as a medium that inevitably distorts; he can take it rather as a system of signs, 'evoking' meaning rather than 'constituting' it. Rosen's chapter on language is a splendid example of clear insight and concentrated discussion; the references it makes to Hegel's theory of art are particularly apposite. The frequent comparisons between Hegel and Kant are also impressive. Rosen makes clear that Kant was already familiar with the problems about thought and its presentation that concerned Hegel, but drew back from any Hegelian solution of them because of his commitment to what he called in one place 'our discursive image-requiring understanding'. Rosen succeeds again in showing the continuity between the account of the transcendental subject in the first Critique and Hegel's theory of the Idea as constituting the objective world. What Kant tried to express in terms of synthesis Hegel dealt with by reference to the activities of the Notion. It is hard, however, to believe that Hegel 'misread' Kant to the extent of supposing that his own content-producing subject is identical with the Kantian unity of consciousness, the more so as Kant went out of his way to exclude the possibility. The truth seems rather that Hegel thought it must be there in embryo, since it had to be present for the doctrine to be intelligible, thus reading his own view into a text he knew would not allow of such an interpretation. If this is correct, it is one more example of fraudulent 'immanent critique'.

Two things in particular are striking about Rosen's work: his complete mastery of the relevant texts, and the way in which he goes straight to the point and settles an issue. The swiftness of his thought may have had an adverse effect on the clarity of his presentation, for it is responsible, I suspect, for a number of passages which are only marginally relevant to the main undertaking, including the introductory chapter on the interpretation of past philosophers and the long essay at the end on the negative dialectic of Adorno. The first is an interesting item in itself, but is not needed for the argument of the book; the second is brought in as if it were intended to throw light on Hegel, but ends by saying that recourse to Hegel is necessary if we are to understand Adorno. It is there, I suspect, because Rosen is fascinated, amongst other things, by contemporary German philosophy. In this way as well his remarkable book stands out clearly from others on its general subject.

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Gotthard Günther, Idee und Grundriss einer nicht-Aristotelischen Logik, and Beiträge zur Grundlegung einer operationsfähigen Dialektik, 3 volumes. Hamburg, Felix Meiner Verlag, 1976-80.

It is both one of the oldest and one of the most persistent criticisms of Hegel's Logic that it violates - and that it exploits its violation of - the laws of logic. And, indeed, much of what Hegel writes would seem to support such a charge.

To speak, as Hegel does, of 'the unity of what is and what is not different ... the identity of identity and non-identity'; to assert that 'being and nothing is one and the same' (and then to add 'the opposing proposition "being and nothing is not the same" which is equally expressed above'); to claim that the very 'method of truth' is both 'analytic' and 'synthetic' - does not all of this suggest an author who, like the White Queen, can maintain six impossible things before breakfast?

Yet it is fundamental theorem of traditional logic, Hegel's critics point out, that from a contradiction any proposition whatsoever can be derived. So

the fact that Hegel's dialectic generates striking conclusions is hardly a sign of its merit; it is just what one would expect from such contradictory beginnings.

The classic version of this objection is, undoubtedly, Karl Popper's 'What is Dialectic?' (Mind, 1940). While Popper does not deny the importance of contradiction in reasoning - it is fundamental for his own 'method of trial and error' - its role, he argues, is simply heuristic. With the structure of a scientific theory itself is has no place: 'Once a contradiction were admitted all science would collapse.'

The very fact that contradictions undermine structure gives dialectic this heuristic role: the presence of a contradiction shows that a theory is radically unsound and that it is time to look for a new one. Dialectic works, for Popper, against the fulcrum of logic, as it were, and so the assimilation of one to the other is a crucial fallacy: 'It is ... about as inappropriate to take dialectic as being part and parcel of logic, or else as being opposed to logic, as it would be to take, say, the theory of evolution.'

By now the conventional counter to Popper's objection is quite familiar in the literature. It is an argument made natural by Popper's own contrast between logic and dialectic. If it can be shown that he is wrong about Hegel's use of dialectic, and that Hegel does not propose dialectic as a substitute for the traditional logician's principles, then dialectic will be as safe from the logician as is, in Popper's example, the theory of evolution.

In support of this we may note that Hegel, in fact, offers no criticism of the traditional rules of deductive inference. Deduction has, indeed, he says, an essential role in 'mathematics and any other science of the understanding' (Philosophy of Right). But deduction is essentially limited: 'this deductive method of the understanding has nothing whatsoever to do with the satisfaction of the demands of reason or with true science'. In deductive reasoning every conclusion depends upon premises which (at the price of a regress) cannot themselves be the outcome of deductive reasoning. It belongs, therefore, only to 'extreme cognition'.

But why, then, does Hegel describe his central work as a science of logic? The answer is simple. Hegel is not concerned with logic in the sense that this implies a restriction to the study of deductive inference. Hegel's logic combines the Greek idea of the logos (the idea of a rational intelligence permeating reality) with Kant's 'transcendental logic' - a study which deals with what form the reality we experience must take in order for certain concepts to be necessarily applicable to it.

Taken together, these two ideas project a task for Hegel's 'logic' much more ambitious than that of mapping the routes which connect true premises and true conclusions: they suggest an a priori study which tells us, at the same time, something about the essential structure of reality. Modern commentators have been more concerned to assess such transcendental claims than to search in Hegel's Logic for a formal calculus.

Gotthard Günther's Contributions to the Foundation of an Operational Dialectic - now presented in three hefty volumes by the Felix Meiner Verlag - thus represents a considerable exception to orthodoxy. Günther's case for the mutal relevance of formal logic and dialectic has two elements.

There is, first, the claim that the central concern of Hegel's logic is ontological - common ground between Günther and the majority of contemporary commentators - and that, specifically, it is concerned to give expression to the fundamental and distinctive role played by subjectivity. What is more, this role can be articulated in the form of logic: ' ... the datum of self-reflection (consciousness) is fully amenable to formalisation.'

Hence, he thinks, a connection runs directly from Hegel's dialectic to twentieth-century cybernetics; for: 'It seems to be beyond controversy that the novel science of cybernetics involves the problem of subjectivity.'

To this claim Günther adds a second: no logic is simply an abstract calculus; they all carry within themselves implications about the nature of the reality with which they can deal: 'A system of logic is a formalisaton of an ontology.'

Günther's understanding of Hegel is demonstrably mistaken. Although it is true that something like the concept of subjectivity is fundamental to Hegel's account of the structure of reality, it is a conception (as Hegel states explicitly in the Introduction to the Science of Logice) which has passed beyond the level of anything one could properly call consciousness or self-reflection: '... this activity should no longer be called consciousness. Consciousness has within itself the opposition between the Ego and its object, which is not present in that original activity ... (Thought) is here to be taken in the absolute sense as infinite thought, not affected with the finitude of consciousness ...'

Günther is evidently a subscriber to that school of Hegel interpretation (by no means extinct, as the writings of Michael Theunissen have recently shown) which reads the Science of Logic as if it had been written by Fichte.

His connection of logic and ontology raises more complex issues, however. The idea is not unfamiliar to modern logicians. (One thinks of Bertrand Russell's claim that it was the traditional logic, with its formal structures based on subject and predicate, which prevented philosophers from coming to terms with the ontological implications of the new physics.) And it is true that there are phenomena which no existing logic deals with adequately (to give an example: there is no real problem as to how a logic could model the structure of belief-statements).

Nonetheless, it is important that modern logic, which is a formal symbolic theory, should be distinguished from any particular interpretation of its symbols. At the heart of modern symbolic logic are a syntactic system of 'well-formed formulae', built up by certain rules from basic symbols; and a proof-relation, $\vdash$, which developed to hold between sets of formulae. This proof relation is defined quite abstractly, in terms of the structure of the formulae alone - that is, without any reference to their 'meaning'.

The formulae may be interpreted in given domains of objects with given relations: once the allocation of relations to symbols is fixed, the truth-value of any sentence in the given domain is determined. The 'semantic entailment' symbol, $\Gamma \models \sigma$, is used to state that, given any domain, if each sentence in holds in that domain, then holds in that domain. The system is proved closed by showing that $\models$ and $\vdash$ coincide: that is, anything that can be derived by looking at models can be proved formally. Of course, semantic motivates syntax. One might say, roughly, that semantic tells us what is true, syntax why (or how).

It is this distinction between (and coincidence of) semantics and syntax which gives modern formal logic its characteristic strength and limitation.

The technical weakness of Günther's system is that he does not go beyond a very sketchy (and highly idiosyncratic) semantic theory. The point of the project is to construct a logic which can distinguish 'ontological' classes (say, stones and thoughts about stones). The obvious way to do this - with what is called higher-order logic - involves the introduction of a language with different kinds of variables. Günther, however, appears to think that he can differentiate ontological classes by increasing the number of values the system has, instead. It is not at all apparent whether these values are truth-values (or, if not, what else); nor is it apparent how they can be made to do any genuine semantic work. Just to introduce values is not enough: one has to show - and this is the hard part - how values get assigned to semantic objects. It is as though Tarski's famous definition of truth said only 'everything is either true or false'. And, in the end, it is unclear what good comes of mixing up objects and truth-values at all; unless some pressing reason can be given it appears only to compound vagueness with obscurity.

Perhaps the challenge left by Hegel to modern philosophy is his uncompromising holism about the nature of its subject-matter. Philosophical problems are so far interrelated, he realised, that the solution of one will always carry implications for all the others. What is more, philosophy cannot draw its boundaries from inside itself - in principle, all areas of intellectual life must be assumed capable of carrying implications for philosophy's scope and nature. Modern logic is a case in point. Philosophers - scholars of Hegel least of all, perhaps - cannot presume to answer the question of its philosophical significance from the outside. All the more regrettable, then, that Günther's efforts to being logic and dialectic together should fall beside that significant point.

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Carl G. Vaught, The Quest for Wholeness, Albany, State University of New York Press, 1982, pp. xvi, 213 cloth £25.15; paper £8.25

In his fourth and final chapter Vaught presents his criticism of Hegel. Hegel seeks for a wholesness that will respond to human fragmentation. But he combines wholeness with completeness, positing an absolute standpoint that transcends alienation altogether.

Yet the Phenomenology in particular proceeds in a way that suggests incompleteness. For Vaught, the descriptions of various stages are not literal definitions but metaphors, suggesting a truth that cannot be expressed. And stage leads on to stage not with any inevitability, but because one senses an analogy. Despite differences, similarities justify associating the various 'scenes' in a single perspective. Since both metaphor and analogy are incomplete, they leave room for mystery and transcendence.

This inherent structure of Hegel's philosophy of experience is vitiated by his theoretical claim that representation is to be transformed into concept. The metaphors and analogies of experience - and in particular, of religious experience - do not have the last word. They are incorporated into a theoretical system in which mystery is dissolved, and immanence reigns.

In reaching this conclusion Vaught has himself used metaphor and analogy. His first chapter, on Melville's Moby Dick, considers the voyage of the Pequod to be a metaphor of the human quest. Ishmael is compared with his namesake, the son of Abraham, and the ocean is the symbol of mysterious eternity. From art, Vaught turns to religion. His second metaphor is the loneliness of Abraham, of Isaac, and of Moses in their encounters with transcendence. Wholeness is thus the result of two different processes. Once moves out into the vast expanse of the world; the other moves into the depths of a single encounter with the ultimate.

Vaught emphasises the incompleteness of this 'bi-directional' movement in this third chapter, on Plato's Euthyphro. By leaving the discussion unresolved Plato suggests that Euthyphro's depth encounter with divinity is in no way vanquished by Socrates' search for universals.

While Melville, the Old Testament, Plato and Hegel all provide metaphors of the quest for wholeness, they may also be associated. Vaught places the four chapters in a single book because each throws light on the others through analogy. These analogies, however, are not self-evident. Is Euthyphro's appeal to the gods comparable to Moses standing before the burning bush? When Ishmael heads to sea is he re-enacting Abraham's departure for Canaan, or