Radical thought is intimately linked with radical action. Thus, a society of domination (e.g., an Empire) must seek to control intellectual activity to reduce the probability of radical thought. Many have offered materialist interpretations of religious, scientific and philosophical thought that show the ways in which these contribute to thought control and help to maintain the dominant order. In some cases, such as that of the feminist philosopher Andrea Nye, this work has given explicit critiques of doctrines associated with formal logic. But the exploration of the politics of formal logic deserves even more attention than it has received and, in particular, we should pay some attention to the philosophical ideologies that justify the demand for formalization. We need a materialist interpretation of the orthodoxies that all rational thought should be logically formalized. According to such a view, the imposition of order demanded by formalized logic serves the socio-political function of thought control within contemporary professional (commodified) philosophy and should be rejected.

(The problem of conflict in reasoning) Philosophers of logic face a seemingly intractable problem. It can be put in the form of the following scenario. Suppose that I am making an argument in an attempt to convince my interlocutor of the truth of $P$. She agrees with each of my premises. Suppose further that my premises logically entail my conclusion. Nevertheless, my “anarchist” interlocutor refuses to accept my conclusion. What can I do? How can I persuade her to accept the conclusion, if persuasion itself presupposes the acceptance of a logic? Perhaps most importantly, how do we actually handle this type of situation when confronted with it?

For a moment let’s suppose, as most philosophers do, that there is nothing problematic about the phrase ‘logically entail’. In a very real sense the problem just described is the epistemological version of the problematic confronted by Hobbes and other modern (liberal) political theorists. It is a fundamental rational conflict between autonomous rational agents. It happens in philosophy classes when we present arguments in premise and conclusion form. It happens in academic philosophical discourse when two philosophers disagree about what follows from a set of premises. In professional logic, it takes the form of different formalizations of logic: classical logic, relevance logic, intuitionistic logic, and paraconsistent logic.

In a classroom environment, I suspect that most teachers invoke the position of authority and with the aura of possessing an irrefutable truth, tell the anarchist student...
that these premises logically entail that conclusion and anyone who thinks otherwise is irrational. In this manner, we exclude the student from the conversation. In effect, we exclude her from the community of discourse.

In academic philosophical discourse, I suspect that we are more likely to take our interlocutor seriously. So, we make the move to formalization. We formalize the argument and then show that it conforms to a known deductively valid argument. But our interlocutor is likely to employ one of two strategies of response. First, she might disagree that the particular formalization employed captures the logical structure of the original set of premises and conclusion in dispute. Second, she might question the validity of the argument structure to which we appeal.

In the first case, we retreat to a discussion of meaning in ordinary language. There is really nowhere to go here, and many philosophers wind up saying something to the effect of “well that is not MY intuition about what this means.”

In the second case, we get involved in a dispute about the ‘right’ logic. That is, we begin to do philosophy of logic. But what is the method of decision in philosophy of logic? It must be by an appeal to our common practices, which in this case is a matter of dispute. So, by its very nature this direction leads us into a vicious circle. And in both cases, we find ourselves reflecting on common practice.

It is this latter development that we must forget in order to commit ourselves to the demand for formalization. Formalization is supposed to clarify issues that otherwise have not been clarified. Formalization is supposed to shed light on the right way to reason. But just as the adherents of formalization must forget its genesis, the high priests who formalize must mask the reason for their activity. Although common practice justifies the initial formalization, the formalization then takes the driver’s seat as if it is warranted independent of practice.

(Frege’s position of transcendence) Frege’s justification for the imposition of formal logic on all thinking is the appeal to the existence of a mind-independent formal structure that orders all Thought. Logical structure is intended to reflect this abstract form. This atemporal, transcendent reality grounds the classical ordering imposed on our temporal and material reasoning process. This is similar to the transcendental grounding of modern state sovereignty. The problem is that this view interprets human thought as a passive reflection of an atemporal Reality. On such a view, human beings merely report but don’t participate in the life of reason.

For Frege logic is about the universal relations that obtain between Thoughts. Thoughts are not mental entities, nor are they material entities of any kind. They are abstract entities. He says,

The thought, admittedly, is not something which it is usual to call real. The world of the real is a world in which this acts on that, changes it and again experiences reactions itself and is changed by them. All this is a process in time. We will
hardly recognize what is timeless and unchangeable as real. Now is the thought changeable or timeless? The thought we express by the Pythagorean theorem is surely timeless, eternal, unchangeable. But are there not thoughts which are true today but false in six months time? The thought, for example, that the tree there is covered with green leaves, will surely be false in six months time. No, for it is not the same thought at all. The words ‘this tree is covered with green leaves’ are not sufficient by themselves for the utterance, the time of utterance is involved as well. Without the time-indication this gives we have no complete thought, i.e. no thought at all. Only a sentence supplemented by a time-indication and complete in every respect expresses a thought. But this, if it is true, is true not only today or tomorrow but timelessly. Thus the present tense in ‘is true’ does not refer to the speaker’s present but is, if the expression be permitted, a tense of timelessness. If we use the mere form of the indicative sentence, avoiding the word ‘true’, two things must be distinguished, the expression of the thought and the assertion. The time-indication that may be contained in the sentence belongs only to the expression of the thought, which the truth, whose recognition lies in the form of the indicative sentence, is timeless. Yet the same words, on account of the variability of language with time, take on another sense, express another thought; this change, however, concerns only the linguistic aspect of the matter.¹

The Thought, then, is not what we would call real (it is real nevertheless), unchangeable, timeless, cannot be acted upon, etc. In a word, it is transcendent. And insofar as it is transcendent, it gives a transcendent ground to logic. It can act, however. For by “apprehending a thought I come into a relation to it...”² And thereby I become subject to the universal laws governing it, namely logic. Thought’s majestic transcendence gives it the justification for why it should become internalized so as to control our thinking. This transcendence is required for its objectivity.

But Thought not only controls our thinking, it can have an influence on all action. For “our actions are usually prepared by thinking and judgment.”³ Our thinking happens first and then action follows. We are actors only after being thinkers. Or, at least, this is how it should be. And since our action is in time, it should be subject to the universal laws governing Thought outside of time. The timeless and eternal should govern time and history for us. Thought is not an action, although thinking is. And correct thinking is determined by the logic that governs Thought. It is a timeless structure that should control the temporal history of thinking.

Additionally, Thought is necessary for communication—which is the persuasive control of others. I cannot communicate to you my idea. If you grasp anything at all, then it must be something objective, independent of both of our ideas. It must be a Thought. In this way, when I get you to grasp a Thought, your action then becomes determined by it as well. I don’t control you and your action, Thought does. I am merely

² Ibid.
³ Ibid., p. 218.
its persuasive enforcer. “[T]hought can have an indirect influence on the motion of the masses.”

The realm of action that logic is supposed to control is that of speaking and writing. These actions together constitute a discursive practice. Our discursive practice, however, is ill-equipped to properly manifest logical structure. Natural discursive practice is disorderly with its vagueness, ambiguity, and deceptive surface grammar. The chaotic life of natural discursive practice explains philosophy’s inability to solve problems. This disorderly element should be cleaned up by a regimentation of our language in order to allow philosophy to solve problems. Language and philosophy should become *formal*. Formalization is the planned economy of discursive practice. It is a utopian socialism of reason however because it is ground in the transcendent and universal relations between Thoughts and not in the material reality of reasoning in concrete life.

What of those anarchists reasoners who insist on being disorderly—such as the student who whilst accepting the premises nevertheless denies the conclusion of a ‘valid’ argument? What she says is false, and indeed, worse than false: necessarily false. She is defective (i.e. irrational) because she cannot perceive the correct logical form.

So, who cares if philosophers, logicians, and mathematicians see fit to formalize their rational worlds? Everyone else still lives and acts in the disorderly world of natural discursive practice. They don’t seem to be Thought-controlled via the formalization of logic. This deflection of the worry about logic’s control is belied by the age of computers and information. Formalized logic was necessary for computer programming. And the immaterial labor that is hegemonic in our world is driven by the structures of computer programs. These follow classical logic. The Common produced by immaterial labor in the twenty-first century is driven by the classical logic that is historically tied to the early twentieth century.

Frege’s justification of formalization by an appeal to the transcendence of logic fails because it cannot explain how material beings such as we could have any kind of access to the transcendent realm of Thought. Timeless Thought is supposed to ground meaning in formalized language, but we learn meaning in time and by virtue of those very discursive practices that are supposed to be regimented. If we learn meaning at all, then this apprehension is a material event. All we have are our bodies, linguistic inscriptions, linguistic sounds, and the presence of material situations to go on. We act in these material situations with these material objects and they are our discursive practice. And this is true even if we start to formalize our language. Formalization is inherently tied to its history and motivated by discursive practice. It reacts to elements of that practice that we find to be problematic.

Marx’s critique of utopian socialism is apt here. Frege’s idea of utopian discourse pays no attention to the actual material conditions of thinking, saying, and writing—although his production of an actual formalization arises out of the material/historical context of philosophical crisis at the turn of the last century. Frege’s practice, though not his theory, allows formalization to be what it should be: a historical moment in our thinking about thinking.

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4 Ibid.
The transcendent ground of the sovereignty of formal logic over rational discourse also fails at answering the problem of conflict. Perhaps the necessity of logical truth grounded in a transcendent abstract logical form gives us a normative necessity that cannot be had by appeal to the contingent truths of material existence. But pushing the ground of logic to such an abstract realm puts logical truth beyond what is materially obvious to everyone. But this necessity is external to our material world. The Fregean move makes the location of logical truth a sanctuary that is accessible to the initiated logician, but not to the work-a-day reasoner. So, why should my student be compelled by my assurance that the material conditional reading of sentences such as “If P then Q” is correct? She has no access to its supposed necessity. She still has no reason to trust the logician beyond his claim that this just is a logical truth.

Moreover, access to this transcendental sanctuary of logical truth yields different results and hence faces a problem of diversity analogous to that present in the philosophy of religion. Those who have entered the sanctuary—the logicians—come back with radically different ideas of the nature of the logic. Classical logic, relevant logic, intuitionistic logic, paraconsistent logic, etc., all compete in their claims to be the one true logic.

(Vienna circle’s position of immanence) Members of and those influenced by the Vienna Circle such as Carnap, Neurath, Hahn and Quine offered an alternative to the transcendental grounding of logic in their insistence on the immanent character of logical truth. This view grounds logic within the grammar of language. There is no getting outside the language. But then there is no getting outside logic. The move to a discussion of the immanent structure of reason in language is a positive one and seems right considering the materialist criticism of the transcendent grounding of language.

Quine’s is the most developed view of those offering an immanent grounding for logical truth. He says,

A logical truth is ... a sentence whose grammatical structure is such that all sentences with that structure are logically true. [...]

Sentences have the same grammatical structure when they are interconvertible by lexical substitutions. ...a logical truth is a sentence that cannot be turned false by substituting for lexicon. ...

We are concerned here not with substitution of some logically sophisticated sort, but with flatly grammatical substitution within our stated constructions; ...

[This] definition is still not transcendent. It hinges on the notion of a grammatical construction, or, in the complementary phrasing, the notion of lexicon. We have no defensible transcendent notion of construction or lexicon, but only a loosely related family of mutually more or less analogous immanent notions ...
Logic is, in the jargon of mechanics, the resultant of two components: grammar and truth. [emphasis added]⁵

Here the sovereignty of logic is based on the immanent features of a language. There is no appeal to a mind-independent, transcendent structure to which any language corresponds. Each logic acquires its sovereignty within a language, based on how its grammatical institutions were historically generated.

Given the little that we have said about Quine’s account so far, it might seem that his view of logical truth avoids the demand for formalization. But this is not true. There are unruly elements of our lexicon that we call ‘intensional’ elements—e.g., words like ‘necessity,’ ‘possibility’, ‘plausibility’, ‘belief’, ‘doubt’, etc.—that we must deport from our language. This is because the insistence on substitution in the definition of logical truth requires the language to be extensional. The necessity inherent in the transcendental grounding of logical truth drives a need to preserve central elements of a language that must reflect something beyond itself. So, Frege’s logic is intensional. The contingency present in the immanent grounding of logical truth permits us to freely deport unruly elements for the good of the language/logic as a whole. The contingent process of such deportation is formalization.

The immanent approach to logical truth answers the problem of conflict by denying that there can ever really be such a conflict. Quine says,

To turn to a popular extravaganza, what if someone were to reject the law of non-contradiction and so accept an occasional sentence and its negation as both true? An answer one hears is that this would vitiate all science. Any conjunction of the form ‘p . ~p’ logically implies every sentence whatever; therefore acceptance of one sentence and its negation as true would commit us to accepting every sentence as true, and thus forfeiting all distinction between true and false.

In answer to this answer, one hears that such a full-width trivialization could perhaps be staved off by making compensatory adjustments to block this indiscriminate deducibility of all sentences from an inconsistency. Perhaps it is suggested, we can so rig our new logic that it will isolate its contradictions and contain them.

My view of this dialogue is that neither party knows what he is talking about. They think they are talking about negation, ‘~’, ‘not’; but surely the notation ceased to be recognizable as negation when they took to regarding some conjunctions of the form ‘p . ~p’ as true, and stopped regarding such sentences as implying all others. Here, evidently, is the deviant logician’s predicament: when he tries to deny the doctrine he only changes the subject.⁶

Since logic in grounded immanently in the language and linguistic meaning is holistic, it follows that any change to the logic is a change to the meaning. Just as nation-state sovereignty is threatened by multi-national institutions, networks, and even dialogue, the sovereignty of logic grounded immanently in a particular language is threatened by inter-

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⁶ Ibid., p.81.
linguistic discourse, especially when the latter comes in the form of questioning the nature of that logic itself.

Anarchist reasoners who question the logic of our arguments don’t really know what they are saying. They mean nothing; they don’t understand what we mean. You can’t ask questions about the rules that making the very question itself meaningful.

Immanent logic can change. Quine acknowledges this. But since logic is a result of the contingency of our grammar, we have no reason to change it unless there is no other choice. The principle of minimal mutilation implies that we would rarely, if ever, change the logic of our language. Of course, this principle holds only after our formalization has eliminated those unruly elements of our grammar such as intensional contexts.

Minimal mutilation is problematic in several respects. It relies on a metaphor in which language is a web with a periphery that impinges on experience and an interior that is only indirectly affected by it. Logic is at the interior. So, logic will rarely merit revision because its revision causes so much damage to the overall structure of language.

Why do we think that logic is at the interior of our language? The concrete manifestations of logic in our world are the formalizations produced by Quine and others. Certainly these are peripheral to most work-a-day reasoners. They are not at the center of their practice.

Quine might respond that these formalizations are just expressions of structures or rules that really lie at the center of the work-a-day practice, even if such practitioners do not realize this. When work-a-day reasoners violate the principles of logic, they really violate the principle of their own practice. This move “reifies” the practice. The practice is no longer the material and immanent manifestation of the life of language. Instead, it is something that transcends the life of language. If so then the Quinean position isn’t all that different from the Fregean position of transcendence after all.

Why should we think that a minimal mutilation of the web is better? To do so is to hold to traditional discourse for tradition’s sake. It is to suppose that past theories already have a significant amount of truth and it is just a matter of making minor modifications. Why think this? The semantic paradoxes and the strange results in Quantum Physics might mean that there is something radically wrong with the whole structure of thought. Moreover, one might argue for a principle of maximal mutilation since it would allow us to try so many different possibilities of how to think over time. Maximal mutilation would lead to a greater chance of hitting on the truth.

Why should we allow our philosophy of logic to rely on the metaphor of a web of linguistic structure that only “impinges” on the rest of life at its periphery? This metaphor separates humans qua language users and humans qua social actors. On the contrary, language is a set of meaningful verbal outbursts and markings that are disparately distributed throughout a network of behavior. These outbursts and markings are not static but dynamic in structure, responding to action, affect and physical event. This “network” that includes action, affect and event could have a different center, nodes that compete for the center, or no center at all. For it has no tangible periphery; it takes in all of our lives. On such a view, understanding reason, i.e. logic, requires understanding what it means to be in life. Reasoning is a certain kind of lifestyle.
(Materialist reasoning) On the materialist interpretation of the history of logic and formalization, the reason for formalization must serve a purpose in the economy of thinking. In the era of the set of social relations that is Capital, philosophy finds itself in crisis. Philosophy has been primarily an activity between thinking persons that is linked to a leisurely form of life. First, in the tradition, it required that participants not be forced to sell their labor power. Second, since its core is a relationship between thinking persons, it does not produce items that can be readily assimilated to the commodity form. In capitalism, philosophy’s resistance to the commodity form must be remedied. There must be a philosophical product.

Modern philosophy, following the relations of capital, began to take on many characteristics that allowed it to be productive. In the first instance, Descartes modernized philosophy. He dispensed with philosophy’s need to be relational: one could do philosophy alone with little attention to history or context. The search for certainty was really a search for how the commodity form could manifest itself in the philosophical project. But the connections between Cartesian philosophy and capital need not concern us at this time. The question is how the formalization of logic contributes to the commodification of philosophy.

The commodity form requires abstraction from particularities in order to produce exchange value. In philosophy, the abstraction from content in terms of formalized argument allows the dead remnants (i.e., articles and books) of philosophical work to be evaluated similarly. Formalization, on this view, must not be just an instance in the philosophical relationship. Instead, either it must be universalized and fetishized in order to stand above and beyond philosophy itself or it must constitute the very conditions of thinking in our language. Formalized logic provides philosophy with the mathematical veneer of product. The products are philosophical doctrines as defended by philosophical arguments. These arguments need not be formalized. But behind the idea of a philosophical market of ideas, is the possibility of the formalization of each and every philosophical argument. You can “buy” this position or that. Some philosophers even produce shopper’s guides to various philosophical commodities. 7

Of course, formalization is not all that is needed. One must also have the correct assumptions to start with. And most say that philosophy can’t do much about whether we start with the correct assumptions. So, as a product, philosophy can only offer its logic: “If you start with these assumptions, then this is what you get.” Philosophical articles are actually advertisements for philosophical positions as grounded by logic in certain assumptions. Their values can be compared because the formalizability of their arguments can be compared.

(Reasoning as historical, actional, relational, and explosive) Rather than being an atemporal reflection of logical form or an immanent structure necessitated for linguistic meaning, reasoning is a temporal process, an action, and a practice in material life. Moreover, it is often explosive, anarchic, and dynamic. It is this explosion of reason that formalization seeks to control and order. Imre Lakatos offers insights into the nature of mathematical thought that yields a different model of reason that embraces the explosive

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nature of reason and opens up possibilities for a liberation of thinking from the fetishized formalism that dominates analytic philosophy.

Lakatos’s concept of rigorous reasoning is not based on the use of formalized rules. He advocates the method of proofs and refutations. In other words, Lakatos believed that when we set out to prove a mathematical conjecture we should also set out to refute it. We always start with a non-rigorous proof, i.e., a set of “lemmas” (or sub-conjectures) that are supposed to imply a certain conjecture. The refutation of the conjecture relies on the production of counterexamples to the conjecture and/or lemmas. Whether a counterexample refutes a certain statement is determined by the content of its concepts. But conceptual content, according to Lakatos, is partially determined by the process of producing proofs. The upshot is that the mathematical community that is engaged in the method of proofs and refutations has a choice about whether to accept a counterexample as a counterexample, i.e., by “contracting” or “expanding” its concept.

There are local and global counterexamples. A local counterexample is “an example which refutes a lemma (without necessarily refuting the main conjecture),” while a global counterexample is an example that “refutes the main conjecture itself.”

Given this, Lakatos says,

There are three possible types of counterexamples. [...] [T]he first ... is local but not global [...]. The second, which is both global and local, does not require any action: far from refuting the theorem, it confirms it. Now there may be a third type, which is global but not local. This would refute the theorem. (Proofs and Refutations, p. 43)

The process of refuting the theorem helps us to refine our proofs. A first-type counterexample requires that we replace the lemma that is refuted by one that is not. A second-type counterexample requires nothing since it, in effect, confirms the validity of the proof. A third-type counterexample requires that we add a new lemma that is also refuted by the counterexample, turning it into a second-type counterexample.

What is important in Lakatos’ view of the role of counterexamples is his acknowledgement that reasoning is essentially antagonistic and relational. I propose a proof and you try to “blow up” my edifice with a counterexample. You and I both have rational autonomy about what to do in reaction to your counterexample. My choice affects my concept, the latter of which is essentially historical and determined by the reasoning process itself.

After we have refined a proof in light of counterexamples (global and local) then we have what Lakatos calls a proof-analysis. For Lakatos, this historical process of revision is essential for the development of mathematical thought. So, the rigor of a

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8 Lakatos says, “I propose to retain the time-honored technical term ‘proof’ for a though-experiment – or ‘quasi-experiment’ – which suggests a decomposition of the original conjecture into subconjectures or lemmas, thus embedding it in a possibly quite distant body of knowledge” (Proofs and Refutations, p. 9).

9 For example, see Lakatos’ section on concept formation (Proofs and Refutations, Cambridge UP (1976), pp. 83ff).

10 Ibid, pp. 10–11.
proof-analysis depends on its history. This is in stark contrast to the concept of rigor as based on abstract formalization.

Given this background about the method of proofs and refutations, Lakatos defines rigor in the following way,

A proof-analysis is ‘rigorous’ or ‘valid’ and the corresponding mathematical theorem is true if, and only if, there is no ‘third-type’ counterexample to it. I call this criterion the Principle of Retransmission of Falsity because it demands that global counterexamples be also local: falsehood should be retransmitted from the naïve conjecture to the lemmas, from the consequent of the theorem to its antecedent. (p. 47)

The Principle of Retransmission of Falsity (PRF) is not the same as the demand that an argument be formalizable or that an argument’s conclusion necessarily follow from the premises. The latter are formal and semantic concepts and whether they apply is in a sense independent of our epistemic endeavors. This is because the validity or invalidity of an argument is a fact about the world and not a fact about our evidence for the premises and conclusion. However, Lakatos is interested in the historical process of how we come to a proof (i.e., the process of “discovery”) and the PRF must be understood in terms of this process. The PRF is an essentially historical concept: as long as there has been a process of attempted refutations and there is no third-type counterexample to our proof, the resulting proof-analysis is rigorous.

Conjectures are always both proved and refuted. And in the end, what matters is not whether the conjecture is proved or refuted. The process of proofs and refutations is itself the essence of reason. There is no product here, but a certain kind of life and relationship between prover and refuter. This relationship is in every way non-coercive since what I say and what you say is autonomous. Indeed, this autonomy is built into Lakatos’ concept of reason. It represents a philosophical life free of the commodity form and the control of the myth of formalization.

Do we abandon formalization? No! But we must recognize that formalization is a moment in the antagonism between prover and refuter. It must serve the relationship of philosophy and not the other way around.

To conclude, as with Quine, Lakatos realizes the immanent nature of logic. Unlike Quine, there are no boundaries on reasoning. There is no deportation of unruly elements and there is a free immigration of reasons and counterexamples. Moreover, all reasoning is local; each philosophical dialogue can result in different reasoning structures. Importantly, we are free to be philosophical nomads who wander across boundaries between communities of discourse or settlers who embrace common rational decisions. Material reason is produced by the various and diverse members of the multitude of thinkers.

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11 According to Lakatos, there is an “intrinsic unity between the ‘logic of discovery’ and the ‘logic of justification’.” And this is “the most important aspect of the method …” (p. 37).