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Dialectic and Indirect Proof

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Walter Zimmerli writes that Hegel's Science of Logic is both "a formal logic which by dealing with the semantics of metaphysics justifies itself' and "a metaphysics which legitimizes itself as a result of the self-justification of formal logic itself:"[1]

... it is not ultimately Hegel's theory of propositions that is placed at the center of critical reconstruction [of the Logic], but his doctrine of conclusive inference. The question of justifying logic raised in the Wissenschaft der Logik is not how we can assert truth, but how we can represent the truth of our assertions to an opponent who doubts them. It should not surprise us that, under these circumstances, nothing more emerges from Hegel's reconstruction of valid logic in the subjective logic than the traditional conception of the syllogism .... The function of legitimizing logic from the history of metaphysics ought also apply to classical logic. The argumentation-structure itself, however, transcends classical logic .... [2]

I quote these lines because I am in basic agreement with Zimmerli's perspective, which he presents as a correction of Hegel interpretations by Dieter Henrich [3] and Michael Theunissen [4] centering around the notion of the speculative proposition. The present paper is concerned to develop but one qualification. I do not find that Hegel's reconstruction of valid logic leads only to the "traditional conception of the syllogism." I maintain that it leads to a conception of indirect proof which constitutes the very "argumentation-structure" of the Logic; and to a concept of syllogisms which transcends the "classical syllogism" without" transcending formal logic.

In attempting to show this I shall clarify the particular concept of indirect proof required by the dialectic and an associated concept of deductive rationality. I have already pointed to the importance of a consideration of indirect proof in previous papers. In a 1975 paper I showed through a formalization of the opening sections of Hegel's Logic how the dialectic is deductively valid by an indirect proof,s In two 1976 papers I argued for identity between stretches of such dialectic in Hegel's Phenomenology and the immanent dialectic of certain stretches of human history and prehistory,s In a 1985 paper I introduced a distinction between rational and non-rational deduction in the course of presenting Hegel as a hermeneutic thinker reenacting the original deductive self-constructions of history.[7]

Building on the above results, here I shall clarify the particular concept of indirect proof which is the key to the Hegelian concept of dialectic, though Hegel himself never explicitly spoke of "indirect proof." Further, I shall lend what support I can to logicians who today find indirect proof to be the most natural (and hence spontaneously historical) form of deduction.

A plausible poetic account of the overall progress of the logic from being through essence to the self-concept in Hegel's Science of Logic begins with the suggestion that episodes in that development show a tragic dimension. There is a fatal flaw in every definition of the absolute as immediate being, or as abstract essence. But when we reach the logic of the self-concept and personhood, what seemed the tragic wasteland of metaphysics is retrospectively reinterpreted as the royal road to its triumph and vindication. To recognize tragedy in the pathos of the abstract rationalists of history--of Parmenides, the pre-Socratic cosmologists, the atomists, even Spinoza--is surely to recognize their greatness. A metaphysical will to command a whole and clear view

is awesome. It is sobering to behold the spectacle of uncommon intellect succumbing, in its quest for theoretical mastery, to one-sidedness and forgetfulness.

Yet the history of metaphysical theology has not stopped with metaphysicians of the abstractive understanding. Speculative metaphysics, which came into existence pre-systematically with Pythagoras, with Hegel was reborn in systematic form by incorporating a historical scale of abstract definitions of the absolute of which Pythagoras could know nothing. Hegel abandons himself heuristically to one after another of the dogmatic metaphysical systems which, for Kant, lacked any cognitive merit. For metaphysical sceptics, the history of metaphysics is at best tragedy (Kant) and at worst comedy (Carnap). For systematic speculative philosophy it is epic. Yet it is no ordinary epic. The heroes of this epic are not popular heroes with whom ordinary people identify. They are not men of action and high adventure. They are the exoteric heroes of theory~heroes because their labor has forged the self-identity and self-concept of the people even more than the popular heroes who have put this identity into action. They are the Rousseaus and the Aristotles who can be found lurking behind the Robespierres and Alexanders of the world, the Descartes and Lockes who constitute the logical inner essence of vast esoteric movements for the separation of church and state or for limited government. The heroes of the esoteric epic of philosophy and pure thought resemble in this respect the inaccesible heroes of tragedy more than the popular heroes of ordinary epic.

The history of philosophy is an epic of repeated tragic episodes down through the generations pursuing us like some hereditary curse. At last the unconscious and relentless connection between character and fate is made conscious: between the character of the abstractive understanding and its self-destructive destiny. Despite the final resolution, the tragic structure of each individual episode remains, rooted in passionate acts of absolutizing what is relative.

Most traditional analyses of even Hegel's logic often stop at a such poetic level, which is quite satisfactory as far as it goes. Yet what is also necessary is a logical analysis of the dialectic which arises from mental fixation on absolutized finitude. If the concept of tragedy serves to identify the passion which drives the dialectic forward, indirect proof as conceived by Zeno serves to identify the logical mechanism of this forward advance. The leading idea of the Eleatic Zeno proves to be as significant an historical presupposition of the Logic as that of Pythagoras who first conceived speculative philosophy as the microcosmic self-beholding itself in a macrocosmic mirror; as Sophocles' concept of tragic character; and as Joachim de Fiore's historical construal of the Trinity through the age of the Father to the age of the Spirit.

I shall first uphold the rationality of indirect over direct argument, and secondly distinguish Hegel's use of indirect argument in the Logic from its usual employment. It will become apparent that the greater rationality of indirect argument lies not in greater deductive strictness. The point is rather that if "rationality" is used in the Kantian sense implying autonomy or self-determination in decision-making, indirect argument appears, among forms of deduction, uniquely self-determined by its own progress. In other words, the motive in indirect proof is to solve the self-imposed problem of testing one's chosen assumption for contradiction, and to replace one assumption with an unrefuted one in the course of the dialectic. The progress of a dialectical sequence of indirect arguments appears internally motivated.

Reference to motivation may make the reader suspect a "psychologistic" approach to Hegelian logic. My position, however, is that Hegelian logic is not just psychology, that it contains strict deduction, but that at the same time it cannot be understood without considerations of motivation. It is a deduction which is internally motivated by the impossibility of resting with contradiction.

Whether or not the Hegelian dialectic is logically deductive has been long debated. In recent decades J. N. Findlay and Dieter Henrich have denied it.[8] Henrich holds that the Logic unfolds in a series of successor concepts in which semantic shifts preclude strict deduction. Findlay explains that the progress of advance is aesthetically "natural," though not logically "necessary." Charles Taylor holds that the dialectic of the Logic pretends to exhibit "strict argument," but he stops short of attributing a claim of deductive necessity to Hegel.[9] Yet Hegel himself repeatedly speaks of dialectical advance not only as scientific but as necessary and deductive. [10] I propose an interpretation which takes Hegel at his word and allows us to vindicate the claim of deductive necessity. Yet the deductive necessity in question will at once prove to be free, self-moving, not externally constrained.

As a consequence of the present interpretation, dialectical logic is not to be taken to be essentially different from ordinary formal logic. Some neo-Romantic interpreters of Hegel's logic, such as Sartre in the Critique de la raison dialectique, have claimed that the logic of dialectical reason is incommensurable with the formal logic of the "analytical" understanding. For those within this neo-Romantic school who defend dialectical logic, the assumption of such a difference has led to the claim that dialectical logic is more powerful than ordinary logic. Sartre considered the dialectical logic by which we grasp human existence to be not only irreducible to formal logic by which we think natural things but even superordinate to it, in that it overreaches formal logic while surpassing it. In his distinctly favorable Critique of dialectical reason he writes:

The goal of my research will thus be to establish if the positivistic reason of the natural science is indeed the same reason found in the development of anthropology, or if the knowledge and comprehension of man by man implies not only specific methods but a new reason, that is, a new relation between thought and its object. In other words, is there a dialectical Reason? .... The modern scientist [savant] takes reason to be independent of any particular rational system: for him, reason is mind as a [formal agent of] unification [without content]. The dialectician, for his part, places himself in a [particular] system: he defines a reason. He rejects a priori the purely analytical reason of the seventeenth century; or, if one wishes, he integrates it as the first moment of synthetic and progressive reason.""

Hegel's detractors, on the other hand, tend to conclude from the same alleged gap between ordinary and dialectical logic that dialectical logic, not being the usual formal logic, is an essentially bogus enterprise.[12] My own position is that dialectical logic is a particular unconscious use of ordinary formal logic. It has been applied first in the original self-construction of human history, and secondly in the hermeneutic reconstruction of that same history. Dialectical logic is not pure formal logic, but only because it is a specific application of such logic to a specific content. It is not, as Sartre would have it, that dialectical reason

overreaches analytic reason (formal logic); rather, analytical reason which overreaches (includes, analytically deconstructs and constructs) dialectical reason.

Formal logic is often considered from a Hegelian perspective to be a province of the abstractive understanding because it abstracts and separates the form of propositions and arguments from their semantic content. But such separation may only be a provisional heuristic stage in the course of a larger construction, and in that case the choice between the "abstractive understanding" and "concrete reason" might turn out to be a false one. A similar comment applies to logical discourse in general, which begins but need not end by separating the subject of discourse from the predicate.[13]

The understanding's power of holding an abstract term to subsist by itself without a correlative may be understood as a heuristically necessary part of the life of reason viewed as the power of discovering the relations of terms precisely through their denial. To suppose that the sun can possess gravitational force without any other body existing in which its force is manifested proves self-contradictory. [14] The general property of having the force of gravity is the relational property of attracting something else. But what is attracted is not just something else in general. Since nothing exists merely in general, what has gravity refers to something else in particular. Yet the sun fails to refer uniquely to the actual planets it happens to have (and not others) simply by the fact that it has gravitational force. Its reference to just these planets is discovered contextually, not deduced, from the general description of having gravitational force. The sun's relationship to earth in particular can be discovered upon noting the contradiction of supposing the sun to exist by itself, but it cannot be deduced. Noting this contradiction is a prod to discovery. In temporarily supposing the sun contradictorily to have gravity by itself without anything in its field of attraction, the understanding with its "abstractive" and "separating" function[15] has heuristic value in a dialectical "voyage of discovery," and the collapse of the supposition proves there was something to discover.

The distinction between reason and the understanding lapses into opposition and contradiction between the two only if the understanding falls into such an immoderate fixation on its absolutized terms (and descriptions) that it is incapable of yielding to rational self-criticism. This indeed happens, according to Hegel, in human history as a result of the fall. What Hegel calls the "fallen understanding"[16] is incapable of saving itself; it must be saved by the "grace" of a reason which transcends it. However, even when the understanding yields to rational criticism, the distinction of terms abstracted by the understanding is in no way erased. In particular, formal logic is capable of constructing and stating the deductive form taken by the rational deabsolutization of terms and of their general descriptions. We must not suppose that any harm is done thereby to reason. On the contrary, reason exists not just in itself as an instinct but in and for itself only by passing through the abstraction of form from content.

Hegel himself traces the origin of dialectic to Zeno, originator of indirect proof.[17] It is admitted by all parties that contradiction plays a key role in dialectical advance. But from a contradiction either nothing at all follows or everything. In either case, we can conclude nothing in particular. From the recognition of contradiction in indirect proof, on the other hand, something in particular deductively follows, namely the falsehood of the provisional assumption with which the proof began.

The limitation of the usual "negative" dialectic according to Hegel is that it produces only negative results,[18] e.g., the denial of motion. However, every negation is also a positive determination.[19] If an object is not red, it has some other color quality which can not be deduced but must be found by inspection. For Zeno, if an object does not move, it has some way of being immobile which can be discovered by meditation on it as simply being. It is true that indirect proof by itself does not go beyond negative results. But we shall find that it can contribute to positive results by giving rise to further indirect proofs which test ever more comprehensive definitions of the absolute. Thus the negative result at the beginning of the Logic that the absolute is not pure indeterminate being is followed by the new positive assumption that it is mere determinate being. In vindicating the deductive character of the dialectic interpreted in terms of indirect proof, it is the transition between the scopes of successive indirect proofs and their provisional assumptions which becomes crucial.

It is crucial, in understanding the deductive character of the dialectic, to see that, even by the ordinary concept of deductive proof, the dropping of one assumption in indirect proof and the introduction of another do not interrupt the deductive progress of the argument. If one assumption can be introduced and suspended within a single deductive argument, so can a hundred assumptions. Thus if indirect proof is once admitted as part of the arsenal of logic, deduction no longer necessarily requires that every line in the deduction deductively follow from one or more previous lines. Assumptions in indirect (or conditional) proof do not follow in this way. Though the overall proof is strictly deductive, the introduction of an assumption line cannot be justified deductively, but this fact does not detract from the strictness of the deduction as a whole. Following up the Parmenidean assumption that the absolute is mere indeterminate being with a totally unrelated assumption (e.g., the absolute is Cleopatra's nose) would leave the purely deductive necessity of the argument unimpaired.

Thus when Charles Taylor writes that "Hegel is anxious to take in all the terms which could plausibly be thought of as categorical," but that "the transitions are not always compelling," and that "there are many detours . . . where one might have expected an immediate leap to a higher category"[20] he may indeed be getting at an important point about the Logic. But it is not really a criticism to the effect that the dialectic fails to be deductive. What Taylor calls attention to, I believe, is the fact that there is a kind of rationality expected in the progress of deductive argument which goes beyond deducibility.

There are steps that can be taken in the course of deductive argument which are quite irrational--in that there is no good reason for taking them. Deductively, there is of course an endless series of statements which follows from any given statement. Most of the lines of deduction which follow from a given statement or conjunction of statements are gratuitous, i.e., rationally unmotivated. Thus from a given statement one could amuse oneself deducing an unending series of double negations: p, .:----p, .: ----p, ... On the other hand, transitions from one category to the next, from one provisional assumption as to what the absolute is to another, may function rationally within what overall is a deductive indirect proof even though they themselves are never justified deductively.

Let us now see how this works in the Logic itself. In the opening sections of the Logic the proposition that the absolute is determinate being follows deductively from the negation of the

prior assumption that it is mere indeterminate being. But it is the assumption that the absolute is by definition mere determinate being which is the rationally motivated successor assumption to the negated assumption that it is mere indeterminate being. The new assumption asserts not simply that the absolute is what it has been deduced to be (namely, determinate being), but also that it is no more than what it has been deduced to be. This claim that the absolute is only what it has been deduced to be--only determinate being--cannot be strictly deduced. Yet it is nevertheless a justifiable and rational heuristic assumption to make on the basis of what has been deduced. There is heuristic rationality in not assuming that the absolute is anything which it has not been proven to be, in order force it to show that it is more. It may be much that it has not been proven to be. But in that case the assumption to the contrary plays a function in the progressive discovery of all that it is.

Denial of an undiscovered or unstated truth elicits its discovery. Reason is polemical. The way of truth is the correction of error, and the very first error is the fear of error[21]--in the present case the fear of venturing beyond what has been deduced. Indirect proof-itself a type of deductive proof--requires that we overcome the fear of assuming what is not deduced, and even of what is false. "Reason is negative and dialectical because it dissolves the determinations of the understanding into nothingness."[22] But if reason is essentially error-correcting, indirect proof appears as the only rational form of deductive proof. There is nothing necessarily rational about deduction as such. Going beyond what has been deduced about a subject by absolutizing that description, by restricting true description within the limits of what has been deduced, is a strategy for inciting the progress of rational deduction in indirect proof.

Hegel qualifies dialectical deduction as "immanent":" . . . there can be no question here of a confirmation founded on the authority of ordinary understanding: in the science of the concept its content and determination can be vouched for only by the immanent deduction which is contained in its genesis."[23] Only a sequence of indirect proofs as conceived above is immanently deductive and internally motivated. Indirect proof is not only rational. It is not only the ruse of reason. It is reason. Reason is a ruse. Quine would seem to confirm the point when he recognizes that indirect proof, though intuitively "snaring and trapping.[24] and even "perverse,"[25] is really more "natural"[26] than direct proof. It is more natural for the premises to be given and the conclusion to be sought than for the conclusion to be given and the proof to be sought: "Downward-trending implication, in which the implying schema is given and the implied one is sought, comes more easily than the opposite."[27]

To be rational is not necessarily to have the truth, but it is to be capable of advancing towards the truth. Indirect deduction is the only sort of proof that can lay claim to being a logic of discovery, the logic of the actual history of inquiry in which we start out without any definite idea as to where we will end up. Again, if the purpose of science is the revision of belief, falsification (Popper), indirect proof is the only form of deductive argument which expresses this purpose: beginning with the assumption that the conclusion is false, it ends with the belief that it is true.

Indirect proof is also the only kind of proof that captures the dimension of reflection on oneself which Findlay correctly perceives to be essential to the Hegelian dialectic, so that the dialectic follows throughout "a method of higher-order comment.[28] Findlay assimilates this method of higher-order comment to the object language-metalanguage distinction. The standpoint of

determinate being, for example, arises through metalinguistic reflection on the Parmenidean object language. Since deduction presumably transpires within a single language, Findlay's interpretation is aimed at precluding a deductive interpretation of the dialectic. However, indirect proof is an exception to the rule that deduction proceeds entirety at one linguistic level. It is a form of proof containing self-reflection. For the dropping of an assumption in indirect proof requires thought to reflect on a previous line of that same proof.

It may of course be replied that all deduction of a conclusion requires thinking to "reflect" on a previous line or lines in the deduction. But the case of indirect proof is significantly different because in this case inference does not merely progress by referring to previous premise lines of the deduction; rather, it propels itself foward by reflecting on a previous line--the assumption line--in a new light. The discovery of contradiction subsequent to the introduction of the assumption casts a new light on the assumed proposition, altering one's propositional attitude towards that proposition. The proposition is no longer assumed but now denied, asserted as false. The object language in which the assumption is stated thus itself yields to a metalanguage (as well as a metatheory) when it is discovered that the assumption is contradictory. Granting that "The sentence 'p' is false" is a metalinguistic statement, the point I am making is a special application of a point which applies to all refutation.

If we compare indirect deduction with direct deduction, we find that direct proof implicitly divides us into teachers and pupils. In this sense, it is an externally directed form of deduction which is authoritarian rather than self-moving, rational, and autonomous. We may distinguish two situations within the general field of authoritarian deduction. On the one hand, if the conclusion as well as the premises are given beforehand, the deduction is a school exercise set by a teacher. The teacher sets a deductive task before the pupil, and the pupil accepts the deducibility of the conclusion on the teacher's authority.

On the other hand, if the conclusion is withheld to the end, to follow the steps of the direct proof implies step-by-step subjection to the external will of the argument's author. In the former case the pupil finds his or her own way to a given conclusion. In the present case, one follows a given path set out before one to an unknown conclusion. In the first case progress is made by negative feedback. Repeated external contrasts are made between the result of the deduction thus far and the goal. Deduction does not proceed merely by internal reflection on the deductive result thus far. This is equally true in the second case. The difference is that the pupil who follows the argument may not be informed of the diminishing contrast by the instructor who leads. The pupil is constrained to follow without any clear idea of the approaching end in view.

Where direct proof is externally determined by a conclusion which is not arrived at merely by mere reflection on the given premises and assumption, indirect proof moves forward to the goal pushed from behind by the need to analyze what has already been said, to escape contradiction, and to reestablish a new logically testable assumption. It does not advance pulled forward towards a goal already known to some teacher. As we have noted, from a given line in a deduction, formal logic alone warrants proceeding in an infinite number of directions. In non-immanent deduction one who follows the argument proceeds in a given direction only on the authority of the author of the argument. The follower must show faith that the premises will lead to a conclusion which is not merely deductive but interesting.

In Hegel's immanent deduction thought does not "follow" an argument. The argument creates its own pathway, without being externally led. Ideally, Hegel's reader is called upon to originate the argument of the dialectic as much as Hegel, or as much as the history of philosophy which both Hegel and his readers reenact in its essential core at the level of pure thought. This is what Hegel's call on us to abandon ourselves to the life of the object means.[29] Each line of the argument is adopted, not on anyone's authority, nor merely on evidence that it follows deductively, but on evidence that deducing it is well-motivated within a specific goal-direct inquiry--directed with respect to the goal of defining the absolute.

If we place ourselves within the scope of some assumption defining the absolute, the dominant motive is to test the assumption to see whether it generates a contradiction. Polemically, it is to defend or deny the assumption. Thus on a conscious level we may distinguish apologetic and skeptical purposes in using indirect proof. The longer an assumption survives the search for contradictory consequences, the better confirmed it is, the more apologetic its use becomes.

But indirect proof is not always something which we do. It is not always a matter of what Hegel calls subjective syllogizing[30] or purely external argumentation (Rasonnieren). It is not always an argument form which we consciously deploy in order to confirm or refute, ensnare or entrap. We can be caught up in an indirect proof without even knowing it, headed towards a conclusion which neither we nor any external instructor realizes. It might be more accurate in such a case to say that indirect proof deploys us as the unwitting vehicles of its advance. Even if we become aware of the general dialectical structure of the progress of thought, this does not make us aware beforehand of the dialectic's specific point of arrival. At most we become willing participants in an open-ended process of inquiry in which we test belief systems, pursue internal criticism, ferret out contradictions, and look for motives for marking off premises from assumptions at one point or another--all the while expecting the ruse of reason to play occasional tricks with us. Indirect proof is the only kind of formal argument in which one may think one is proving one proposition (e.g., the postulate of parallels) while in fact one is helping prove something quite different (e.g., nonEuclidean geometry). Finite intentions achieve the very opposite of their intended effects.

An oft-repeated Hegelian critique of formal logic to which we have already alluded is that it considers form apart from content, and thus is the work of the abstractive understanding. But indirect proof escapes this criticism of other forms of deduction. For it is the form of deduction which content-filled deductive argument naturally and unselfconsciously assumes in actual inquiry. In the context of discovery, it is not an external logical form subjectively imposed on the content of the argument by a logician for purposes of elegance or economy of reconstruction.

In fact, indirect proof is a deductive strategy rather than a particular argument form. Many forms of direct proof can occur within indirect proof, in the scope of an indirect proof assumption. And if there is no initial awareness where the line should be drawn between premises and assumptions, direct proof may have a context of indirect proof which is not apparent, or not yet apparent.

Needless to say, the dialectic of the Logic is not just any indirect proof. It is developed in the context of a program of inquiry, the quest for a definition of the absolute. The assumptions tested are all proposed definitions. Each definition except the first is derived by limiting the absolute

heuristically to being what thus far it has deductively been found to be. And each definition except the last is refuted by discovering that what it has been deduced to be necessarily implies that it be still something more. Every enactment of a dialectical cycle thus includes the discovery of a further true premise of the deduction. This new introduction is polemically motivated as a coherence-saving reanalysis and expansion of the established defining description of the absolute.

In the particular conditions of its existence the absolute always proves to be more than what even a true definition of it states or specifically implies. The question is only whether this surplus is recognized or not. Generally, abstract definitions deny such a surplus, while concrete definitions recognize it.[31] Whatever the absolute is deductively beyond a given definition is in another sense included in the definition--as cats are included in the definition of animals or particular colors in the concept of being colored, by way of the specification of a genus or determination of a determinable rather than by deduction. Yet each false definition of the absolute offered by the abstractive understanding in the logics of being and essence is falsely assumed to describe it completely. By contrast, definition by speculative reason in the logic of the concept (the last part of the Logic) defines it truly, though incompletely: the absolute under such a definition overreaches all that is, but only on condition of being determinable only through it.

The absolute is said, in the various abstract definitions of it, to be merely that which has pure being, merely the infinite, merely the aggregate of mutually exclusive ones, merely substance, etc. If the absolute were said to be essentially the One but accidentally many, we would have to admit something apart from the absolute to which it owes its accidents, where in fact there can be nothing apart from the absolute. Either the many as such is not, or it is reducible to some specification of the One. Each definition of the absolute--of that outside of which nothing is-- purports either to explain deductively all actual facts about what is, or to embrace all that is as so many particular non-deducible determinations of the absolute's determinable general character.

The negation of an initial abstract definition of the absolute assumed to be complete is derived by showing that it itself implies a further specifying description of the absolute beyond itself, so that the initial definition fails to be fully comprehensive and coherent. To use again the familiar example from the beginning of the Logic, since to be indeterminately is also to be determinately, it is not the case that the absolute merely is without being anything in particular. A consistent analysis of indeterminate being, a property which Parmenides absolutized as the sole property of the absolute to which all others are reduced (or from which all others are deduced), requires its reformulation as the indeterminate (undifferentiating) property of having some determinate (differentiating) property. The property of having indeterminate being is contradictory if not conceived as the property of having some determinate property.

It is true that Hegel, while claiming the dialectic to be deductive, denied that it could be adequately analyzed in terms of formal logic.[32] But the reason is surely that the formal logic which Hegel knew in his own time was the Aristotelian logic of the syllogism. Aristotle, as we know, distinguished science from dialectic in that science alone starts off from true premises, and that dialectic or indirect proof was thus considered unscientific. Formal logic today has caught up with Hegelian logic, which starts out with false assumptions, by incorporating the method of indirect proof, overcoming the Aristotelian prejudice against it. Formal logic has thus overcome

its original Aristotelian-based prejudice against the "scientific" status of the Hegel's dialectieal science of logic.

In his treatment of the syllogism, Hegel endeavored to demonstrate the inadequacy of the Aristotelian "syllogism of the understanding," and to show indirect proof to be essential to a truly "rational syllogism." Generally, an Aristotelian syllogism of the understanding abstracts from the material content of terms, which may be entirely unrelated; while a rational syllogism does not abstract from content. It concludes that terms which have been contradictorily separated are related, thus overcoming the contradiction. Hegel used the term "syllogism" generally as synonymous with a three-termed argument (Schluss) containing three propositions, thus opening the door to non-Aristotelian truth-functional syllogisms, and to "rational" syllogisms of indirect proof, such as the following gloss of the transition from the logic to the philosophy of nature in his own system:

"The absolute is merely pure thought by itself (IP assumption). All that is mere pure thought has been abstracted from nature, its other. Therefore, the absolute is not merely pure thought by itself, but is pure thought only in abstraction from nature." The three terms here are: the absolute, pure thought, and that which is abstracted from nature. This is obviously not a classical Aristotelian syllogism. It has the form: 1. All P are merely S. 2. All S are R. 3. Therefore, it is not the case that all P are merely S; rather all P are both S and R.

If my own exposition has served its purpose, along with certain bracketed interpolations it should in the end make Hegel's own words more intelligible:

Such a Syllogism [as Aristotle recognizes] contains reason, but in utter notionlessness,--the formal syllogism of the understanding. In it the subject [of the conclusion, e.g., "Socrates" in the judgment "Socrates is mortal"] is coupled with an other character [the middle term, e.g., "human," a character other than the major term "mortal"]; or the universal [the major term] by this mediation subsumes a subject ["human"] external to it [to the major term]. In the rational syllogism, on the contrary, the subject is by means of the mediation [the particularizing middle term] coupled with itself. ["Socrates the man contradictorily abstracted from the predicate "mortal" by IP assumption is, precisely by being human, more coherently and concretely reconceived as the same Socrates who is mortal in general only by being human in particular.] .... In the following examination [in the Encyclopaedia], the Syllogism of Understanding, according to the interpretation usually put upon it, is expressed in its subjective shape; the shape which it has when we are said to make such Syllogisms. And it is really only a subjective syllogizing. Such Syllogism [i.e., syllogistic reasoning more generally] however has also an objective meaning; it expresses [discloses by IP] the finitude of things [i.e., the explicit contradictoriness under which we initially and conventionally refer to things] ...."[33]

The rational syllogism of indirect proof is initiated wherever an organic whole undergoes internal self-division through the abstractive understanding, wherever "the object.., breaks up into distinct parts, each of which is itself [what it is through] the totality," so that "the object is the absolute contradiction between a complete independence of the multiplicity, and the equally complete non-independence of the different pieces."[34] The conclusion of the rational syllogism heals this division. For example, "as regards the action of the end [teleological action],

. . . in the [non-academic] syllogism [of real-life experience], which represents that action, and shows the end closing with itself by the means of the realization [since an end is not a true end if there are no means to its realization], the radical feature is the negation of the [apparently independent] termini [falsely absolutized apart from one another by IP assumptions]. That negation is the one just mentioned both of the immediate subjectivity appearing in the end as such, and of the immediate objectivity as seen in the means and the objects presupposed."[35]

There is sufficient reason, I think, to question Zimmerli's claim that, while Hegel's "argumentation-structure" goes beyond the traditional syllogism, "nothing more emerges from Hegel's reconstruction of valid logic in the subjective logic [Book Three of the Logic] than the traditional conception of the syllogism." More importantly, we have seen how Hegelian logic is assimilated to ordinary formal logic. Dialectical reason is not external to analytic or formal reason. However, the role of indirect proof in both dialectical logic and formal logic demonstrates how both go beyond the application of Aristotelian formal logic.

NOTES

[1]. Walter Zimmerli, "Is Hegel's Logic a Logic?" in Hegel and His Critics, edited by William Desmond (Albany, NY: State University of New York Press, 1989), p. 192.

[2]. Ibid., p. 201.

[3]. Dieter Henrich, "Formen der Negation in Hegels Logik," Hegel-Jahrbuch (1974), 245-56; "Hegels Grundoperation," Der Idealismus und seine Gegenwart (Hamburg: Felix Meiner, 1976), pp. 208-30.

[4]. Michael Theunissin, Sein und Schein. Die kritische Funktion der Hegelschen Logik (Frankfurt am Main: Suhrkamp, 1980).

[5]. Clark Butler "On the Reducibility of Dialectical to Standard Logic," The Personalist (1975), 414-30.

[6]. Clark Butler, "Hegel and Freud: A Comparison," Philosophy and Phenomenological Research (1976), 506-22; "Technological Society and Its Counterculture," Inquiry (Spring 1975). [7]. Clark Butler, "Hermeneutic Hegelianism," Idealistic Studies (1978), 121-35.[8]. John N. Findlay, Hegel: A Re-Examination (New York: MacMillan, 1958), 55-56; Dieter Henrich, Hegel im Kontext (Frankfurt am Main, 1967), pp. 95-157, e.g., p. 143.

[9]. Findlay, ibid., p. 71; Charles Taylor, Hegel (London: Cambridge, 1975), p. 219.

[10]. G. W. F. Hegel, Encyclopaedia of Philosophical Sciences, no. 42; Wissenschaft der Logik, ed. G. Lasson (Hamburg: Felix Meiner, 1932), I, 7; II, 219.

[11]. Jean-Paul Sartre, Critique de ia raison dialectique (Paris: Gallimard, 1960), pp. 10, 119. My translation.

[12]. See, for example, Charles Hartshorne, "Hegel, Logic, and Metaphysics," CLIO, vol. 19, no. 4 (Summer 1990), 345. "Hegel held that there is a philosophical logic beyond ordinary formal logic .... I think the task [he undertook] must be redone and with more respect for and in closer relation to ordinary formal logic .... "

[13]. "The general nature of the judgment or proposition, which involves the distinction of subject and predicate, is destroyed by the speculative proposition." G. W. F. Hegel, Phenomenology of Spirit, trans. A. V. Miller (London: Oxford, 1977), p. 38; Phanomenologie des Geistes, ed. J. Hoffmeister (Hamburg: Felix Meiner), p. 51.

[14]. Encyclopaedia, no. 126.

[15]. Logik I, 26.

[16]. "Review of C. F. Goschel's Aphorisms," trans. C. Butler, CLIO, 18 (1989), 383.

[17]. G. W. F. Hegel, Samtliche Werke, edited by Herman Glockner (Stuttgart: Frommann, 1927-1968) vol. 17 (Lectures on the History of Philosophy, vol. I), 324. 324.

[18]. Encyclopaedia, no. 81.

[19]. Logik I, 102.

[20]. Taylor, 23.

[21]. Phenomenology, 47; Phianomenologie, 64.

[22]. Logik 1, 6.

[23]. Logik 2, 219.

[24]. Willard van Orman Quine, Methods of Logic (Cambridge, MA: Harvard University Press, 1972), p. 226.

[25]. Ibid., p. 231.

[26]. Ibid., p. 227.

[27]. Ibid., pp. 226-27.

[28]. J. N. Findlay, "Comment" on my "Hegel's Dialectic of the Organic Whole," Art and Logic in Hegel's Logic (Atlantic Highlands, NJ: Humanities Press, 1980), p. 234.

[29]. Phenomenology, 32. Phanomenologie, p. 45.

[30]. Encyclopaedia, no. 182.

[31]. Logik 2, 451-53. This section chiefly treats abstract, arbitrary, or external definition. Concrete definition is internal and objective self-definition, as in the lion's self-definition by its claws, or as in a person' s self-definition by the choice and execution of a life-project. Definition of the absolute is also self-definition.

[32]. Encyclopaedia, no. 182.

[33]. Enc. no. 182.

[34]. Enc. no. 194.

[35]. Enc. no. 204.