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## THE NATURE OF SCIENTIFIC PHILOSOPHY

**Abstract.** The goal of this paper is to explain the nature of philosophy as a distinct science with its own subject-matter. This is achieved through a comparative analysis of mathematical and philosophical knowledge that reveals a profound similarity between mathematics and philosophy as mutually complementary sciences exploring the field of abstract entities that can be comprehended only by purely a priori theoretical inquiry. By considering this complementarity, a general definition of philosophy can be obtained by dualizing the traditional Aristotelian definition of mathematics as the “science of quantity”. Philosophy should thus be interpreted as an a priori science of the pure qualitative attributes of being.

**Keywords:** science; philosophy; mathematics; a priori knowledge; principle of duality; quantity; quality

### 1. Preliminaries: The idea of philosophy as a distinct science

The controversial issue of whether philosophy is a science has been at the center of debates at least since Kant’s groundbreaking inquiry into the possibility of scientific metaphysics [see 14, pp. 147–148]. Many have rejected the idea that philosophy have a scientific nature, and have treated it as a special branch of human culture similar to art, literature and religion [cf. 6]. The problem with such a perspective is to explain how philosophy so interpreted can qualify as a means of knowledge acquisition.

However, the opposite view (in favor of the scientific status of philosophy) is often advocated indirectly, simply by arguing that true philosophy is not really art, literature, or religion, and thus that there is no option but to treat philosophy as a science. Clearly, this indirect

way of arguing, even if it plays an important supportive role, cannot be completely satisfactory. To justify a scientific character for philosophy, it is desirable to formulate a *positive definition* that directly explicates the nature of philosophy and delimits its field of study.

The objective of this paper is to explain the nature of philosophy as a distinct science with its own subject-matter, and place among the other sciences. To this end, it appears quite promising, though perhaps somewhat surprising, that philosophy is compared to mathematics. Such a comparison proves useful for revealing certain specific features of philosophical knowledge. Remarkable as it may seem, philosophy and mathematics share certain important similarities that are manifested most notably in (1) the nature of mathematical and philosophical concepts and judgments, (2) the essence of mathematical and philosophical entities, (3) the notion of truth in both fields, and (4) some basic principles for constructing mathematical and philosophical theories. Based on this similarity, which implements a fundamental duality between mathematical and philosophical knowledge, one can derive a definition of the latter by dualizing the definition of the former.

## 2. Pure a priori knowledge

The concepts and claims of mathematics are usually considered an archetype of what, following Kant, is commonly referred to as *pure a priori knowledge*. A judgment is regarded as *a priori* if its truth can only be established by rational, non-experiential means (general laws) alone, with no recourse to empirical inquiry.<sup>1</sup> Clearly, theorems of geometry, arithmetic equations, and algebraic expressions are verified by purely logical means. The process of such verification does not require any factual information about our “physical world”. Thus, mathematical judgments have nothing to say about the states of affairs in this world, and we do not need any empirical data to be able to establish the truth of these judgments.

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<sup>1</sup> Cf. the famous statement by Gottlob Frege: “For a truth to be a posteriori, it must be impossible to construct a proof of it without including an appeal to facts, i.e., to truths which cannot be proved and are not general, since they contain assertions about particular objects. But if, on the contrary, its proof can be derived exclusively from general laws, which themselves neither need nor admit of proof, then the truth is a priori” [7, p 4]. On modern debates about the a priori see, e.g., [11].

Even though philosophical reasoning falls far short of the perfection and rigor of mathematical proof, the judgments of philosophy in certain important respects are entirely analogous to those of mathematics, inasmuch as they are also a priori in nature, and are obtained from some basic assumptions by means of a purely logical argument.<sup>2</sup> Of course, any science includes such a purely theoretical component represented by a body of general laws and their consequences. However, proper judgments of pure mathematics and theoretical philosophy, distinct from the other sciences, never refer to any empirical domain and, as a result, are both deprived of the so-called “observation sentences” available to other scientific disciplines.

Of judgments that express a priori knowledge, Kant singles out pure ones and characterizes them as those “with which nothing empirical is intermixed” [14, p. 137]. The difference between “pure” and “impure” a priori judgments can be illustrated by the following two statements: (1) “ $100 \cdot 2 = 200$ ”, and (2) “If the vehicle has traveled at a speed of 100 km/h, and then its speed doubles, the resulting speed of the vehicle is 200 km/h”. Another example is presented by the following pair of sentences: (1) “Nothing is without a reason for its being”,<sup>3</sup> and (2) “World War I could not have happened without a cause”.

Evidently, only judgments of the first kind belong to *pure* mathematics (respectively, philosophy), as opposed to judgments of the second kind, which, while a priori, are not mathematical (respectively, philosophical) statements as such, because they refer to some applied (empirical) reality. That is, the distinction between pure (a priori) judgments and judgments that have some “empirical admixture” is based on their content and the characteristics of objects to which the notions occurring in the judgments refer and which constitute extensions of these notions.

### 3. Abstractions of higher level

Pure a priori judgments cannot include empirical notions, which are generalizations of observed objects and their properties. Moreover, such judgments cannot deal with *concrete notions* of any kind comprising concrete things, situations, and processes of physical reality or idealizations

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<sup>2</sup> From this perspective, philosophical knowledge is sometimes characterized as being attainable merely by “armchair methods” [see, e.g., 27] and [22].

<sup>3</sup> A formulation of the principle of sufficient reason from [23, p. 5].

thereof.<sup>4</sup> When occurring in a judgment, such notions inevitably “pollute” it by adding “something empirical” to its content. Many abstract notions from the theoretical sciences are also empirically loaded — for example, such notions of theoretical physics as “elasticity”, “conductivity”, and “speed”. These notions introduce abstract objects of a certain kind that are obtained by converting some (empirical) properties and relations of concrete things into certain *objects of thought*. These objects of thought can be called “abstractions of the first level”.

By contrast, the notions of mathematics and philosophy represent abstractions of a higher level performed over the (abstract) properties and relations possessed by some abstract objects of a lower level. For example, the mathematical notion of number can be obtained by converting the abstract property of cardinality into an (abstract) object, whereas sets exhibiting this property are by themselves abstract objects of some kind. Likewise, in philosophy, the notion of justice can be introduced as an abstraction over certain property (a virtue) that can be possessed either by persons (Aristotle) or by social institutions (Rawls), which in turn are considered abstractions of a certain kind.

As a result, mathematical and philosophical objects have no direct connection to empirical reality, and are entirely non-empirical entities. This means in particular that criteria for the existence and identity of such objects are essentially non-empirical, and comprise characteristics that by their very nature cannot be collected through the sensory system. For instance, the identity criteria for numbers in mathematics consist in the equinumerosity of the corresponding sets: the number of elements of set  $X$  is identical to those of set  $Y$  if and only if the elements of these sets are connected by a one-to-one correspondence (Hume’s principle). The latter is an abstract mathematical relation that cannot be seen or somehow sensed.

Similarly, in philosophy the identity criteria for substances consists in their having the same attributes — God and Nature according to Spinoza are one and the same substance by virtue of possessing the same attributes. Again, these attributes are completely non-empirical — the intellect perceives them of a substance “as constituting its essence” [see 26, p. 217].

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<sup>4</sup> The interested reader can consult, e.g., [4] for the operation of idealization.

#### 4. The problem of truth

To a large extent, the problem of truth in mathematics and philosophy is treated in a similar way. This particularly concerns the theories of truth that can be applied to the analysis of judgments in both fields.

First and foremost, the correspondence theory of truth is inapplicable to mathematics. According to it, the truth of a sentence is established by correlating it with a non-linguistic reality. For mathematical judgments, it is by no means clear what kind of “reality” should be considered, and what the procedure of such a correlation could be. The world of physical things can hardly be such a reality. Indeed, mathematical statements are true not because of their correspondence with the physical world. On the contrary, the real world is subject to the laws of mathematics and demonstrates its truly amazing correspondence with them. Should one assume the existence of an ideal realm of abstract entities, it is difficult to see how one could establish the supposed correspondence between this reality and mathematical judgments without recourse to “intellectual intuition”, “direct awareness of essence”, and other arcane “methods” that lack rational explication.

The coherence theory of truth is more applicable to the analysis of mathematical theorems than the correspondence theory. Indeed, every such theorem holds only with respect to some mathematical *theory*. The statement “the sum of the angles of a triangle is  $180^\circ$ ” is true in Euclidean geometry but not true in hyperbolic geometry. A mathematical theory in turn is normally based on some stock of basic postulates (axioms), the truth of which is grounded by a conventionalist theory. Such postulates are usually accepted by agreement and, ultimately, this provides the justification for mathematical axioms. Thus, the truth of mathematical statements is based on a certain combination of coherence and convention.

The situation with philosophical judgments is very similar. By way of example, consider a typically philosophical statement: “Space is nothing other than merely the form of all appearances of outer sense, i.e., the subjective condition of sensibility, under which alone outer intuition is possible for us” [14, p. 159]. This statement makes sense only within a certain philosophical conception in which space is treated as an a priori form of sensibility. Whereas the very possibility of finding such forms in “empirical reality” seems highly problematic, one can only postulate them (i.e., accept them by agreement) and proceed further with the

consequences of the accepted postulates. In other words, philosophical judgments are supported by a similar (to mathematics) combination of the coherentist and conventionalist theories of truth.

## 5. An axiomatic-deductive framework

The point made in the previous section allows us to find important similarities in the general design of mathematical and philosophical conceptions. Mathematical knowledge can typically be represented in the form of an axiomatic theory:

For the rigorous development of a mathematical theory proceeds [...] from a set of non-definitional propositions which are not proved within the theory; these are the postulates or axioms of the theory. They are formulated in terms of certain basic or primitive concepts for which no definitions are provided within the theory. [...] Once the primitive terms and the postulates have been laid down, the entire theory is completely determined; it is derivable from its postulational basis in the following sense: Every term of the theory is definable in terms of the primitives, and every proposition of the theory is logically deducible from the postulates. [9, p. 380–381]

By developing their conceptions, philosophers essentially stick to a similar canon. Any philosophical system (theory) is grounded explicitly or implicitly on some collection of primitive notions (categories) taken without definition. By means of these notions, a body of fundamental statements (principles, postulates, etc.) is formulated, on the basis of which the entire conception is then developed. Of course, the mathematical standards of completeness are hardly (if ever) attainable in philosophy. But generally, an abstract model of evolving philosophical ideas is well within the parameters of a *pure theoretical inquiry*.

The above model can be considered to represent a typical pattern for developing theoretical knowledge. To some extent, it is inherent to any science as it has an abstract-theoretical component.<sup>5</sup> However,

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<sup>5</sup> Classical mechanics is a good example. Despite having an empirical subject-matter (macroscopic objects, and their motion, position in space, and relations between them) it is constructed as a rigorous axiomatic system, the general statements of which do not depend on concrete data concerning the nature and properties of material bodies, and can thus be interpreted in various ways. Still, an applied component is indispensable to any mechanical theory.

only in mathematics and philosophy are the construction, development, and justification of scientific knowledge performed *exclusively* within an axiomatic-deductive schematism broadly conceived. Mathematics and philosophy are the only sciences that have no research tools other than logic and logical analysis. Experimental methods are alien to both, as opposed to other disciplines.<sup>6</sup>

From this perspective, the similarity between mathematics and philosophy is much more important than the evident difference, which is that mathematics typically deals with explicitly formulated axioms and rigorous deductive procedures, whereas initial postulates in philosophy are often assumed only implicitly, and the process of inference is accomplished mainly by means of informal argumentation.<sup>7</sup>

## 6. The classification problem

There is yet another similarity between mathematics and philosophy, that is classificational by nature, and reflects a rather remarkable distinctness for both disciplines from other sciences. It is challenging to classify both mathematics and philosophy under a more general scientific label. According to a widely accepted view, all sciences can generally be divided into two main groups: the natural sciences and the humanities. Such a division is rather conventional and, considering further possible specifications of it,<sup>8</sup> comes close to the division of everything that exists into the “world of nature” and the “world of man”. However, the problem is that philosophy, much as mathematics, does not fit into such a rigid dichotomy of scientific knowledge. Just as mathematics cannot be classed as a natural science simply because of common features (an extra-subjective character of the subject-matter, certainty, and precision of methodology), it would be inappropriate to place philosophy among

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<sup>6</sup> We bracket here the so called “experimental mathematics” and “experimental philosophy”, which have emerged as a new direction of research in recent times [see 1, 15]. On closer examination, however, studies in these areas turn out to be either not experimental (as in the case of mathematical computations), or not truly mathematical or philosophical (as, e.g., an empirical examination of intuitions of certain ethnic groups).

<sup>7</sup> On informal logic and its application to philosophy [see, e.g., 12].

<sup>8</sup> Thus, one often separates technical or engineering sciences from the natural sciences. Likewise, social sciences can be separated from the humanities.

the humanities, on the sole ground that it deals with humanity (among other things).

In fact, mathematics and philosophy as distinct sciences jointly constitute the basis of scientific knowledge as a whole. The mathematical apparatus is essentially used in all natural sciences and often in the humanities, and the basic categories of any scientific theory have a philosophical character. Moreover, whereas any other discipline in the natural sciences and the humanities explicitly deals with certain pieces or aspects of the “real world”, which constitute its concrete subject-matter, neither mathematics nor philosophy has such a narrow scope as they both involve the “world as a whole” (in an abstract sense). Thus, the most fundamental sciences — mathematics and philosophy — must extend beyond such a “dichotomous classification” as separate and self-determined elements in the unified system of scientific knowledge. Remarkably, many systems of the classification of sciences reserve such a place for mathematics and philosophy.<sup>9</sup>

## 7. Typical views on the subject-matter of philosophy

In light of the above, mathematics can be considered a science that is the most similar to philosophy in several important respects. This observation might be helpful for resolving the main aim of this paper — to identify the nature of philosophy as a distinct science. Before exploring this issue, some typical approaches to defining philosophy are briefly considered.

Leaving aside the views of those who reject a scientific nature for philosophy, there are two major approaches to philosophy as a theoretical discipline. According to the first general approach, which can be called a “subject-matter approach”, philosophy has its own specific subject-matter that separates it from other disciplines. The countervailing view is that there is no such thing as the subject-matter of philosophy, and thus its scientific role is a purely methodological one, which determines its place in the system of scientific knowledge.<sup>10</sup>

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<sup>9</sup> Cf. the well-known classification of the sciences elaborated by Charles Peirce [19].

<sup>10</sup> Recently, Graham Priest has proposed a “third way”, by proposing an account of philosophy that “attempts to define it neither by its subject-matter, nor by its method, but by its spirit — unbridled criticism” [21, p. 206–207]. Taken broadly,

The famous Aristotelian definition of “first philosophy” as “a science which investigates being as being and the attributes which belong to this in virtue of its own nature”<sup>11</sup> presents a classic example of the subject-matter approach to philosophy. Aristotle emphasizes that this science, inasmuch as “its objects are immovable and separable from matter” (1026–7), is “not the same as any of the so-called special sciences; for none of these others treats universally of being as being” (1003–23).

This definition combines universality in a general treatment of the subject-matter of philosophy with a quest for a high degree of precision in describing its content. Indeed, the subject-matter of philosophy is clearly identified here as a certain object, albeit abstract — *being as such*. At the same time, according to Aristotle, philosophy should deal not with selected parts or particular implementations of this object, but with its general nature. Such a combination of definiteness in describing the subject-matter of philosophical investigation with a recognition of the universality of its tasks is a clear advantage of Aristotle’s definition and a move in the right direction.

Nevertheless, this definition raises questions that require further clarification and specification. First, it is not entirely clear what is meant by “being as being”. Is this category used here in a purely ontological sense? If so, we obtain a definition of metaphysics as ontology at the very most, leaving such branches of philosophy as epistemology and ethics beyond its scope. Thus interpreted, the definition under consideration unjustifiably narrows the subject-matter of philosophy. To avoid such a restriction, it has to be assumed that any branch of philosophy should deal with “being” conceived very broadly. It would then be challenging to specify any further attribute of being so conceived, except for merely stating that it exists. The universality of the Aristotelian definition would thus have been trivialized.

Turning to other definitions of philosophy in the literature, it can be observed that they typically lack the advantages of Aristotle’s definition while sharing its weaknesses. For example, by considering philosophy as a kind of “general science” [see, e.g., 30, p. 19], there is a risk of overem-

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however, this account can be united with a methodological approach in the “no-subject-matter” stance.

<sup>11</sup> See Book IV, Part 1 of *Metaphysics* (1003a 20-32), and also the similar statement about first philosophy at the end of Part 1 of Book VI: “And it will belong to this to consider being *qua* being — both what it is and the attributes which belong to it *qua* being” (1026–32).

phasizing the universality of its possible subject-matter, thus turning philosophy into a shallow, yet pretentious, “teaching” of everything and nothing. Such a view gives us what can be dubbed a “dictionary definition of philosophy”, different variations of which are widely represented in a range of popular encyclopedias and dictionaries. Thus, the Encyclopaedia Britannica defines philosophy as “the rational, abstract, and methodical consideration of reality as a whole or of fundamental dimensions of human existence and experience”.<sup>12</sup> According to the Penguin English Dictionary, philosophy is “the study of the ultimate nature of existence, reality, knowledge and goodness, as discoverable by human reasoning” [20]. The Oxford Dictionary of Philosophy considers philosophy to be “the study of the most general and abstract features of the world and categories with which we think: mind, matter, reason, proof, truth, etc.” [2]. Formulations of this kind, usually aimed at the general public, are also found in some specialized publications, even though they are expressed in passing. The problem with such definitions is that they usually appear to be declarations devoid of substance. It is not possible to specify the supposed “universal laws of everything”, and we therefore obtain something very similar to mere rhetorical exercises.

Contrary to the above, other definitions of philosophy are often too detailed and too narrow. As a result, they exclude an entire range of traditional philosophical disciplines. Narrowly interpreted, philosophy turns into a “special science”, dealing with selected aspects of some particular domain. Reference can be made in this context to Husserlian phenomenology with its understanding of philosophy as a science of the phenomena of pure consciousness, i.e., of the pure “acts of intuition and thinking” in “their immanent meaning-content” [see 10, p. 170]. Alternatively, the neo-Kantian view of philosophy is that of a “critical science about universal values”, which becomes a “scientific investigation of normative consciousness” [see 28, pp. 51–52, 67–69]. Paul Natorp describes the main task of such an investigation as a “philosophical justification of what can generally be called human culture” [18, p. 11].

The limitations of these approaches consist not simply in a virtual identification of philosophy with its particular branches (be it epistemology, philosophy of mind, philosophy of culture, or some other), but primarily in what might be termed “anthropologization”, whereby the subject-matter of philosophy completely depends on the existence of hu-

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<sup>12</sup> See: <https://www.britannica.com/topic/philosophy>

man beings.<sup>13</sup> The “anthropological approach” marginalizes the role of philosophy as a universal science, by placing it on a par with such particular sciences as history, literary studies, and anatomy, which deal with specific aspects of human beings as a unique natural and social phenomenon. However, given the uniqueness and the contingency of the creation and existence of humankind, such an interpretation of the subject-matter of philosophy appears incompatible with the a priori (and thus, necessary and universal) character of philosophical knowledge.

The “purely methodological” approach to the foundations of philosophy can be perfectly illustrated by a conception elaborated by the Vienna Circle, where philosophy was considered to be a certain kind of activity “through which the meaning of statements is revealed or determined” [24, p. 56].<sup>14</sup> In this case philosophy is meant to play a merely instrumental role, and turns out to be no more than a facilitative mechanism for other sciences to achieve their goals. As Victor Kraft correctly observes, this approach produces a paradoxical outcome: when aiming at the scientific status of philosophy, one, in fact, prevents it from being a true science [see 16, pp. 171–173]. Every science should have its own specific “field of inquiry”, where the presence of such a field determines key features of the science. This is no less true for philosophy: If we wish to establish philosophy as a real science, we have to clearly identify its subject-matter.

## **8. The subject-matter of philosophy and the spectrum of scientific knowledge**

It is instructive to reflect on a famous statement by Hegel in which he characterizes philosophy as “the thoughtful examination of things [denkende Betrachtung der Gegenstände]” [8, p. 28]. This definition records “thoughtfulness” and “thingness” as the fundamental features of philosophical knowledge. Philosophy deals with “things in general”, i.e., with pure being and those of its properties (qualities) that can be established purely through an a priori (thoughtful) justification.

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<sup>13</sup> On anthropologization and its shortcomings with respect to logic see [25].

<sup>14</sup> This understanding of philosophy is rooted in some key ideas of Ludwig Wittgenstein, e.g., in proposition 4.112 of the *Tractatus*: “Philosophy aims at the logical clarification of thoughts. Philosophy is not a body of doctrine but an activity. A philosophical work consists essentially of elucidations. Philosophy does not result in ‘philosophical propositions’, but rather in the clarification of propositions”.

When properly interpreted, Hegel's statement can provide a clue to a useful explication of the subject-matter of philosophy, especially by appealing to its significant resemblance with mathematics as explained above. The latter, in accordance with the classical definition descending from Aristotle, is considered the "science of quantity" [see, e.g., 5, p. 104]. Specifically, mathematics studies the pure *quantitative* properties and relations (aspects, characteristics, dimensions — in short, attributes) of any possible being. Given that being of any kind necessarily enjoys *both quantitative and qualitative* determinacy, one can *dualize* the above definition of mathematics and arrive at the idea of a science, the subject-matter of which should be the pure *qualitative* properties and relations of any possible being, i.e., the "science of quality" *per se*.

As shown above, it is philosophy that, together with mathematics, *exhaustively* covers the area of pure a priori investigations and, in this respect, philosophical knowledge is *complementary* to mathematical knowledge. Hence, it is philosophy that can be considered to be the required "science of quality". In this way we can obtain the definition of philosophy as the *a priori science of the pure qualitative attributes of being*.

The above definition concretizes the Aristotelian definition of philosophy by extracting for philosophical inquiry the pure *qualitative* aspects of being (as being). Importantly, "being" is taken here in the broadest possible sense, comprising not only, and not even primarily, the actual (real) world and existing things, but any arbitrary possible world and all things whatsoever, the existence of which is logically possible.<sup>15</sup> Furthermore, according to this definition, philosophy deals with the *pure* qualitative determinacy of being. This, first, is totally devoid of quantitative characteristics and, second, can be known only by a priori (speculative) "thoughtful examination". For example, physical and chemical attributes are in this sense not "pure" and thus do not fall within the scope of the given definition. This is in contrast to justice, good, truth and similar pure qualitative attributes, which, by a "second-order abstraction", turn into specific *philosophical entities* [cf. 17] constituting the field of philosophical inquiry.

Thus, mathematics and philosophy are *dual sciences* in some precise sense of the term because their subject-matters are mutually complementary in the domain of the pure abstract attributes of being, and therefore

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<sup>15</sup> Cf. the conception of Christian Wolff, who defined philosophy as the "science about possible, inasmuch as it is possible" [29, p. 19].

their definitions can be obtained from each other by interchanging between qualitative and quantitative attributes.

By employing the principle of duality, one can also take a different route toward essentially the same definition of philosophy, building on an alternative understanding of mathematics as the science of (mathematical) structures [see, e.g., 3, pp. 221–232]. Mathematical structures are neutral with respect to the specific nature of the constituent elements, maintaining only the pure *organizational form* of entities or collections of entities. This *pure form* is the subject-matter of mathematics under a structuralist understanding. Then, by taking into account the fundamental duality between form and matter, philosophy is left with the *purely material* dimension of being — namely, the totality of its pure (abstract) qualitative attributes.

In this way, the roles and places of both philosophy and mathematics in a general system of scientific knowledge become more transparent. Somewhat conventionally, such a system can be presented as a kind of a linear spectrum. In the middle of it, complementing each other, are located two absolutely a priori and abstract sciences — mathematics and philosophy. Other sciences are posed on both sides along the spectrum line. The further a particular science is from the center of the spectrum, the less “theoretical” it is, i.e., the more empirical and domain-specific content it has. The natural sciences are oriented more toward mathematics because their empirical content is more measurable. The humanities, by contrast, primarily make use of informal arguments and qualitative methodology, whereby they are more philosophically regarded.

## 9. Concluding remarks

This paper the outlined and briefly justified the view of philosophy as an abstract a priori science of the pure qualitative attributes of being. A detailed exploration and critical examination of different branches of philosophy and various philosophical categories based on this standpoint should be the subject of a separate case study, and is left for future work in the area.

I conclude by drawing attention to a remarkable objection to the view developed here, found in Kant’s “Logic”:<sup>16</sup>

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<sup>16</sup> This is a manual for lectures that Gottlob Benjamin Jäsche published in 1800

It is customary to maintain that mathematics and philosophy are distinct from one another *as to their object*, in that the former deals with *quantity*, the latter with *quality*. But this is wrong. The distinction between these sciences cannot rest on the object, for philosophy deals with everything, hence also with *quanta*, and mathematics does so in part too, insofar as everything has a quantity. The specific difference between these two sciences is constituted only by the *different kind of cognition of reason, or of the use of reason*, in mathematics and philosophy. Philosophy is, namely, *cognition of reason from mere concepts*, while mathematics is *cognition of reason from the construction of concepts*. [13, p. 536]

This is an interesting claim that deserves separate consideration. In particular, it might be instructive to review the writings of German philosophers of the 18th century to find precise formulations of the “customary” view mentioned at the beginning of the statement. In any case, the author of this statement (whether Kant or Jäsche) appears to reject for philosophy (as well as for mathematics) the possibility of having a specific object of study because “philosophy deals with everything”. The claim that philosophy is to be distinguished only by a “different kind of cognition” is characteristic of the “no-subject-matter” approach mentioned in Section 7 above. As observed there, it is doubtful that a scientific nature for philosophy can be secured in this way.

## References

- [1] Bailey, D. H., J. M. Borwein, N. J. Calkin, R. Girgensohn, D. R. Luke and V. H. Moll, *Experimental Mathematics in Action*, Wellesley, MA: A K Peters, 2007. DOI: [10.1201/9781439864333](https://doi.org/10.1201/9781439864333)
- [2] Blackburn, S., *The Oxford Dictionary of Philosophy*, 3rd edition, Oxford University Press, 2016. DOI: [9780198735304.001.0001](https://doi.org/9780198735304.001.0001)
- [3] Bourbaki, N. *L’Architecture des mathématiques. Les grands courants de la pensée mathématique*, Marseille: Cahiers du Sud, 1948.
- [4] Elliott-Graves, A., and M. Weisberg, “Idealization”, *Philosophy Compass* 9, 3 (2014): 176–185. DOI: [10.1111/phc3.12109](https://doi.org/10.1111/phc3.12109)

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at Kant’s request, “as he expounded it to his listeners in public lectures”, based on “his own manuscript” [see 13, p. 521]. However, to what extent this publication is “a reliable statement of Kant’s views”, and which parts of the text are “attributable to Jäsche” himself, is a matter of dispute, see the “Translator’s introduction” in [13, pp. xvii–xviii].

- [5] Franklin, J., “Aristotelian realism”, pages 103–155 in A. Irvine (ed.), *The Philosophy of Mathematics*, Handbook of the Philosophy of Science series, North-Holland Elsevier, 2009. DOI: [10.1016/B978-0-444-51555-1.50007-9](https://doi.org/10.1016/B978-0-444-51555-1.50007-9)
- [6] Friedland, J., “Philosophy is not a science”, *The New York Times*, April 5, 2012: <https://opinionator.blogs.nytimes.com/2012/04/05/philosophy-is-not-a-science>
- [7] Frege, G. *The Foundations of Arithmetic: A Logico-Mathematical Enquiry into the Concept of Number*, New York: Harper and Brothers, 1960.
- [8] Hegel, G. W. F., *Encyclopedia of the Philosophical Sciences in Basic Outline*, Part I: Science of Logic, edited and translated by K. Brinkmann and D. O. Dahlstrom, Cambridge University Press, 2015.
- [9] Hempel, C., “On the nature of mathematical truth”, pages 378–393 in P. Benacerraf and H. Putnam (eds.), *Philosophy of Mathematics. Selected Readings*, 2nd edition, Cambridge: Cambridge University Press, 1984. DOI: [10.1017/CB09781139171519.020](https://doi.org/10.1017/CB09781139171519.020)
- [10] Husserl, E., *Logical Investigations*, vol. I, London and New York: Routledge, 2001.
- [11] Jenkins, C., “A priori knowledge: debates and developments”, *Philosophy Compass* 3, 3 (2008): 436–450. DOI: [10.1111/j.1747-9991.2008.00136.x](https://doi.org/10.1111/j.1747-9991.2008.00136.x)
- [12] Johnson, R., *Manifest Rationality: A Pragmatic Theory of Argument*, Mahwah, NJ: Lawrence Erlbaum Associates, 2000. DOI: [10.4324/9781410606174](https://doi.org/10.4324/9781410606174)
- [13] Kant, I. *Lectures on Logic*, translated and edited by J. Michael Young, Cambridge: Cambridge University Press, 1992.
- [14] Kant, I., *Critique of Pure Reason*, translated and edited by P. Guyer and A. W. Wood, Cambridge: Cambridge University Press, 1998.
- [15] Knobe, J., and S. Nichols, “Experimental philosophy”, *The Stanford Encyclopedia of Philosophy*, Winter 2017 Edition, E. N. Zalta (ed.). <https://plato.stanford.edu/archives/win2017/entries/experimental-philosophy/>
- [16] Kraft, V., *Der Wiener Kreis: Der Ursprung des Neopositivismus. Ein Kapitel der jüngsten Philosophiegeschichte*, Wien–New York: Springer-Verlag, 1968.
- [17] Montague, R., “On the nature of certain philosophical entities”, *Monist* 53, 2 (1969): 159–194. DOI: [10.5840/monist19695327](https://doi.org/10.5840/monist19695327)

- [18] Natorp, P., *Philosophische Propädeutik: Allgemeine Einleitung in die Philosophie und Anfangsgründe der Logik, Ethik und Psychologie*, Marburg: N. G. Elwert, 1905.
- [19] Peirce, C. S., “An outline classification of the sciences”, pages 203–283 in *The Collected Papers*, vol. 1, 1902.
- [20] *Penguin English Dictionary*, 3rd edition, Penguin, 2007.
- [21] Priest, G., “What is philosophy?”, *Philosophy* 81 (2006): 189–207. DOI: [10.1017/S0031819106316026](https://doi.org/10.1017/S0031819106316026)
- [22] Restall, G., “A priori truths”, pages 37–50 in J. Shand (ed.), *Central Issues of Philosophy*, Malden, Mass.: Wiley-Blackwell, 2009. DOI: [10.1002/9781444315837.ch3](https://doi.org/10.1002/9781444315837.ch3)
- [23] Schopenhauer, A., *On the Fourfold Root of the Principle of Sufficient Reason and On the Will in Nature: Two Essays*, revised edition, London: George Bell and Sons, 1907.
- [24] Schlick, M., “The turning point in philosophy”, pages 53–59 in A. J. Ayer, *Logical Positivism*, Glencoe, IL: Free Press, 1959.
- [25] Shramko, Y., “The logical way of being true: truth values and the ontological foundation of logic”, *Logic and Logical Philosophy* 23, 2 (2014): 119–131. DOI: [10.12775/LLP.2013.031](https://doi.org/10.12775/LLP.2013.031)
- [26] Spinoza, B., *The Complete Works*, edited, with introductions, by M. L. Morgan, translated by S. Shirley, Indianapolis/Cambridge: Hackett Publishing Company, 2002.
- [27] Williamson, T., *The Philosophy of Philosophy*, Malden, Mass.: Blackwell, 2007. DOI: [10.1002/9780470696675](https://doi.org/10.1002/9780470696675)
- [28] Windelband, W., “Was ist Philosophie?”, in *Präludien*, Tübingen: Verlag von J. C. B. Mohr (Paul Siebeck), 1907.
- [29] Wolff, Ch., *Einleitende Abhandlung über Philosophie im allgemeinen*, Stuttgart: Frommann-Holzboog, 2006.
- [30] Wundt, W., *Einleitung in die Philosophie*, Leipzig: Verlag von Wilhelm Engelmann, 1904.

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