TRANSFORMING NECESSITY
TRANSCENDENTAL LOGIC AFTER CAVAILLÈS
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We shall attempt to strike through the crust of the externalized ‘historical facts’ of philosophical history, interrogating, exhibiting, and testing their inner meaning and hidden teleology.

Edmund Husserl, 1936

Although Jean Cavaillès’s critique of transcendental logic, which is found in On Logic and the Theory of Science, influenced the development of philosophy in post-World War II France, it seems to have had little impact on one of its principal targets, namely Husserlian phenomenology. From the Husserlian perspective, one might surmise the reasons for the intransigence to Cavaillès’s criticisms. In the first place, Cavaillès’s writing is dense even when compared to the bar set by the Husserliana, and the limited number of works comprising his corpus makes it difficult to discern what a Cavillès-inspired alternative would look like. In the second place, two of his main criticisms, namely, that Husserl’s reliance upon a notion of mathematical completeness is invalidated by Gödel and that one must choose between a transcendental logic and an absolute transcendental subjectivity, have been addressed at some length by Suzanne Bachelard and Jacques Derrida. Finally, with the ongoing release of Husserl’s manuscripts, the ways in which contemporary phenomenologists understand their craft, with its emphasis on genetic and, even, generative analyses, differ sufficiently from the portrait presented by Cavaillès as to render his critique otiose.

In any case, the intransigence is unfortunate because Cavaillès’s provocation provides an opportunity to reconsider transcendental logic and to ask whether it satisfies the requirements for a science, either in Cavaillès or Husserl’s sense. Pursuing that question is necessary, not only for exegetical purposes, but also to determine the possible impact of a phenomenological self-criticism within transcendental logic. In short, the question posed by Cavaillès allows us to determine whether phenomenology today has a future as a living philosophy, or whether it represents yet another naïvely accepted historical fact.

To consider whether transcendental logic can be conceived as a science in the wake of Cavaillès’s critique, two main tasks must be pursued. First, it is necessary to demonstrate that Bachelard and Derrida’s responses (or any that would fit within their general, shared approach) are not sufficient to forestall the possibility that transcendental logic may fail as a science. Second, once we have established that Cavaillès’s criticism still bears upon transcendental logic, the path is opened to considering what it would mean for any transcendental discipline to be scientific. Because the first task is substantially more difficult given the present state of scholarship, section one, “Cavaillès’s Critique of Transcendental Logic,” is necessarily longer than the second section, “Transcendental Logic as Phenomenological Science,” which remains largely suggestive in content.

Cavaillès’s Critique of Transcendental Logic

Cavaillès’s discussion of Husserl’s work focuses almost exclusively on Formal and Transcendental Logic and investigates how successful the proposed transcendental logic could be at explaining the development of scientific (or mathematical) knowledge. Although Cavaillès’s work ends abruptly, without presenting a fully expounded theory of science, it is clear that he believes that any such philosophical enterprise must satisfy three requirements. It must explain science’s necessity by maintaining the difference between sensuous reality and mathematical reality; it must ground science by accounting for its genesis; and it must explain science’s progress. Academic and institutional transformations, he believes, are not enough to explain the necessity of science. He is concerned with the development of knowledge, not merely its existence. This is the primary motivation for his critique of transcendental logic.
cording to Cavaillès, Husserl’s transcendental logic fails to satisfy these criteria on two levels, firstly in its insistence on an outmoded conception of mathematics, whereby novelty in science is precluded, and secondly, through its adherence to what Cavaillès calls the “principle of reducibility,” which assures that the distinction between sensuous and intelligible reality cannot be maintained.

At the first level, Husserl’s conception of mathematics is shaped by a notion of finite axiomatics defined in terms of what he calls “definiteness,” by which he means something akin to David Hilbert’s requirement of completeness. Hilbert’s notion of completeness was developed during the late nineteenth century when he provided an axiomatic conception of geometry, and ultimately formed a central element for what became known as Hilbert’s Program. A main task of Hilbert’s Program was to construct what is called a “finitist” proof for axiomatic systems. The central requirement for a finitist proof of an axiomatic system is that it can (in principle) explain all possible propositions as derivable from a finite set of axioms. On the face of it, Husserl’s adherence to such a notion would indicate his willingness to maintain the heterogeneity between sensuous and intelligible experience. However, by most accounts, Hilbert’s Program and its associated principles were dismantled by Gödel’s incompleteness proof. The incompleteness proof demonstrates that for any mathematical system of greater complexity than the system of integers, it is always possible to discover a proposition that is non-derivable from a finite set of axioms, which means that a finitist proof is impossible. For Cavaillès, Gödel’s results have important consequences in general for how one thinks about explaining advances in mathematical knowledge, and more particularly, for how one evaluates Husserl’s transcendental logic.

In the first place, science will not be able to be self-grounding, since it must always rely upon a system with greater explanatory power in order to account for all possible propositions—in which case the notion of an absolute grounding may need to be rethought. In the second place, science appears to be creative in unexpected ways, for in principle new propositions may be discovered that cannot be foreseen on the basis of a given, finite set of propositions proper to that science—in which case non-axiomatic explanation must be sought to explain scientific progress.

There are generally two types of responses to this line of Cavaillès’s criticism. Regarding the first point, most contemporary phenomenologists hold that the notion of absolute grounding underwent significant transformation during the course of Husserl’s career. Indeed, by the time of Formal and Transcendental Logic one finds the elements for a genetic phenomenology in the second appendix. Regarding the second point, transcendental logic is precisely a non-axiomatic explanation for how the notion of an axiomatic system and the possibility of a finitist proof come to be meaningful. In this sense, even though Gödel’s proof counts against Husserl’s notion of mundane mathematics, it does not affect the general transcendental aim, which is to explain how the meaning of such a project arises in the first place. Together those two points seem to indicate that a Husserlian transcendental logic avoids Cavaillès’s first level of criticism because the transcendental has already moved beyond finite axiomatic thinking for its method of explanation.

The second level of criticism, by contrast, attempts to address transcendental logic on its own terms. Husserl’s transcendental logic falls short due to what Cavaillès calls a “principle of reducibility.” This principle of reducibility is not to be confused with the reduction—the meaning of which, one might note, Cavaillès never considers. Instead, the principle of reducibility refers to the Husserlian conception of logic, which sees judgments as ultimately founded upon and therefore answerable to experience.” The intervention of this principle marks Husserl’s move from formal to transcendental logic at two decisive points.

In the first place, Husserl argues that formal logic is a single unified science with two parts, formal apophantics and formal ontology. Formal apophantics examines the form of judgments and their possible combination. By contrast formal ontology focuses on objects and their formal relations. Reviewing the history of logic, Husserl sees these two disciplines as having been pursued in isolation by opposed traditions. Whereas formal logic garners its inspiration from traditional, Aristotelian logic,
what Husserl calls formal ontology finds its embodiment in late nineteenth-, and early twentieth-century mathematical logic. At this point, Cavaillès notes, “an essential element in the Husserlian theory of judgment intervenes: the judgment is an expression of a ‘state of things’ (*Sachverhalt*).” By this “principle of reducibility”—this insistence on the primacy of experience—the relation of formal apophantics to formal ontology is revealed. Judgments are ultimately about structured state of affairs. Consequently, the theory of judgment has a necessary relation to the theory of objects, for while the judgment as such is the province of apophantics, the possible relations among objects fall under the purview of ontology. Therefore, in order to have a complete, formal account of judgment, Husserl claims that formal logic cannot be restricted to either formal apophactics or formal ontology. Instead, formal apophemics and formal ontology ought to be understood as two parts of a single, unified formal logic. In this, Cavaillès believes, the principle of reducibility reveals Husserl’s inability to adhere to the need for maintaining the strict separation between sensuous and intelligible reality.

Secondly, the principle of reducibility is the gateway to Husserl’s transcendent logic. We have already seen how the judgment’s founding in experience calls for a two-sided formal logic. But the founding in experience also indicates the general direction of logic, namely toward truth. For this reason, Husserl claims that formal logic has a teleological orientation toward a truth-logic, which moves beyond the mere assurance of well-formed, coherent propositions to issues of what it means to judge correctly. Truth-logic is not transcendent logic, but it does bring to the fore the issue of knowledge and thereby its introduction makes explicit a novel avenue for investigation; one can now ask about the relation of the subject to those claims taken to be true. Pursing that question takes one to transcendent logic.

Cavaillès claims that by locating the authority of science and formal logic in transcendent logic and presenting that authority as yet another instantiation of the principle of reducibility, Husserl inadvertently reveals a fundamental failing of the phenomenological attempt to establish a theory of science. According to Cavaillès, a transcendent logic which employs the phenomenological method limits itself “to unraveling the entanglement of motivations and elementary actions, but without questioning the logical entity itself.” Cavaillès’s reasons for questioning transcendent logic’s critical dimension might be encapsulated by his understanding the phenomenological commitment to evidence and the eidetic method. On the one hand, evidence is defined in terms of being in the presence of whatever entity one is investigating. Cavaillès takes this to mean that “there is nothing to question beyond the act or the content in the immediate presence.” On the other hand, eidetic variation finds its limit by being confronted with a lived impossibility, namely, that any subsequent variation will destroy the sense of that which is investigated. Cavaillès characterizes this as “an abdication of thought.”

Here, again, some standard Husserlian responses become available. At this point, the phenomenologist may well protest that the proper task is to map a hierarchy of evidence, and thereby to justify logic. However, the justification, according to Cavaillès, has only a single source, namely consciousness, and even if such a hierarchy contains a consciousness of progress—which is the key issue for a theory of science—consciousness itself will remain unchanged because only consciousness can guarantee the unity of phenomenological knowledge. But such a unity forestalls the possibility of describing scientific progress, which does not simply consist of augmentation but rather a “continual revision of contents by deepening and eradication.” To this, the Husserlian can take solace in an earlier response, namely that Husserl’s later notion of consciousness is more flexible and includes both genetic and generative aspects.

**Transcendental Logic as Phenomenological Science**

For some, the matter should end here: a contemporary transcendent logic need not be worried about Cavaillès’s critique because it ultimately relies on an anemic understanding of the Husserlian enterprise. However, even though Cavaillès’s critique cannot warrant dismissing the phenomenological enterprise, it still remains important for it points to the pos-
sibility that any science, even transcendental logic, may be open to a radical transformation.

To begin with, the phenomenological insistence on the primacy of experience identified by Cavaillès must be rethought, for it provides a key for understanding Husserl’s transcendental logic. When taken in a sufficiently broad sense, experience is the immediate, lived-through encounter with some objectivity, and thus the insistence that experience is primary embodies an allegiance to what Husserl calls evidence. Evidence does not refer to some datum that secures absolute certainty, but rather, Husserl writes, “designates that performance on the part of intentionality which consists in the giving of something-itself.” As such evidence comes in various styles corresponding to the temporal index and the type of objectivity given. For example, there is the type of evidence that is known as perception, which is characterized by the immediate presence within consciousness of the object itself. To this can be compared memory as a type of evidence that brings the past object itself to consciousness as past. Not only does evidence differ according to its temporal index, it also differs according to the type of objectivity. Real objectivities are given as determined by a specific location and time, whereas ideal objectivities (such as concepts and formal laws) are not. The difference in evidence is important, for recognizing that all evidence is not equivalent is one way to motivate a transcendental investigation, one way to bring about a transcendental logic.

How, then, should one understand the task of a transcendental logic viewed phenomenologically? Transcendental phenomenology is an investigation of the origins of sense. The sense of our worldly encounters, for example, has an origin in the acts of consciousness, each of which embodies a particular type of intentional correlation between the experiencing and that which is experienced. Similarly any realm of sense can be investigated phenomenologically. If one thinks of logic as being concerned with the categories of meaning and truth, then a transcendental logic is simply “a transcendental logic in relation to” the topics of logic. In other words, a transcendental logic examines the categories of meaning and truth “as correlates and in correlation with those acts which disclose or constitute them.”

Transcendental logic, in other words, investigates the “givenness” of logic. As such transcendental logic pursues a radical constitutional analysis, or sense-unfolding, that reveals the presuppositions of logic and tests them to determine their limits by uncovering the hidden layers of evidence that supports them. Once the hidden layers of evidence supporting logic are recognized, however, the categories of meaning and truth are seen in a new context. In brief, the categories of meaning and truth are no longer seen as absolute in themselves but as being relative to a whole realm of evidence. Such recognition can have dramatic results for logic.

For example, an absolute conception of truth becomes untenable. In this context, absolute means being independent from qualification and forming a whole incapable of supplement. Thus defined, an absolute conception of truth goes hand-in-hand with a correlative notion of perfect evidence. But what sense can perfect evidence have? Perhaps it means to have evidence that is incapable of doubt and complete, thereby securing both the independence and fullness of absolute truth. However as Husserl demonstrates in the *Cartesian Meditations* the notions of apodictic and adequate evidence are separable, and indeed adequate evidence exists at best only as an ideal. Even more problematically, Husserl notes, the presumption of absolute truth, which as an unanalyzed assumption is nothing more than a “theory from on high,” short-circuits investigations that would determine the evidence appropriate to other realms of experience.

But what about transcendental logic, does not it risk being another theory from on high if it does not submit to a critique? What about its hidden presuppositions? As a general rule, Husserl tells us one begins transcendental phenomenology “at first with a sort of naïveté.” The naïveté results in part because the first task of transcendental phenomenology is to uncover the presuppositions operative in our mundane sense-consciousness for what they are, namely presuppositions that carry a certain scope and weight by virtue of their underlying evidence. However, what one is after in pursuing a philosophical explanation of science is to be rid of naïveté. Consequently, a critique becomes necessary, and following the model for all phenomenological critique it will be the task of a transcendental logic to uncover the presuppositions operative in our understanding of logic and to test them to determine their limits by uncovering the hidden layers of evidence that supports them.
investigate the evidence pertaining to the initial stages of transcendental logic.

What would such a transcendental criticism look like? In part it is difficult to say, especially given that *Formal and Transcendental Logic* merely leaves us at the beginnings of transcendental logic. At the very least, though, the “absolute” truths of the first level of transcendental logic would be relativized, be shown to be incomplete and necessarily dependent upon hidden layers of sense. Among the principles up for criticism here would be further investigation of the laws of contradiction and excluded middle, which at the level of formal logic are already wrought with idealizing presuppositions. More importantly, perhaps, would be the attendant change in attitude within the transcendental sphere, a further reduction if you will.

Until now, the transcendental reduction has been kept out of view, in part because Cavaillès does not deal with it directly. But the move to transcendental logic is marked by a shift in attitude. Husserl calls the various ways of enacting this shift in attitude the transcendental reduction. The effect of the reduction is characterized nicely by Stephen Crowell. He writes, “The reduction opens up the sphere of transcendental subjectivity, the descriptive domain of the intentional correlation between noesis and noema.” That is, the transcendental reduction opens up a space for investigating how meaning comes to be in the life of any subject whatsoever, it opens up a realm of transcendental experience. A subsequent change in attitude would ask about the evidence for this “any subject whatsoever.” Prior to such a change in attitude, one has little assurance that the “for everyone” presumed within transcendental subjectivity isn’t merely another transcendental illusion, merely the counter to the specter of solipsism that haunts the beginnings of transcendental phenomenology. And while at one level transcendental phenomenology gets along fine with this presumption, a critical transcendental phenomenology must risk that the “for everyone” is in the end yet another relative necessity where “possibilities for a complete reorientation of view will make themselves felt, pointing to new dimensions.”

**ENDNOTES**


4. These criteria, as well as a clear exposition of Cavaillès’s text to which the following account is indebted, have been provided by Leonard Lawlor in *Derrida and Husserl: The Basic Problem of Phenomenology* (Bloomington: Indiana University Press, 2002), 57–67.


6. I say by “most accounts” because there is some recent dissent. See, for example, Panu Raatikainen, “Hilbert’s Program Revisited,” *Synthese* 137 (2003): 157–77.

7. Both of these points have been made (albeit more provocatively) by Jacques Derrida in Edmund Husserl’s *Origin of Geometry: An Introduction*, trans. John P. Leavey, Jr. (Lincoln: University of Nebraska Press, 1978).


14. Ibid., 408.

15. Ibid., 409.


17. Ibid., 161.


20. That sense-investigations, or constitutional analyses, are critical by their very nature is a central theme in the most extended commentary on *Formal and Transcendental Logic*. See Suzanne Bachelard, *A Study of Husserl’s Formal and Transcendental Logic*.


22. Ibid., 275.


25. Husserl, *The Crisis of European Sciences*, 18. I would like to thank Duane Davis, Phillip Honenberger, Burt Hopkins, Adam Konopka and Jared Woodard for their comments on an earlier version of this essay.

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