



Ilyenkov and the Immanence of Logic

David Bedford and Thomas Workman

ABSTRACT: The materialist tradition challenges the conventional philosophical understanding that logic is the organon for both science and philosophy. Marx and Engels, building on the materialist tradition that can be traced back to the ancients, inaugurated the direct challenge in the nineteenth century. The dialectic of humanity and nature, they argued, was the matrix of all human culture including its philosophical and logical forms. But as suggestive and compelling as Marx's and Engels' bold thesis was, it would fall to twentieth century writers to flesh out the counter-claim that the material world is really the organon for logic. The logician John Dewey, building upon the naturalism and instrumentalism of American pragmatism, theorized the relationship between the continuum of science and the development of logical forms. And Evald Ilyenkov, writing a few decades later, argued that science and logic must conform to the dialectical character of the object world. In Dewey's writing epistemology is the organon for logic; in Ilyenkov ontology is the organon for logic; and thus in keeping with Marx and Engels both writers see logic as being effectively shaped by the material sphere. Neither writer, however, establishes a clear ontological philosophy commensurate with the claim that the world is dialectical, although Ilyenkov's writing is much more fecund and suggestive. Building on Ilyenkov, we argue that a theory of entification helps to illuminate claims about the dialectical character of the object world, drawing attention directly to the self-sameness and difference of entities, highlighting their abiding essence and evolutionary character, and so forth. Moreover, we conclude that a clearer philosophy of entification reveals the path through which the material world registers in the upper cultural echelons of science, philosophy, and logic, and helps to show how the dialectical epistemology of Dewey and the dialectical ontology of Ilyenkov complement each other within the materialist tradition.

KEYWORDS: Science, materialism, ontology, dialectic, Marx, logic, entity, Ilyenkov, Dewey.

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- *Correspondence:* David Bedford, University of New Brunswick.
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Introduction

The writings of E. V. Ilyenkov contain a radical philosophical thesis: *the matrix of logic is materialist through and through*. For more than 2,000 years, philosophical speculation had typically regarded *logic* as something akin to a transcending organon of pure thought, an abiding set of rules, creating a standard by which all thoughtful reflection and philosophical contemplation was to be measured. As such, *logic* yielded a set of invariant ratiocinative rules regarding conceptualization, the concatenation of concepts, and the drawing of valid inferences. Good philosophy and proper scientific investigation conformed to the rules of logic; bad philosophy and poor science tended to transgress or collide with them. Ilyenkov's insistence on the materialist matrix of logic overturns this perennial assumption, and its radical character could not be more striking: rather than seeing *logic* as an *organon* for thoughtfully grasping the world, the *material world* became an *organon* for shaping *logic*. The truly radical quality of Ilyenkov's work can be thrown into relief by reviewing the genesis of the materialist philosophy of knowledge in the nineteenth and early twentieth centuries. Marx and Engels, building on ancient thinkers like Leucippus and Democritus, and directly inspired by modern thinkers like Bacon, Hobbes, and Locke, had emphatically declared that the matrix of human culture was materialist—tout court (Marx and Engels 1956, 172–177)! They asserted that the historical interaction between humankind and the natural world shaped all aspects of human life from the organization of the family through to the highest regions of human culture. “The phantoms formed in the brains of men,” they stressed in *The German Ideology*, “are also, necessarily, sublimates of their material life-process, which is empirically verifiable and bound to material premises” (Marx and Engels 1976, 42). Although this constituted the essence of the materialist outlook, neither Marx's perennial work on questions of political economy, nor Engels' often expository writings on scientific socialism, directly addressed the exact mechanisms through which the material world registered in our varied and increasingly sophisticated cultural forms. It is one thing to assert that the matrix of all culture was materialist, as Marx and Engels repeatedly proclaimed during their formative writings in the 1840s, and quite another to specify the mechanisms through which the material world is drawn up into the cultural realms, especially philosophy and logic. A litany of questions naturally arise out of their bold anti-idealist claim: What aspects of ‘the material’ do we have in mind when we assert its priority? Exactly how might ‘the material’ work its way up into the upper echelons of human culture? What does it more precisely mean to say that materialist aspects of life are deposited in the more abstract fields of philosophy or logic? And does the primacy of the material hold over time, or is there a point when the upper echelons of culture begin to exert a substantive influence in the course of history, creating a more iterative

dynamic between the material domain and its cultural offshoot?

Such questions abound, but the corpus of Marx or Engels responds with little more than the odd philosophical aperçu or tantalizing speculative morsel. The task of fleshing out the relationship between the material world and the upper echelons of human culture would initially fall to the American philosopher John Dewey, and we will argue that substantively similar themes are abundantly evident in the writings of Ilyenkov. Both writers explore the radical thesis that logic is immanent to the material world, but do so by centering different animating concepts in their respective *corpi*. Dewey's central analytical focus is *epistemological* whereas Ilyenkov's commanding intellectual notion is *ontological*. This is to say that for the American philosopher the path from the material world through to logic is forged through an epistemological notion summarized as the *continuum of inquiry*, while the path from the material to the logical in Ilyenkov is driven by an ontological notion grasped as the *dialectical character of the object world*. Dewey more or less ignores the character of the object world by privileging the science that investigates it, and this science provides the organon for logic in the end. It is not really an exaggeration to say that Dewey identifies that material world as the matrix of philosophy and logic, but fails to theorize the material directly. Writing several decades later, Ilyenkov begins to correct this theoretical shortcoming in the American logician's work. The organon for logic in Ilyenkov is ontological rather than epistemological, and he stresses that it is the dialectical character of the object world in particular which necessarily imbues logic, in turn, with a dialectical character. In the wake of the bold materialist claims of the nineteenth century, both speakers challenge the conventional philosophical claim that logic is the organon for science and philosophy with their deflationary thesis that the matrix of logic is materialist, but only Ilyenkov began to theorize the material directly.

The Materialist Matrix of Logic in Dewey

Turning first to the American philosopher, Dewey's writings were constructed around a paradox. On the one hand, he observed that philosophers and logicians were the models of rational interrogation when it came to the world around them. Their philosophical mode of cognition, especially when contrasted with religious or mythic ones, was permeated with an unrelenting reflex that subjected all aspects of life to sustained rational interrogation and analysis. Yet, Dewey lamented, even these denizens of otherwise rationalistic communities tended to work supernatural or seemingly divine elements into their reflections when it came to philosophy and logic. Logicians and philosophers, he stressed, often hypostatize notions like truth, beauty, logic, and epistemology, and fail to see that they are working notions engendered within

the continuum of inquiry. The notion that such staples of philosophical discourse can be orphaned to other-worldly spheres ran counter to Dewey's naturalistic view of philosophy. "Belief in magic," he lamented in *Logic: The Theory of Inquiry*, "is not confined to primitive peoples" (Dewey 1938, 216). Dewey's naturalistic epistemology posits a relationship between the realm of inquiry and the labours of philosophy. Within the realm of inquiry a complex logical relationship of entailment and presupposition obtains between *i*) conceptions of the natural and social reality *ii*) practical applications of science to achieve homeostasis *iii*) ongoing scientific research and *iv*) the emergence and consolidation of established conceptual paradigms in various fields of research (Dewey 1938, chaps. 2, 3, and Part IV). Dewey's notion of *experience* encapsulates this rich relationship between the different elements of the *sphere of inquiry*, and we stress that this notion is very similar to the *dialectic of humanity and nature* found within Marxian scholarship (Dewey 1925, chap. 1). The critical moment of Dewey's project is his insistence that philosophy and logic supervene upon this ongoing sphere of sustained inquiry. To express this in a more philosophical manner, *philosophy and logic are immanent to the continuum of inquiry*. The conceptions formed within the sphere of inquiry tend to frame and steer philosophical and logical thought as inquiry deepens and progresses. Past philosophy has errantly *absolutized* notions like truth, beauty and epistemology, came to regard logic as a standard of thought 'lying in back of knowledge' as he would occasionally put it, and treated basic philosophical conceptions as notions transcending *experience*.

In Dewey's writings, the notion of experience is inseparable from the continuum of scientific inquiry. To illustrate the radical nature of his thinking, he drew a sharp contrast between 'transcendental epistemology' and the 'experimental theory of knowledge.' Transcendental epistemology often mistakenly assumed that "the organ or instrument of knowledge is not a natural object, but some ready-made state of mind or consciousness, something purely 'subjective,' a peculiar kind of existence which lives, moves, and has its being in a realm different from things to be known ..." Accordingly, Dewey added, the nature of the process of knowledge is de-naturalized or severed from the ongoing process of inquiry, and it is mistakenly assumed that "the ultimate goal and content of knowledge is a fixed, ready-made thing which has no organic connections with the origins, purpose, and growth of the attempt to know it, some kind of *Ding-an-sich* or absolute, extra-empirical 'reality'" (Dewey 1997, 98). Dewey argued that the noun 'truth' might be better conceived as an adjective 'true,' or even an adverb 'truly,' both of which summon to mind the relationship between the knowing subject and the known world. Such appellations would help to emphasize that any claim to truthfulness is not a property of things but rather a relationship between a knowledge claimant and some aspect of the extra-mental world.

Indeed, Dewey's instrumentalism, which as we will see has a family resemblance with Marx's notion of "human sensuous activity" as the ground of knowing, asserts the continuity between the practical actions that we take to solve the immediate, biological problems of shelter, food, protection, and so on as creatures embedded in the processes of nature, and the seemingly detached investigations of the scientist in her lab. Both are keenly attuned to the myriad of causal chains that link our actions and the actions of natural (and social) forces, each with the goal of creating a harmony between our existence and nature, and of uncovering the causal chains that will facilitate future practical activities. Dewey, like Marx, Engels, and Ilyenkov recognized that the quintessential form of the ongoing interchange between human thought and action and nature is "useful labour" (Dewey 1925, 84). Dewey writes further that "The first thinker who proclaimed that every event is an effect of something and cause of something else, that every particular existence is both conditioned and condition, merely put into words the procedure of the workman, converting a mode of practice into a formula" (Dewey 1925, 84). The goal of a naturalistic, instrumentalist practice of scientific knowing is not a fixed and once for all truth, which even if possible would be inconsistent with the final end of knowing which is to enhance and make more intelligent the practical solutions to lived problems. Rather, it is to discover ever widening, ever more comprehensive and interconnected causal sequences that both embed entities and emerge from their characteristic ways of being in the world. Such improvements in our understanding of the world ultimately make our practice more successful. To quote from Dewey's *Quest for Certainty*, "if we see that knowing is not the act of an outside spectator but of a participator inside the natural and social scene, then the true object of knowledge resides in the consequences of directed action" (Dewey 1929, 188).

Dewey's writings amount to a stark thesis: logic is not the organon of inquiry, but rather the continuum of inquiry is the organon for logic. Aristotle's logic, he argued for example, emerged organically as a register of the practices of Greek science in his day. Whereas the modern philosophy of science since Hume has been built around the problems of induction, and since Peirce, around the emergent forms of abduction and retroduction associated with the continual advancements in science, Greek science, as articulated by Aristotle in the *Posterior Analytics*, did not problematize the growth of new knowledge. Indeed, Aristotle argued that "the soul is so constituted as to be capable of" intuiting the universal from a group of particulars, and that it does so unproblematically (McKeon 1941, 100 a, 9–14). The current and apparent sterility of Aristotelean logic results from failing to recognize that *his* organon was immanent to the science of *his* day. As science, understood as the *continuum of inquiry*, evolves and changes, so too must reflective thought breach the immuring confines of syllogistic deduction as the *a priori* model of all proper

thinking. With each passing generation the advancements of science direct the attentions of the philosophers of science to the logical problems attendant upon growth of knowledge. These developments in science have increasingly highlighted the growing insufficiency of Aristotle's logic as the organon for theoretical knowledge. As Dewey wrote in his *Logic: The Theory of Inquiry*:

The next chapter deals explicitly with the traditional logic as derived from Aristotle, with a view to showing that of necessity the scientific conditions under which it was formulated are so different from those of existing knowledge that it has been transformed from what it originally was, a logic of knowledge, into a purely formal affair, and (2) that there is a necessity for a logical theory based upon scientific conclusions and methods. These are so unlike those of classic science that the need is not revision and extension of the old logic here and there, but a radically different standpoint and a different treatment to be carried through all logical subject matter. (Dewey 1938, 79–80)

The executive intellectual function of inquiry extends to the highest levels of abstraction, and we only lose sight of this because of prevailing pedagogical conventions. As he stresses in *Reconstruction of Philosophy*:

Mathematics is often cited as an example of purely normative thinking dependent upon a priori canons and supra-empirical material. But it is hard to see how the student who approaches the matter historically can avoid the conclusion that the status of mathematics is as empirical as that of metallurgy. Men began with counting and measuring things just as they began with pounding and burning them. One thing, as common speech profoundly has it, led to another. Certain ways were successful not merely in the immediately practical sense, but in the sense of being interesting, of arousing attention, of exciting attempts at improvement (Dewey 1920, 137).

Dewey stresses that the appearance of logic and mathematics as something eternal overlooks the lengthy period of trial and error that established all paradigms of thought:

The present-day mathematical logician may present the structure of mathematics as if it had sprung all at once from the brain of a Zeus whose anatomy is that of pure logic. But, nevertheless, this very structure is a product of long historic growth, in which all kinds of experiments have been tried, in which some men have struck out in this direction and some in that, and in which some exercises and operations have resulted in confusion and others in triumphant clarifications and fruitful growths; a history in which matter and methods have been constantly selected and worked over on the basis of empirical success and failure (Dewey 1920, 137).

Dewey's unremitting naturalism lays stress upon the iterative exchange of scientific observation and thought, of observation and theoretization, of the gathering up of facts and the translation of those facts into paradigms of

knowledge. He deplors the past tendencies of philosophy to isolate the scientific process of observation and investigation from the realms of thought and reflection: “Nothing has done greater harm to the successful conduct of the enterprise of thinking (*and to the logics which reflect and formulate the undertaking*) than the habit of treating observation as something outside of and prior to thinking, and thinking as something which can go on in the head without including observation of new facts as part of itself” (Dewey 1920, 140, our emphasis).

The Materialist Matrix of Logic in Ilyenkov

The radical nature of Dewey’s logical project highlighted in the quote immediately above bears repeating: logic is not the organon for science; rather science is the organon for logic (Bedford 1993). And it is the contention of this paper that a similar notion frames Ilyenkov’s logical project as well. To recapitulate, both thinkers flesh out the bold materialist thesis that was stated so starkly by Marx and Engels, but which was left largely unexamined when it came to the question of logic. How does the material world come to register in the more abstract echelons of human thought? Or, alternatively: “Exactly how can logic be traced back to the material realm?” Both Dewey and Ilyenkov essentially reply that the materialist matrix of logic is forged through the continuum of inquiry. To express their equally bold thesis with pith: *as science goes, so goes logic*. But for Ilyenkov, and this distinguishes his work from Dewey in a profound manner, science itself will respond to the dialectical character of the object world. In other words, the guiding notion in Ilyenkov’s work is ontological, and the realm of logic, largely engendered through science, will tend to conform to the dialectical character of the object world. This is to assert, ultimately, that ontology—*viz* the dialectical character of the object world—is the organon for logic in Ilyenkov, a radical notion that inverts the traditional view of logic and science in the history of Western philosophy.

To elaborate, Ilyenkov’s brilliant monograph *Dialectical Logic* has bequeathed a wealth of rich philosophical notions for later generations of radical scholars to ponder (Ilyenkov 1977). Not the least of these notions is his deflationary thesis that the sphere of *logic*, far from being the “supreme overseer” of science or the “absolute truth” threading pure philosophical discourse as metaphysical logic would have it, is wholly immanent to the material realm (Ilyenkov 1977, 371). Ilyenkov’s most fundamental claim is that logic is tethered to an irreducible material world. The philosophical implications of this thesis are profound. Ilyenkov’s notion of logic, therefore, essentially reworks several of the standard philosophical characterizations of logic that have appeared in the history of philosophy. The traditional conception of logic, a con-

ception that regarded logic as the fundamental organon of thought itself, entailed three closely related claims. *First*, logic was seen to be *eternal* or abiding, effectively immaterial and outside of time. *Secondly*, logic involved the *necessary* movement of thought, that is, the necessary drawing of inferences irrespective of time or place. This is to say that logic by and of itself was indifferent to the will of the thinking subject and foreclosed inferential variation or *contingency*—logic is exacting. And, *lastly*, the domain of logic is *analytic*, and tends to focus on the deduction of inferences through reflection rather than the *synthetic* drawing of inferences largely taken from experience, as the philosophical conundrum around induction confirmed in the modern era. *Eternal, necessary, and analytic*: in this traditional construal, therefore, logic transcends the specificity of history and scientific inquiry—it points to the immaterial and eternal nature of thought to which all proper human thinking, and all proper theoretization, inevitably conforms.

The notion of logic for Ilyenkov often departs from or massages this strictly traditional view of logic. On the question of its eternal character Ilyenkov rather presents logic as immanent to the progress of science in history. Logic is immanent to the material world as humanity struggles to come to terms with that world, and so much so that he embraces Lenin's notion that logic, dialectics, and 'the theory of knowledge' are fungible concepts. Logic pertains to the labour of thought itself, that is, it takes "thought, thinking" as its subject matter, and it regards this thought "as the ideal component of the real activity of social man transforming both external nature and himself by his labour" (Ilyenkov 1977, 8). In the language of contemporary philosophy Ilyenkov stresses that logic is 'created' rather than 'discovered,' and far from being an otherworldly template of proper thinking that humanity merely hits upon in the course of time, rather logic ultimately emerges out of our direct engagement with the material world, or what the historical materialist tradition would incline to summarize as the dialectic of humanity and nature. In the introduction to *Dialectical Logic*, Ilyenkov thus sums up his project by cribbing from Marx's language employed in his *Contribution to the Critique of Hegel's Philosophy of Right* and observes that the "matter of logic" is really, in the end, the "logic of matter."

Logic is the reducible notion in Ilyenkov and the material world is the irreducible notion. Ilyenkov's conception of the material world highlights its dialectical and contradictory character: "Contradiction as the concrete unity of mutually exclusive opposites is the real nucleus of dialectics, its central category" (Ilyenkov 1977, 320). The central question for Ilyenkov, and the question that demonstrates most clearly that logic is immanent to the material world, is how this dialectical character of the object world registers in thought itself. As he writes: "If any object is a living contradiction, what must the thought (statement about the object) be that expresses it? Can and should

an objective contradiction find reflection in thought? And if so, in what form” (Ilyenkov 1977, 320)? On this score, he continues, traditional logic rejects the very notion of contradiction on principle, and thereby proves to be inadequate to the tasks of science and philosophy:

The metaphysical logician tries to demonstrate the inapplicability of the dialectical law of the coincidence or concurrence of opposites, which amounts to their identity, to the very process of thought. Such logicians are occasionally prepared even to recognise that the object can, in agreement with dialectics, be by itself inwardly contradictory. The contradiction is in the object but must not be in the ideas about it. The metaphysician, however, still cannot permit himself in any way to recognise the truth of the law that constitutes the nucleus of dialectics, in relation to the logical process. (Ilyenkov 1977, 320–321)

And to underscore his repudiation of the notion of logic as the discovery and respect for eternal modes of thought he laments that the “metaphysical logician” transforms the principle of contradiction “into an absolute, formal criterion of truth, into an indisputable *a priori* canon, into the supreme principle of logic” (Ilyenkov 1977, 321).

The fundamental movement in Ilyenkov’s *Dialectical Logic* is from *ontology* to *logic* via *epistemology*. The dialectical character of the object world is the central notion for Ilyenkov, and logic will tend to conform to it as that world is grasped through inquiry. He retains the coincidence of logic and *necessity*, but only within the purview of this crucial ontological qualification. That is, the necessary character of logic is not attached to eternal or everlasting rules of thought, it does not view logic as the “supreme overseer” of science and inquiry, but rather attaches the notion of necessity to the dialectical character of the world. In short, the world is dialectical, and so too must thought and, ultimately, the science of thought—logic—be dialectical. The fact that the dialectical character of the material world functions as the organon for logic in Ilyenkov’s thinking is the proper context for his claims concerning the necessary dialectical character of logic: “Logic has as its aim the development of a scientific representation of thought in those *necessary* moments, and moreover in the necessary sequence, that do not in the least depend either on our will or on our consciousness” (Ilyenkov 1977, 7). It is in this sense that Ilyenkov embraces Lenin’s notion regarding the identity of logic and dialectic: “Dialectics had no subject matter distinct from that of the theory of knowledge (logic), just as logic (the theory of knowledge) had no object of a study that would differ in any way from the subject matter of dialectics” (Ilyenkov 1977, 312). The necessary dimensions of logic will reflect the determinations of the (dialectical) object world upon humanity as subject. As such, the subject matter or focus of logic is the “objective laws of subjective [viz human] activity” (Ilyenkov 1977, 289). The object world registers in the subject necessarily, viz dialectically, and this violates the conventions of traditional logic insofar as it

proclaims that logic admits of contradictory predication, that is, that logic is both subject and object at one and the same moment. It is useful to quote Ilyenkov at length:

Such a conception is quite unacceptable to traditional logic since, from the standpoint of the latter, it unites the unjoinable, i.e. an affirmation and its negation, A and not-A, opposing predicates. For the subjective is not objective, and vice versa. But the state of affairs in the real world and in the science comprehending it also proves unacceptable to traditional logic, because in it the transition, formation, and transformation of things and processes (including into their own opposite) prove to be the essence of the matter at every step. (Ilyenkov 1977, 289).

Ilyenkov immediately adds that “traditional logic is consequently inadequate to the real practice of science and therefore has to be brought into correspondence with the latter” (Ilyenkov 1977, 289). Logic must ‘get to’ reality; logic appeals to experience in and through science. It is here that the *synthetic* character of logic in his construal is thrown into relief. Although he stresses that both logic and science will conform to the dialectical character of the world, the dialectical character of logic will emerge in and through the work of science itself. “Logic as a science is not at all interested in the ‘specific features’ of the thinking of the physicist or chemist, economist or linguist,” Ilyenkov writes, “but only in those universal (invariant) forms and laws within which the thinking of any person flows, and of any theoretician, including the logician by profession, who specially thinks about thought” (Ilyenkov 1977, 314). Logic is the science of thought that emerges both alongside and through the various branches of science as we reflect upon its concepts and theoretical scenarios. As it congeals over time, logic then provides guidance to the very scientific endeavours that helped to spawn and engender it. Ilyenkov’s notion of logic thus retains a significant analytic dimension, a dimension where the veracity of the claims are dependent upon the meanings ascribed to concepts and inferential rules as they are congealed through science, but these very meanings and rules were ‘borne of’ and ‘confirmed through’ experience. As he writes: “The *creation* of a Logic understood as a system of categories, of course, constitutes only one stage. The next step would have to be the realisation, actualisation of the logical system in a *concrete scientific investigation*, because the end product of all work in the field of philosophical dialectics is the resolution of the concrete problems of concrete sciences” (Ilyenkov 1977, 370-371). The meanings and ratiocinative rules attached to logic, in other words, are not spun out of our heads but rather appeal to real, factual conditions elaborated through and confirmed by the labours of science. Those crucial categories associated with logic like *contradiction* and *totality*, along with its inferential rules, appeal, ultimately, to those factual conditions explored in the concrete sciences, and it is in this sense that we can speak of them as synthetic. In linking logic to the process of scientific investigation, and especially

by presenting logic as something that is realized or actualized in and through science, Ilyenkov effectively repudiates the traditional view of logic as merely analytical, that is, as the enumeration of invariant rules of conceptual thought discovered largely through reflection. Logic rather emerges in and through concrete scientific investigations, and effectively becomes an “equal collaborator” in the course of science, “not a ‘science of sciences’ crowning their system as just another variety of ‘absolute truth’” (Ilyenkov 1977, 371). As he summarizes:

The dialectical conception of logic is engendered through and confirmed by science as it struggles to resolve its theoretical challenges: science as a whole, through the clash of undialectical opinions mutually provoking and correcting one another, develops for all that in accordance with a logic of a higher type and order. (Ilyenkov 1977, 290).

In tracing out the immanence of logic in Dewey’s thought we observed that he largely fails to consider ontological questions directly. In his construal, the material world is the matrix for logic as engendered largely through the continuum of inquiry, and the object of science itself—the very character of the object world theorized by science—is more or less neglected philosophically. At the risk of oversimplification, the path for Dewey is from epistemology to logic, not ontology to logic, and there is a distinct sense in which the material realm is under-theorized.¹ Although both Dewey and Ilyenkov can be read as fleshing out the groundbreaking materialist thesis of Marx and Engels, the Soviet philosopher takes the question of the materialist matrix of logic much further than the American logician. The matrical path for Ilyenkov is from ontology to logic most definitively, with science acting as the cumulative conceptual register of the object world that both shapes logic and, in turn, is guided by logic. Ilyenkov places a much greater theoretical emphasis on ontology to specify the manner in which the material world is deposited in the realm of logic. In his *Dialectic of the Abstract and Concrete*, Ilyenkov argues for a dialectical conception of the abstract and concrete that guards against empty abstractionism, that is, that guards against conceptions of the concrete that lose sight of the essential markers and relational complexity of the object world (Ilyenkov 1960). Although his effort to explore the dialectical character of the abstract and the concrete summons an account of the object world more directly, particularly one that helps to clarify the path from the dialectical character of the object world through to the dialectical character of science and logic through which it registers, Ilyenkov falls short of presenting a full-blown philosophy of entification. To elaborate on this limitation, we begin by stressing that any theoretical assumption, including Ilyenkov’s claim that the

1. This neglect has in no small part contributed to the neopragmatic relativism evident in writers like Richard Rorty.

object world is dialectical, cannot be left at the level of an axiomatic claim or assumption. By the seventeenth century, it was recognized that the scientific mode of cognition differed from mathematics by virtue of its rejection of axiomatic claims or unexamined points of departure. Hobbes' poignant criticism of Descartes, for example, stressed that science, unlike mathematics, had to be built on *empirical observations* rather than axiomatic claims or declamatory assumptions.² This rule of science throws the limitations surrounding Ilyenkov's claim that the object world is dialectical into rather stark relief. His assertion that the object world is dialectical must be grounded in experience, that is, in the observational and empirical aspects of inquiry, and cannot be left at the unexamined level akin to an axiomatic assertion in mathematics. This goes doubly so for Ilyenkov since it is the dialectical character of the object world that essentially functions as the organon for both science and logic in his philosophy.

Equally importantly, the evolution of science provides a clue as to how the need to ground Ilyenkov's claim about the dialectical character of the object world might be satisfied. Not only have we witnessed a continual evolution of such central scientific notions as 'hypothesis,' 'fact,' 'law,' and 'theory' over the ensuing centuries, but we have also witnessed a continual refinement in the conceptualization of the very things upon which science comes to devote its attention, that is, the very 'things' about which science develops theoretical knowledge. We can indeed identify evolving theories of the most basic character of the object world that summons the attention of science (Wootton 2015). Over time, a critical theoretical distinction has emerged between *aggregates*, such as Heidegger's famous jug, and *dynamic singulars*, that is, ontologically dynamic objects characterized by a self-generative essence and a relatively consistent presence of outward phenomena as it interacts with its environment. *Aggregates* like teapots or tables or piles of sand are not the focus of scientific inquiry; *dynamic singulars* ranging from atoms to cells to solar systems, and even the universe in its entirety, have invariably come to command scientific attention. This is to say that one of the most important developments in the philosophy of science has been the corresponding development in its *philosophy of entification* with a focus on the relational complexity and ontological depth of entities, that is, upon dynamic singulars (Hartshorne 1984). Any effort to theoretically and empirically ground Ilyenkov's claim that the object world is dialectical is bound to enlist a philosophy of entification. More to the point here, we are compelled to ask: "What is it about entities (of the object world) that is particularly dialectical?"

On this score we argue that Ilyenkov falls short of presenting a full-blown

2. As Hobbes wrote: "There are two things necessarily implied in this word knowledge; the one is truth, the other *evidence* ..." from *The Elements of Law Natural and Politic* (Oxford: Oxford UP, 1994), 40, our emphasis.

philosophy of entification, although his writings are suggestive and rich. To conclude this paper we accordingly tease out a ‘theory of the entity’ that builds upon Ilyenkov’s suggestive materialist thesis about logic, positing a theory of the entity commensurate, ultimately, with dialectical logical conceptions characterized by contradictory predication—the entity’s self-sameness and difference, its abiding essence and evolutionary character, its individuality and its universality, its relational internality and externality, and so forth. We briefly elaborate on Ilyenkov’s largely implicit notion of the dialectical character of the object world, and highlight especially his somewhat uncertain and imprecise specification of dialectical ontology.

As observed above, Ilyenkov argues in *Dialectical Logic*, that “(C)ontradiction as the concrete unity of mutually exclusive opposites is the real nucleus of dialectics, its central category.” And with respect to the effect of the dialectical character of the world upon the course of science he adds: “(C)ontradiction in the theoretical determinations of an object is above all a fact that is constantly being reproduced by the movement of science” (Ilyenkov 1977, 320). As discussed above, such quotes assert that a dialectical philosophy of science will come to rest upon a dialectical ontology, that is, upon an account of the *object of science* that does not foreclose its dialectical construal either theoretically (in and through science) or logically. Ilyenkov stresses that both science and logic must evolve in a manner that embraces the contradictory character of the object world, and that traditional logic had fallen short in this respect (Ilyenkov 1977, 320–322). Such a standpoint, however, compels us to specify the dialectical character of the object world in an exacting manner. To put this in even stronger terms, the *object of science* must be examined *both* from the standpoint of its dialectical properties as well as from the way that these properties engender a dialectical science alongside a concomitant dialectical logic, and both of these requirements call for a clear *philosophy of entification*.

Ilyenkov’s philosophy most certainly begins to fulfil this requirement. We can elaborate on this point by first observing the manner in which Ilyenkov stressed that Marx’s logical categories are grounded ontologically, arguing that the fundamental categories in Marxist thought—that of the abstract and the concrete—do not admit of a “narrow epistemological interpretation” which Ilyenkov identifies with “modern bourgeois philosophy” (Ilyenkov 1960, 35). Rather, he argues that Marx sees them as properties of the object itself. Ilyenkov writes: “The object is concrete by and in itself, independent from its being conceived by thought or perceived by sense organs. Concreteness is not created in the process of reflection of the object by the subject” (Ilyenkov 1960, 33). A purely epistemological approach, one basically deriving the *universal* from the logical relationship of ideas alone, Ilyenkov argues, would fail to capture the form of logical argumentation and investigation used

by Marx. On his interpretation, Marx's emphasis on the ontological ground of the logical categories allowed him to explore the universal—or the essence of the entity—without relying solely on the method of empirical summation of perceived properties. Logical categories in Marx's corpus were neither distilled from pure thoughts alone nor mere generalizations from a series of discrete observations. Marx's sensitive treatment, an approach which results in ontological distinctions reminiscent of Hegel's differentiation between *mere existence* and *actuality*, strove to uncover the essence of the object under investigation, an essence which may or may not be instantiated in any given *particular*. Ilyenkov illustrates this using the example of Marx's assertion that the "production of labour implements" is the "objective basis for all other human traits," or better, as "the essence of man" (Ilyenkov 1960, 75). Marx did not derive this conclusion by summing up observations of innumerable individuals, but rather established this *universal* marker by discerning and clarifying the grounding relationship between the act of producing implements and all other human traits (Ilyenkov 1960, 76). We thus see the logical category emerging through the complex iteration of reflective thought and historical investigation, that is, between the dialogue of sorts between the abstract and concrete moments which defer, ultimately, and in keeping with Marx's materialism, to the independent character of the concrete. Absent such a derivation of critical logic categories from this dynamic exchange between abstract reflection and concrete observation, engendered through a complex interplay of *analytic* and *synthetic* moments as it might be philosophically put, then Marx's theoretical insights into the historical character and trajectory of capitalism would not have been possible.

Although incomplete, Ilyenkov's discussion of the abstract and concrete is richly suggestive in that the emergent categories of logic create space for the contradictions, tensions, and evolutionary processes which inhere in the object world, and begin to direct attention towards those very things which command the focus of scientific inquiry—namely, *entities*.³ To elaborate, his ontological insights are grounded in his acceptance of the basic idea of Spinoza that being is one substance with the two attributes of thought and extension. He thus rejects any of the variants that follow from the Cartesian argument that there exist two distinct and unconnected substances—*res cogitans* and *res extensa* (Ilyenkov 1960, 32). The myriad of Cartesian-inspired ontologies assert that mind is a separate substance, unconnected to matter, and that matter is inert and unthinking. Such dualistic philosophies, despite the importance of specifying any connection between thought and extension, tend to

3. For a more involved treatment of the philosophy of entification as it relates to Marxian inquiry see David Bedford and Thomas Workman, *Marx, Engels, and the Philosophy of Science* (London: Routledge, 2023), chapter 3.

leave the matter unresolved. The Spinozan solution, which Ilyenkov embraces, is to unite thought and extension from the outset. “This simple and profoundly true idea,” he writes, “was expressed by Spinoza in the language of his time: thought and extension are not two special substances but only two attributes of one and the same substance” (Ilyenkov 1960, 32). Hence, as Ilyenkov embarks on the philosophical construction of a dialectical ontology he begins by asserting that it is matter which thinks, and that thinking is material (Ilyenkov 1960, 33–35).

The notion of matter which thinks is a meager beginning. Ilyenkov’s ontology is further developed when he argues against the mechanistic view of the entity as mere matter, and asserts instead that existing things are organically interconnected wholes. He writes that “(T)he concrete is thereby interpreted as an internally divided totality of various forms of existence of the object” (Ilyenkov 1960, 33). The idea of an internally differentiated totality, we stress, is a promising initial foray into the question of the entity. To explore the question further of what constitutes an entity as the existing thing we must begin by differentiating what we are here calling an “entity” from a mere agglomeration of matter. An “agglomeration” of matter, close to what philosophers have called an aggregate and famously exemplified with a tea pot, is a thing in which the material elements have no internal relation to each other. This can best be explained by an example. For Ilyenkov, a heap of stones would be such an instance of an agglomeration. The individual stones which constitute the heap are not related to each other in any meaningful way. There are no significant processes internal to the heap. In commonplace language, such a heap is lifeless or inert. Nor is there an internal life to the philosopher’s tea-pot, just functional parts. In contrast to such renderings, Ilyenkov understands the entity as an organic, internally related, singular. It is a unity formed from diverse (but interconnected) parts. As Ilyenkov writes in *The Dialectics of the Abstract and the Concrete*: “The problem of the relation of the universal to the individual [by which Ilyenkov here clearly means the problem of the essence] arises...as the object’s internal relation to the object itself, the relation of its different aspects to one another as the problem of the internal differentiation of the objective concreteness within itself” (Ilyenkov 1960, 75–76). It behooves us, however, to articulate more fully what is meant scientifically by “organic” or “internally related.” To begin, such a notion implies that we can differentiate the entity from its environment. It will have a boundary which can be more or less porous, more or less definitive, separating it from its environment, and marking off what is internal to the entity and what is external to it. Entities will differ as to the degree to which this boundary with the environment is porous, that is, the degree to which the thing is fully self-contained, or correspondingly, the degree to which its essence is implicated in, and is determined by, its relations to its surroundings. No entity is fully

self-contained or self-identical, just as no entity is indistinguishable from its environment. One of the tasks of science is to determine the extent to which the physical boundary is porous. For example, recent studies on forests indicate that trees communicate with one another, and might even distribute food resources through the interconnection of their root systems. Theoretical chemists study the extent to which the outer electrons of molecules are shared and interact. In the social sciences, liberal political philosophers see the individual person as fully self-identical, and contained entirely within itself. A more socialist understanding sees the individual as both self-identical *and* relationally immured in the social, existing as well in its relations to other persons and to the social structures that are outside it and that are part of its essence. I am both a self-contained ego, and yet my being is also inseparable from my relations to others and my social environment.

If we generalize this key dialectical understanding of the entity as self-identical *and* extended into its environment, we can then problematize the way that different entities, with different essential features, interact with, and extend into, their environment. The starting principle is that what is true for *human being-in-the-world* is also true for all entities. All entities are, to varying degrees, sensitive to, and hence implicated with, aspects of their environment. The electrons of a molecule are sensitive to incoming photons, which they absorb and which increase their energy level. It does not need saying that they are not sensitive to sound. Plants detect water, sunlight, and minerals in the soil. They are also not sensitive to sounds. Animals can hear, smell, feel, etc. and they do respond to sound, but they lack sensitivity to many of the inputs that affect humans. These points are commonplace, but we must not lose sight of their importance because of this apparent triteness. The notion of the entity's degree of sensitivity to its environment is significant in two ways. *Firstly*, the degree and kind of sensitivities is a function of the complexity of the internal organic relations of the entity. So, while it is true that an entity is characterized by an internal interrelation, or ordering, as Ilyenkov asserts, entities differ by the degree of the complexity of this internal ordering, and, correspondingly, by the degree to which they are sensitive to inputs from their environment. That is, entities vary by the degree to which they are self-contained, and hence, as well, by the degree to which their *being-in-the-world* extends into their environment. The disagreement, for example, between liberal and socialist social theory regarding the degree of self-containment of the individual person is not merely an ideological disagreement—it is a scientific one, to be determined by an analysis of the actual *being-in-the-world* of individuals (and on this score liberalism is woefully lacking!).

Secondly, each kind of entity will process the inputs (to which it is sensitive) in ways that are characteristic of, and determined by, its internal organic ordering. Indeed, we can define the essence of any entity as its *way-of-being-*

in-the-world, understanding by this: *i*) the inputs from its environment to which it is sensitive; and *ii*) the ways that its internal organic ordering processes these inputs into various kinds of outputs. For example, Pavlov's famous experiments involved inducing salivation in dogs by ringing a bell. Here the dog's behavioural output —salivation—follows from the ringing of a bell. The dog's internal organic ordering transformed the stimulus into a response. What is crucial to note is that the output or response is always incommensurate with the input or stimulus. Salivation is in no way commensurate with bell-ringing. Absent the intervention of the processing of the stimulus by the internal organic ordering of the dog's *way-of-being-in-the-world*, there is nothing in salivating that is contained in bell-ringing. This is true of every input-output relation for every entity.

Indeed, the incommensurateness of effect to cause is the key way that science is able to discern the various features and internal ordering of the entity. As the essence of any entity is its *way-of-being-in the world*, that is, how it is affected by inputs from its environment and how in turn it (re)acts upon the environment, the scientific study of an entity probes the nature of its internal processes to learn how it is implicated with its enviroing world. Biology examines the internal processes of plants and animals; sub-atomic physics bombards particles to try to discover their composition and order. Psychology progresses by presenting the test subject with an input and noting their reactions to it. A subject is asked to speak before a large group. They report being nervous. Their palms perspire; their throat gets dry; their pulse rate increases; they begin to blush. This gives the physiologist clues as to the mechanisms of fear and anxiety, which can then be further investigated. Increases in hormone levels related to fear can be noted, and so on. These investigations reveal, piece by piece, the essence of the entity, or, more precisely, its *way-of-being-in-the-world*.

Our extrapolation of Ilyenkov's incipient suggestions regarding the entity help to clarify an unfortunate legacy of Spinoza's philosophy that is not explicitly disregarded by Ilyenkov, and which does little to clarify the manner in which the material world registers in the upper echelons of culture including, of course, philosophy and logic. While entities vary immensely in the degree to which they are sensitive to their environment, and in the degree of complexity of their internal relations, and hence in the range of responses of which they are capable, these are matters of *degree* only. From the standpoint of a dynamic theory of the entity, therefore, humans may differ significantly from all other entities in the degree of complexity of their internal relations, and thought and thinking (including scientific reflection and philosophical speculation when it comes down to it) is best grasped as an element of the complex internal processing and sensitivity of humans as they interact with

their environment. As such, thought (and all symbolic thinking for that matter) differs from the responses to environmental stimuli only by degree, and not qualitatively, as Ilyenkov, seeming to follow Spinoza, implies. Ilyenkov writes for example, “The crossing and combination of masses of chains of cause and effect could lead in one case to the appearance of a thinking body and in another case simply to a body, a stone, a tree etc.” (Ilyenkov 1977, 53). Or again: “In man, in the form of man, in his person, *Nature itself* thinks” (Ilyenkov 1977, 34). Further, Ilyenkov quotes Engels: “But the truth is that it is the nature of matter to advance to the evolution of thinking beings, hence, too, this always necessarily occurs wherever the conditions for it (not necessarily identical at all places and times) are present” (Ilyenkov 1977, 54). Such a construal fails to expressly recognize that “thinking” is one end of a spectrum that considers the manner in which any given entity processes inputs into incommensurate outputs. Ilyenkov is at pains in *The Dialectics of the Abstract and the Concrete* to stress the social nature of conceptualization, along with its historical dimension, and he explicitly rejects what he calls the “Robinson Crusoe epistemological model.” “Rising to conscious life within society,” he stresses, “the individual finds pre-existing ‘spiritual environment,’ objectively implemented spiritual culture” (Ilyenkov 1960, 40–41). But despite his emphasis on the historical and social character of consciousness and language, Ilyenkov neglects to specify the genesis of thought itself. Our amendments to his nascent theory of entification help to overcome this limitation. Human thinking, and we really see our voice here as but an extension of his fecund speculations, is just the most complex example of a process that holds true for all entities. To adumbrate the materialist matrix of logic (and all thinking for that matter) with more rigour we must depart from Spinoza’s inadequate construal, an error that seems to be absorbed unwittingly into Ilyenkov’s philosophical horizons owing to his failure to theorize the entity fully and clearly. It is not that there is one substance with two attributes, the attribute of extension and thought; rather, the two attributes are ‘extension’ and the ‘process of transforming inputs into incommensurate outputs.’ Thinking—including logic—in humans is nothing more than the most complex processing that we currently know. It is with a note of irony that we underscore the claim that thinking is not something that just ‘pops’ into our heads. With this qualification, all thinking from the most prosaic through to the most abstractly symbolic can only be, as Ilyenkov is determined to demonstrate, social and historical, and in a word: material!

In itself, these are seemingly inconsequential differences, but we conclude by stressing that when theoretically elucidating the manner in which the material world is deposited in the realm of logic our observations about the *entity* bring us closer to bridging the gap between Dewey’s epistemological focus and Ilyenkov’s ontological focus discussed in this paper. A proper and complete

theory of the entity reduces language to the manner in which humans respond to their environment. We close by reiterating that a proper materialist treatment of logic must draw upon the theory of the entity outlined above, and by regarding the human entity and the immanence of language in this manner, we can explore the paths through which the material world comes to shape logic from *either* an ontological or an epistemological standpoint. A dynamic theory of the entity will constitute an integral part of a *dialectical ontology* which was more directly the concern of Ilyenkov, just as it will constitute an integral part of a *dialectical epistemology* which was more directly the focus of Dewey. Informed by a proper theory of the entity, the dialectical conception of both immanent dimensions—the ontological and the epistemological—will be animated, have ‘concrete life’ breathed into them, and can be blended together theoretically to yield a more vivid and robust materialist accounting of logic. It is in this sense that we can construe Dewey and Ilyenkov as complementary philosophers, with a *fundamental materialist matrix of logic* guiding each thinker.

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Biographies

David Bedford is a retired professor of Political Science at the University of New Brunswick. He has taught and published on topics in philosophy, political philosophy, and indigenous issues. He is the co-author of *The Tragedy of Progress: Marxism and*

the Aboriginal Question (Fernwood), and recently co-authored *Marx, Engels, and the Philosophy of Science* (Routledge).

Thomas Workman is Professor of Political Science at the University of New Brunswick. He teaches and publishes in political philosophy, critical theory, and political economy, and recently co-authored *Marx, Engels, and the Philosophy of Science* (Routledge).