Kantian Review, 20, 3, 467–478 © Kantian Review, 2015

Review Essay: Paolo Parrini's *Il Valore della Verità*

Paolo Parrini, *Il valore della verità*
Milan: Guerini e Associati, 2011
Pp. 254, €20.00, pbk
doi: 10.1017/S1369415415000187

The nature of truth is an enduring philosophical question, the significance of which has increased over the centuries. Metaphysical theories of truth have largely dominated the debate, offering results logically relevant but epistemologically weak. Among them is deflationism, which reduces truth to a void linguistic predicate. Parrini thinks differently. Moving from epistemic rather than semantic premises, he believes that a cognitive idea of truth guides our scientific research as a leading principle.

The volume collects Parrini's papers published during the last fifteen years in North America and Europe, most of them updated by the author. The subjects range from epistemology and philosophy of science (Kant, Poincaré, Popper, Duhem, Grünbaum, Reichenbach, Quine, Putnam, Friedman) to theories of truth (Horwich), including some of their hermeneutic accounts (Heidegger, Rorty). The ideal audiences for these essays are philosophers interested in science and its history, and those who deal with the meaning of truth. Parrini offers a contribution to the understanding of truth, the scope of which goes beyond academic borders to include every scientific inquiry.

1. Truth

Parrini's notion of truth initially appeals to moral philosophy (Introduction, chapter 6). He recalls the distinction between *true* and *agreed*, and consistently distinguishes *goodness* from *approval*, arguing that *'I approve x'* differs from *'x is good'* because the first statement merely means *'I agree with x'*. My objection to this standpoint is that the former will always entail the latter; especially from a Kantian point of view, to agree with something that cannot be universalized would simply be a mistake of reasoning (I rely on Burgess and Burgess 2011). However, Parrini makes his case by arguing that the statement *'x is morally true'* does not simply describe '*x*' but also evaluates it. It means that *x* satisfies certain criteria. In this sense, the notion of truth always comes with a normative connotation that implies some sort of justification. Only a state of affairs that has been previously evaluated can be said to be true (or false). It follows that *being true* designates something that is

objectively rather than subjectively valid, something that is recognized as real. It is this recognition that has been overlooked in the deflationist theories.

According to Parrini, truth results in a universal, valid connection that is always formal and never material. Rather than representing a semantic (or linguistic) connotation, truth possesses a normative character, as Kant and the neo-Kantians have held. Kant is certainly right that '*being* is obviously not a real predicate', 'it is not a concept of something which could be added to the concept of a thing' (2003: A598/B626);[1] so is Sellars (1968) in binding together justification and truth, since *true* actually means *justified belief*. For Parrini, *being true* and *being justified* are properly intertwined, but this does not mean that *truth* and *justification* are one and the same. Our standard theories are simply our best theories, which we hold to be true; however, as we improve our justifications we move our theories closer to the truth, which remains something largely ideal. In short, we keep an open relation with the truth. Mistakes and fallibility are an essential part of the normative character of truth, whose primary function is regulative.

Parrini moves from a criticism of *performativism* (Austin, Strawson) and *deflationism* (Ramsey, Quine, Horwich). He rejects the first assumption of performative truth, namely that words like 'true' or 'real' have neither predicative nor descriptive value. But he accepts the second assumption, which amounts to the basic idea of deflationist truth according to which each proposition is equivalent to the affirmation of its truth – e.g. like any other affirmation, saying that 'snow is white' is equivalent to saying that 'snow is white is true'. The meaning of the first claim is not altered in the second. However, Parrini's affinity for deflationism ends here. In fact, he does not follow the radical consequences of Horwich (2005: 2), nor does he agree that the nature of truth is simply a 'linguistic illusion'. On the contrary, to affirm the truth of any claim is to attribute to that claim the property of conforming to certain standards or, at the very least, satisfying some conditions (of truth).

Consistently, truth represents a primitive, undefinable notion that is prior to any knowing activity; it is impossible to assess our experience without employing cognitive value, a value that is ultimately provided by the notion of truth. In this sense, *true* does not entirely overlap with *justified*, the latter being a necessary but not sufficient connotation of the former. In Parrini's eyes, truth still comes from our empirical intuition of the world, an intuition that maintains the possibility that our standard theories may be falsified by new data; an unlimited and inexhaustible experience requires renewable and modifiable rational theories. Therefore, the meaning of truth has a larger scope than the theories of truth used to recognize. It rather calls for a commitment to improve our understanding of reality; it is a ruling ideal that must remain as close as possible to experience and as open as possible to critical-rational discussion.

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2. Kant

Parrini's endorsement of logical positivism is well known, and so are the differences with the Kantian philosophy that have largely characterized that movement. However, Parrini warns us that assuming a simple rejection of Kant represents a trivial misunderstanding of logical positivism. The Kantian roots of the latter are undeniably evident in the idea of epistemic *a priori*, which underpins any cognitive-scientific process (chapter 1): any knowledge is developed within a certain framework of linguistic, theoretical-methodological assumptions by means of which we justify our beliefs.

Such a development is not simple, though. Two characteristics pertain to the Kantian notion of truth, namely a nominal definition and a general criterion. The former lies in the classic correspondence theory (*adaequatio*), the latter relies on coherentism. Because pertaining to all content of knowledge is impossible, the general criterion of truth is solely formal in two ways. First, the object of knowledge must be consistent with the *logical criterion* of truth, namely with the principle of non-contradiction governing all analytic judgements (A150/B189). Second, such an object must also be consistent with the *transcendental criterion* of truth, i.e. with the synthetic rules of our pure understanding, which represent the structural components of our knowledge.

Parrini (1994) discussed the difference between *analytic* and *synthetic a priori* rules: the proposition, 'there are rectilinear triangles the sum of whose internal angles differs from two right angles' (219) is, for example, not contradictory but, nevertheless, *a priori* false because it contrasts with our possible experience. In Kantian terms, it has logical but not objective validity. Hence, 'every object stands under the necessary conditions of synthetic unity of the manifold of intuition in a possible experience' (A158/B197).

For Kant, the *synthetic a priori* rules represent 'the source of all truth (that is, of the agreement of our knowledge with its object), insomuch as they contain in themselves the ground of the possibility of experience' (A237/B296) – especially those rules pertaining to *the analogies of experience* and *the postulates of empirical thought in general*, properly called 'epistemic' by Allison because they fulfil the 'objectivating function' (2004: 11). The analogies satisfy the basic cognitive condition that 'experience is possible only through the representation of a necessary connection of perceptions' (B218). The postulates state that '1. That which agrees, in intuition and in concepts, with the formal conditions of experience, is *possible*. 2. That which is bound up with the material conditions of experience, that is, with sensation, is *actual*. 3. That which in its connection with the actual is determined in accordance with universal conditions of experience, is (that is, exists as) *necessary*' (A218/B265–6).

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3. Objections to Kant

Kant's account of truth has been the subject of many critiques (chapters 1, 4). To some (like Brittan), Kant's mistake was to restrict his cognitive framework, thus overlooking historical and biological factors essential to the developments of the sciences. However, to many others (Strawson, Hintikka), Kant can be fixed. A decreased and relativized *a priori*, for instance, suits well the current scientific picture (Sellars, Körner, Rosenberg).

Parrini's main concern is empirical knowledge. On the one hand, he accepts the *epistemic dependence* of the object of knowledge; without any theoretical-methodological assumptions there would be no knowledge at all. On the other hand, he rejects the *ontological dependence* of this object; our *a priori* conditions of knowledge do not determine the existence of the object, nor do they produce it in any way. Therefore, he distinguishes between (a) something existing independently of us and (b) the modalities (being) of such existence, the latter being largely logical-theoretical and, therefore, ultimately dependent on our cognitive assumptions.

This explains the distinction between things in themselves (noumena) and things as appearances (phenomena), a building-block of Kant's epistemology. By default, some of the objective properties derive from the epistemic subject; but these are just epistemic properties that characterize our knowledge of substances within a spatial-temporal-causal framework (see Bird 2006: 292, 353; Watkins 2007: 115). Parrini relies on Kant (Kant 2003: A92/B125): 'representation in itself does not produce its object in so far as *existence* is concerned … Nonetheless, the representation is *a priori* determinant of the object, … only through the representation is it possible to know anything as an object'.

Difficulties concerning empirical knowledge remain. Roughly put, Kant's epistemology falls under the classic relation of *form* and *matter*. The latter is 'that in appearance which corresponds to sensation', the former 'that which so determines the manifold of appearance that it allows of being ordered in certain relations' (A20/B34). Kant seems to struggle to find a balance between the two. Herbart (1813) objects that as long as *matter* remains void of any determination, our knowledge is totally based upon the *form*, but that would make it impossible to know anything from experience. This is why, for instance, Schlick holds that knowledge solely concerns the structural relations of empirical contents and not the contents themselves. The same difficulty pertains to all natural sciences; in each of them there are two parts, namely the *a priori* part (the metaphysics) that coordinates with the *a posteriori* part (the physics). In Kantian terms, 'Special laws, as concerning those appearances which are empirically determined, cannot in their specific character be derived from the categories, although they are one and all subject to them. To obtain any knowledge whatsoever of these special

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laws, we must resort to experience' (B165). In his *Opus Postumum*, Kant strives to connect critical metaphysics with physics; here he argues for free constructions of our mind, which mediate the two – something like waves or corpuscles in physics today (i.e. abstract, imperceptible entities introduced to link perceptible, direct experiences together).

Parrini remains unsatisfied, though. He notices that 'There is an irresolvable tension between the clear, anti-empiricist attempt to absolutely ground a few *a priori* norms of judgment and truth – sheltering them from the attacks of experience – and the necessity to recognize the role played by experience (sensible manifold or matter of knowledge) in making sense of our a posteriori knowledge' (71). He traces the struggle back to the dependence on Newton's physics. The principle of causality and Euclidean geometry constitute at the same time building-blocks of Newtonian physics and its critical metaphysics, as conceived by Kant. And such metaphysical *a priori* components are so closely tied to the physical *a posteriori* ones that they proved themselves to be no less vulnerable to empirical contents than the physical components.

In this sense, Parrini points to Reichenbach's developments of Cassirer's and Schlick's idea of knowledge as *coordination*. In his *Relativitätstheorie und Erkenntnis a priori* (1920) Reichenbach showed that (a) in accord with the Kantian notion of *a priori* framework, for any field of experience there is a proper system of theoretical assumptions; (b) however, for any system of *a priori* assumptions, there is at least one inconsistent field of experience, hence the latter determines the former but not vice versa, and the ultimate evidence for all empirical truths is *perception* that resists any rationalization; (c) hence, experience possesses certain properties by itself (as confirmed by Einstein's analysis of matter), and from such properties alone can a coordinated *a priori* framework be derived. This framework cannot be independent of experience (as Kant mistakenly thought).

4. Poincaré, Duhem, Popper

Poincaré offers a different solution to *the Herbart objection* (chapter 2). Presented with the alternatives of empiricism and apriorism he decides in favour of conventionalism. His main claims are that mathematics is an induction-based construction, and that much of science is a matter of convention since its definitions can be reduced to *conventions in disguise*. Given that non-Euclidean geometries are inconsistent with axiomatic principles of geometry as far as they rely on the Kantian notion of synthetic *a priori*, and given that experience does not teach us *a posteriori* which geometry among many kinds actually describes physical space, Poincaré concludes that 'the principles of geometry are only conventions' (1905: p. XX). He relies on Lobatschewsky, who showed that the space revealed to us by our senses is

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absolutely different from the space of geometry, hence geometrical space can hardly be derived from experience. Furthermore, there is a sort of circularity between measuring tools and measured things that cannot be broken unless conventionally – see, for instance, Kripke's discussion about the standard metre in Paris, where the rigid designator 'one meter long' coincides with 'the length of the stick S at a fixed time t_o', namely a non-rigid designator (1980: 54–7). Thinking about the nature of space, Poincaré argues that one can never tell whether it is Euclidean or non-Euclidean because one cannot logically separate the physics involved from the mathematics, so any choice would be a matter of convention. 'But these conventions are not arbitrary' for two reasons at least. First, 'experience leaves us our freedom of choice, but it guides us by helping us to discern the most convenient path to follow'. Second, 'the framework into which we wish to make everything fit is one of our own construction; but we did not construct it at random, we constructed it by measurement so to speak; and that is why we can fit the facts into it without altering their essential qualities' (1905: pp. xix–xx). Le Roy's nominalism is rejected in both cases.

Parrini prefers Duhem's holism over Poincaré's conventionalism. He agrees with the former that the latter remains naively detached from scientific practice. Poincaré's isolated hypotheses look like Quine's empirical sentences, which aren't observational. Openly referring to Duhem, Quine (1951) rejects the idea that individual sentences can be confirmed or disconfirmed by experience, unless they are based upon stimulations of our sensory nerves. Most of our supposedly empirical sentences have implications for experience when they are taken together with a larger body of other sentences, and not when they are taken one-by-one. Before Quine, Duhem argued that empirical statements are interconnected, and therefore cannot be singly disconfirmed: 'an experiment in physics can never condemn an isolated hypothesis but only a whole theoretical group', i.e. 'a crucial experiment is impossible in physics' (1906/1954: 183–7).

This legacy fed Popper's epistemology. This latter is centred on the well-known notion of falsifiability, which clearly supports Parrini's idea of truth. In addressing the problem of understanding how observations can confirm a scientific theory, Popper appeals to a deductive, anti-verifiable method. In his *The Logic of Scientific Discovery* (1959), inductive methods are rejected. Passing from singular statements (such as accounts of the results of observations or experiments) to universal statements (such as hypotheses or theories) amounts to a logical fallacy; we are not justified in inferring universal statements from singular ones, no matter how numerous.

In short, assuming that a scientific theory is *true* because it has been *proven* through experiment entails the fallacy of affirming the consequent: let p be a conclusion of a system t of statements (theories and initial conditions), if p is true then t is true or proven ($t \supset \Box p / p \,//\, t$). A scientific theory can only be

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corroborated at best; in other words, there is no knowledge of empirical sciences but only conjectures. Popper's proposal is 'based upon an asymmetry between verifiability and falsifiability' resulting from the logical nature of universal statements, which *can never derive from* but that *can always be contradicted by* singular statements. By means of purely deductive inferences, Popper argues 'from the truth of singular statements to the falsity of universal statements' (1959: 19). The falsifying mode of inference here referred to is the *modus tollens*: let p be a conclusion of a system t of statements (theories and initial conditions), if p is false then t is false or falsified ($t \supset \Box p / \sim p \,//\, \sim t$). Hence, a theory can always be refuted and, at most, confirmed, but never proved.

Parrini criticizes the idea that falsifying *a single conclusion* entails the falsification of *the whole system* from which it is derived but he nevertheless likes the consequences of Popper's method. As soon as a well-corroborated theory ceases to be further corroborated, a new hypothesis of a higher level is deductively introduced to replace it; any eventual refutation makes room for the progress of theory. In this case, far from being an empty predicate, truth is a leading norm of scientific activity.

5. Conventionalism

Conventionalism and truth are main subjects of the logical-empiricist debate over Einstein's physics (chapter 3). Defending a non-linguistic version of empiricism, Parrini (2003) relies on a variation of the Kantian *a priori* that is theoretic-synthetic rather than linguistic-semantic. Given that logical empiricism largely adopts some sort of conventionalism, he consistently confronts the semantics-based models of conventionalism, especially the *geo-chronometric conventionalism* (GC) supported after Poincaré by Reichenbach and Grünbaum. Parrini's goal is to differentiate *epistemic conventionalism* (EC, centred on Duhemian holism) from GC, and thus to show that the critiques of GC do not apply to EC (see Parrini 2011).

Examining Grünbaum's *Philosophical Problems of Space and Time* (1963/1973), Parrini identifies GC with three main theses.

(a) *Epistemic justification thesis*, which holds that 'the ascription of a particular metric geometry to physical space and the chronometry ingredient in physical theory be held to have an empirical warrant' (Grünbaum 1968: 4).
(b) *Constrained conventionality thesis*, which limits the congruence of spatio-temporal intervals and the simultaneity of events to factual and logical-conventional ingredients.
(c) *Linguistic turn thesis*, which states that comparing two measurements of any physical quantity at different space-time points requires coordinative definitions.

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While (a) and (b) are shared by both EC and GC, (c) exclusively characterizes GC, but the critiques of GC overlook this distinction.

What is at stake here is the notion of congruence, whose conventionality is differently interpreted. As Norton describes Einstein's argument for conventionality:

> a geometry G tells us nothing observable about space, but it tells us something about certain idealized structures such as rigid rods which do not actually exist. … Observational consequences [O] follow only from $G + P$, the conjunction of the geometry G with the physical theories P. (Norton 1999: 185)

We can conventionally modify G as long as we modify P accordingly so that O remains unchanged. In this sense, 'the one set of [O] can be accounted for equally by a large number of conventionally chosen geometries' (ibid.).

Roughly put, indispensable conceptual structures are needed to fill the gap between our beliefs and the data of experience. Reichenbach (1958, 1965) saw such structures first as *constitutive principles* (in the Kantian sense of synthetic *a priori*), then as *coordinative definitions*, conforming to Schlick's idea of hypothetical conventions (in Poincaré's sense). As Parrini puts it, a Reichenbachian coordinative definition (CD) is 'the assumption of congruence necessary to confer an empirical content on the hypothesis regarding the geometrical structure of physical space' (2003: 350). Parrini insists that such a coordination is hardly conceivable as merely semantic but rather relies on some *hypothetical-theoretical assumptions*. A closer glance at CD seems to confirm this position.

'Physical knowledge is characterized by the fact that concepts are not only defined by other concepts, but are also coordinated to real objects' (Reichenbach, 1958: 14). In this case, conceptual definitions that reduce one concept to another need to be implemented with 'certain preliminary coordinations', i.e. with *coordinative definitions* arbitrarily chosen (despite the non-arbitrary coordination of testable relations, which requires verifiable uniqueness). 'If a distance is to be measured, the unit of length has to be determined beforehand by definition'; the latter is coordinative since by means of conceptual defining nothing can be said about the size of the unit, which 'can only be established by reference to a physically given length such as the standard meter in Paris' (15). Einstein's term 'relativity' precisely intends such CD. Reichenbach consistently concludes that 'congruence is a matter of definition' (17), but in a coordinative sense (Parrini 2002: 67–71). Hence, a metric geometry (i.e. a chronometry) is empirically determined only after a physical stipulation of congruence. As Grünbaum clarifies, 'In the case of geometry, the specification of the intervals which are stipulated to be congruent is given by the distance function $ds = \sqrt{g_{ik}\, dx^i\, dx^k}$, congruent intervals being those which are assigned equal

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lengths *ds* by this function'. It leads to 'alternative metrizations of the same factual coincidence relations sustained by a transported rod', namely to 'alternative definitions of congruence [which] will give rise to different metric geometries than others' (1968: 15).

6. Holism

Parrini consistently invites us to consider all problems of empirical testing in terms of Duhem's problems (chapter 3). It does not matter if *very small vicious circles* (Norton 1999: 189) or *Reichenbach loops* (Carrier 1994: 146–51) point to components of Duhemian holism that could be independently verified and, therefore, be ultimately non-conventional. Parrini simply looks at them (and more in general at all problems of GC) as special cases of Duhemian holism. And this is by virtue of Parrini's main thesis: what is conventional does not depend on the existence of plausible alternatives (equally justified by our experience, as Friedman notices) but on the epistemic justification of the claims, which deeply incorporates conventional elements. By default, holism is a form of conventionalism that relies on the theory–experience relation as characterizing not only the whole of the theory but also any of its parts.

In this sense, Duhem's holism would not be affected even if Malament were correct (despite Sarkar-Stachel's criticism) that in the theory of special relativity there is room for only one notion of simultaneity – namely, the standard relation based on the assumption that from A to B and back from B to A, the speed of light does not change, i.e. $\varepsilon = 1/2$. Holism relies on the necessary stipulations upon which any theory is ultimately build. After all, experience does not select any absolute simultaneity, for instance, without introducing a few conventional ingredients into the physical picture – *minimal and innocuous constraints*, as Malament (1977: 297) also admits.

Parrini specifically appeals to Friedman's critiques of GC (*Foundations of Space-Time Theories*, 1983), and to the conclusions he draws in *Dynamics of Reason* (2001) about the Michelson-Morley experiment and the Lorentz-Fitzgerald theory, especially as Friedman refers to Pap's conception of functional *a priori*. 'Einstein has "elevated" an empirical law to the status of convention … to the status of coordinating or constitutive principle'; 'It is precisely here that an essentially non-empirical element of 'decision' must intervene … giving a radically new space-time structure a determinate *empirical meaning*' without which it would simply remain undefined (2001: 88). Parrini stresses that the conventional principle is actually *constitutive* and not merely semantic.

The same conclusion holds for alternative metrizability in physics. In this regard Grünbaum argues for the conventional status of geometry on the basis of the metrical amorphousness of space, which he draws mainly from

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Riemann's discussion of the continuum. As Norton noticed, 'He urges that space has no intrinsic metrical properties, the properties that determine the distances between points, so that these metrical properties must be provided conventionally by us as a definition of congruence' (1999: 189). If physical space represents a continuous manifold of point-like homogeneous elements, it intrinsically owns a topology but not a metric; therefore, 'the continuity we postulate for physical space and time furnishes a *sufficient* condition for their *intrinsic metrical amorphousness*'. Accordingly, 'any *particular* congruence class is a *class of classes* of congruent intervals whose lengths are specified by a *particular* distance function $ds^2 = g_{ik}\, dx^i\, dx^k$' (Grünbaum 1968: 13).

Parrini agrees with Grünbaum: 'the existence of congruence relations among disjoint intervals is a matter of convention … along with the self-congruence of any and all of them under transport' (1968: 218). However, remetricizing congruences does not look semantic to him. It rather realizes a synthetic operation in two steps, (a) affirming the existence of a rigid rod whose length does not change during the transport; and (b) coordinating such a rod to a physical object in order to obtain a measuring standard for congruence (Parrini 1976: 260). Hence GC is part of EC, and as such it has nothing to do with trivially semantic conventionalism, as Putnam (1963) mistakenly thought.

7. Hermeneutics

After rejecting nihilist interpretations (chapter 5), Parrini focuses on a few hermeneutic accounts of truth (chapters 7, 8). On the one hand, he criticizes the relativism of interpretations as naive but, on the other, he stresses some affinities between Rorty's approach to semantics and his own version of antirealism.

According to Rorty, 'whether a sentence had sense would depend … upon whether another sentence were true' (1991: 55–6); therefore, language is contingent in nature since sentences signify in relation to other sentences. However, there are certain pre-conditions of linguistic meanings that cannot be expressed in sentences; these pre-conditions ultimately emerge from social practice, from the 'exchange of marks and noises among human beings for particular purposes' (1991: 63). Hence, the sentence, 'the snow is white' is certainly true iff the snow is white ('p' is true iff p); however, the second sentence, symbolized by p, should be treated as equally formal, since it does not mean anything real but simply designates a further sentence.

Heidegger's notion of a *hermeneutic circle* is centred on the same idea. Any semantic meaning comes with an original pre-comprehension that is ultimately non-linguistic. Accordingly, our understanding requires non-linguistic components like feelings (such as angst towards death) and global perspectives on our personal life (such as the chain of purposive references). (See Brandom

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1983.) The contingency of language mirrors the contingency of the human condition, whose existence is rooted in the nothingness of our death.

In Parrini's eyes, hermeneutics represents an example of *empiric underdetermination of theories*, whose main flaw consists in transferring the relativity of our *descriptions* to the *facts* we describe. Parrini shares something with hermeneutics, namely the relativist approach to reality, but this latter must be properly developed in a cognitive-scientific fashion, which remains far from being solely linguistic-interpretive. Metaphysical realism is certainly legitimated in pretending to objectivity, since there would simply be no scientific knowledge without objective truth, but the epistemic relativism endorsed by Parrini (2010) carefully avoids any *theoretic overdetermination of experience* because only experience can teach us how to employ our cognitive assumptions. Any correspondence between mind and 'absolute' reality is dismissed, but there is still objective truth, which comes only in the form of regulative value that leads to the ongoing synthesis of theories and data.

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Note

1 Citations from the Critique of Pure Reason will be from Kant 2003, using standard A/B pagination.

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