in the spotlight. Narratives can also be analyzed as a product of the *Idealizational Theory of Science* (ITS). After another brief but clarifying introduction to Nowak's thought, the author underscores the characterization of idealization as a form of deformation, of which a soft and a hard version and possible internal combinations can be distinguished, illustrating once more the complex conceptual structure of idealizational modeling and of intelligent cognitive fictions. Eventually, Szwochert goes back to his main topic, historical narratives. Referring to Izabela Nowakova, he develops his assessment against an epistemological background, particularly the somewhat conflicting theories of truth of Aristotle ("All true knowledge comes from the senses") and Georg Hegel ("Truth is essentially idealizational"). Following Nowakova, the author obviously favors the latter or the essentialist viewpoint as more suitable to his intention. (The premodern Aristotle already had recognized the role played by abstract categories like *genus* and *species* too, of course). So it happens that reality is analyzed as made out of two layers, the phenomenal or superficial, and the deep, which contains the essential determinants of the former. What these principal factors include is subject to a researcher's interpretation, and forms a part of a hierarchically ordered structure, not just a set of singular statements. So-called *cascadeness*—a concept studied by Brzechczyn—is identified as a common phenomenon in the social sciences, especially in historiography. It refers to the decline of the principal factor's influence, due to an increase of the impact of secondary factors, even as the principal factor may remain stronger than each secondary factor taken separately. *Reverse cascadeness* may also occur, which consists in the opposite movement, when the relative supremacy of the principal factor over the secondary factors is being restored. Obviously, different styles of narration reveal different selection criteria, such as between Marxist and Hegelian discourses. Therefore, assessment of historical narrations shall focus on the deep layer and its presuppositions rather than on superficial, factual statements. Rhetorical frameworks—that may be approving or disapproving, apologetic or ironic, even quasi-impartial—also affect a discourse, perhaps depending on the axiology or value-system that the author implements as a member of a particular culture or society. The author further develops and illustrates his view through concrete examples taken from Polish and international historiography. Readers who happen to be historians may wonder at the widespread presence of formalized language or mathematical formulas throughout this and other essays in the book. In spite of the qualitative nature of studies in the humanities, the attempt to identify a blueprint for all forms of idealization and the belief in the earlier mentioned methodological monism has led to a much more uniform discourse than the hermeneutic and more-than-logical process of learning and understanding in the humanities may have suggested.

We would like to return to the very first essay in Part I, that of De Donato Rodriguez and Falguera, who start their discussion from so-called entity-realism. This position consists basically in the assumption that theoretical entities have references, that may—or may not—be spatiotemporal in nature, depending on the weight given to their causal manipulation during laboratory experiments. At the same time, the entity-realist position may be twined with an antirealist stand on scientific theories, since these are complex constructions, often made with the help of mathematical formulas,

that cannot strictly be true, unless in relation to the entities used in a specific model. This entity-realism is being confronted with the constructive empiricism of Bas van Fraassen, who rather takes an agnostic stand in the defense of unobservable entities and their ontological status. Theoretical terms may or may not have references, but theories are expected to be empirically adequate. Problems with the Causal Theory of Reference (CTR) include the assumption that the theory is true. So, what if it is not? Or what is to be done with cases of evolving models or simultaneous conflicting models that appear to refer to the same object? How can continuity of reference be guaranteed, or how is co-referentiality defensible, so that discussion and revision make sense? Since an ostensive approach is problematic, the authors propose to come up with a hybrid, or modified descriptivist approach, different from the causal one. Following Thomas Kuhn, the authors consider the references of theoretical terms as nonnatural, humanly constituted “kinds.” These may be represented as “abstract objects”—a term coined by Edmund Zalta—and are to be distinguished from their respective extensions, referring to the classes of concrete instances to which their corresponding terms can be applied. “Abstract objects” are nonspatiotemporal, but in no way unreal, even as they include numbers, fictional characters and places, or scientifically rejected concepts—like “simultaneity” in classical mechanics after Albert Einstein. Edmund Zalta also includes impossible or contradictory entities—like the “round square”—among them. De Donato Rodriguez and Falguera propose to let them also cover accepted and nonrejected terms—like mass, energy, electron. A condition for this would be the formulation of connecting principles relating abstract objects to observable features of the world. Such “ultra-inclusive” stand could significantly expand the realm of beings, of course, risking even an overpopulated universe. A distinction could be made, then, between the primary (this is the abstract) objects of science and the secondary or mediate objects (these are the observables in space and time). The authors also apply Zalta’s concept to scientific theories. Scientific theories are eventually called “stories” that aim to present the concrete world as it is, but, nevertheless, remain a part of the class of “abstract objects.”

We would also like to return to the essay of Barbara Konat in Part II, in which she takes a perspective from linguistics on *Idealization Theory of Science* (ITS). This theory was, as argued, applied for the first time in the field by Noam Chomsky in the 1960s. Because of this, the author believes that Chomsky deserves to be called the “Galileo of linguistics,” in analogy with Nowak’s qualification of Karl Marx as the “Galileo of the Social Sciences.” Right before Chomsky, linguistics were dominated by structuralist distributivism, that used a method based on observation, classification, and induction to map the structure underlying natural languages. Konat state that Chomsky was not satisfied with this approach as far as it could not separate factors deemed significant to the linguist. In other words, to become a mature science, linguistics had to make the move to idealization, as exemplified in the work of Leszek Nowak. Nowak made a distinction between logic and linguistics, as the first was primarily interested in formal or artificial language and the second in common or natural language. However, unlike for example Kazimierz Ajdukiewicz, Nowak considers artificial language as an idealization of natural language, that relates to artificial language as a concretization of it. Nowak goes beyond Ajdukiewicz’s relation of correspondence. He also identifies idealization

as present in both types of language, referring to Chomsky's axiom of an ideal speaker-hearer relation, a homogeneous speech community, and an error-free speaking subject. Emphasizing without relent the above-mentioned analogy of method between the natural and the social sciences, Nowak distinguishes three steps in Chomsky's idealization process, from the more abstract generative grammar to gradual concretizations. So, just as ITS was initially developed to make sense of Marx's *Das kapital*, pointing at the reluctance of Marx to study the world and the economy on a purely "particular" or "phenomenal" basis, idealization was again applied in linguistics by Chomsky as he made a distinction between (linguistic) *competence*—a mental process analogue to a computer program that generates propositions complying with the "grammaticality" requirement—and the *performance*, that is, the actual implementation of competence in a speech context and the seat of the acceptability criterion.

At any rate, the methodological monism that underlies idealization theory has demonstrated its strength in *Idealization 14*, as far as the universal presence of modeling and deformation was illustrated, in the social as well as in the natural sciences. And—given the evolution of all sciences—no model is perfect or will exist forever. Methodological pluralism seems to us recommended, as it may tolerate and encourage the continuous development of new models and theories, that allow a better grasp of their object, both in the cognitive and in the pragmatic sense. And, by way of conclusion, in all sciences, at all times, truth may prevail...!

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