

NAGEL'S LECTURES ON DEWEY'S LOGIC

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I first encountered Ernest Nagel in the late winter of 1947 when I entered Columbia as a graduate student. The lectures I attended were those of the course he entitled *Types of Logical Theory*, and during that term he devoted the lectures to Bradley and Dewey. I listened eagerly and with pleasure to everything that Nagel had to say about Bradley and Dewey, and I marveled at the patient way he went about dissecting their views and stressing the weak points in their arguments. Nagel's lectures on Dewey have never been published, and because I increasingly see the importance of what Dewey was trying to do, it seemed more than appropriate to give here an account of Nagel's lectures. I have shown the date of each lecture as a method of indicating natural breaks in the narrative.

MARCH 10

Nagel finished his lectures on Bradley by making the well-known point that Bradley seems to deny the essential validity of discursive discourse, and he opened his lectures on Dewey by pointing out that this was an aspect of Bradley's thought that Dewey had absorbed and accepted. Before turning to any details of the logic itself, Nagel made some general remarks about Dewey's motivation and general orientation. He noted four important influences on Dewey's thought that should be taken account of in examining the *Logic*. The first was the importance that Dewey attached to modern mathematics and experimental science; the second was the influence of biological conceptions, particularly those of Darwin; the third was the rejection of psychological empiricism; and the fourth was concern with the social import of thought.

Concerning the first point about the importance of modern mathematics and experimental science, Nagel said that Dewey inveighs against the view that science gives us a final grasp of things. Dewey's arguments are directed against Aristotle and the tradition of British psychological empiricism, which holds that sense gives us a final grasp of things. In this connection as in others, however, one of the difficulties of Dewey's

analysis is that he is usually directing a specific polemic at various unnamed schools. His two main foes are traditional rationalists and traditional empiricists, because he wants to eliminate the sharp dichotomy between reason and sense. According to Nagel, Dewey's attack on classical rationalism has been fortified by the fact that many of the alleged first principles of various sciences have subsequently been replaced by other first principles, as, for example, in geometry.

Concerning the influence of biological conceptions in Dewey's thought, Nagel remarked that it is evident that Dewey emphasizes a genetic approach in most of his works. Dewey, Nagel said, has been reproached for confusing genesis with validity, and yet much can be said for Dewey's approach as a fruitful method. Dewey is dependent on Darwin for his emphasis on change and, in particular, for the thesis that structure is not fixed but functional. Dewey's conception of the mind as active makes up for some of the deficiencies apparent in associationistic psychologists like Mill.

Concerning the social context of Dewey's thought, Nagel remarked that it is worth remembering that Dewey wrote his *Logic* to help the social sciences progress at the same pace as the natural sciences. Dewey's interest in logic, Nagel said, has been controlled by the apparent profound chaos in moral and social thought for which Dewey has sought a solution. One of Dewey's earliest and most influential papers (1902), "Logical conditions of a scientific morality," contains the kernel of most of his logical thought. Dewey's general conception is that an appropriate logic should be an organon for the solution of pressing social problems.

After these preliminary and general remarks, Nagel turned to the direct consideration of Dewey's *Logic, The Theory of Inquiry*. To begin with, Nagel pointed out, Dewey considers logic as the theory of inquiry and not as a formal science. Dewey distinguishes between the proximate and ultimate subject matter of logic. The proximate subject matter is the traditional study of the implicative relations between propositions, and so forth. There is much agreement on this aspect of the subject matter; but there is disagreement over the ultimate subject matter, for example, about the basic units of logic. According to Bradley, the basic units are judgments; others hold that they are terms. For Dewey, the basic unit is a *completed act of inference*. Dewey continually argues that inference is needed, because any natural immediate experience is incomplete in itself, and its relation to other events involves inference. Dewey's chief criticism of ancient science is that it mistook immediate qualities as the efficient causes of things. The chief virtue of modern science is in overcoming this and being able to ignore directly experimental qualities as causes. On this view logical theory is regarded as systematic reflection on inquiry. In Dewey's opinion, and I think also in Nagel's, too often there has been no systematic investigation of why some inquiries are successful and others are not; the peculiar con-

ditions that produce success are too seldom understood. These conditions are precisely the subject matter of logic. For Dewey, if there are no problem solvers, there is no logic. Put another way, it may be said that for Dewey logic is equivalent to experimental epistemology. Logic is a positive inquiry into inquiries, having the methods of inquiries as its specific subject matter. In this sense logic is descriptive and not normative, but it is also normative insofar as it sets standards for later inquiries.

MARCH 12

Nagel began by pointing out that a central feature of Dewey's logical theory is his claim that logical forms arise inside inquiry and do not characterize things outside of inquiry. Nagel pointed out that while this contextual concept of logical form is a difficult one for those with a background in mathematics and formal logic, it is worthwhile to see what Dewey has in mind. According to Nagel, the key to understanding what Dewey means here is to realize that the concept of logical form is not the same in Dewey's theory and in formal logic. Dewey holds that certain types of functions are to be regarded as the logical forms; for example, the functional relation between evidence and conclusion is not characteristic of things themselves but only in relation to specific inquiries. Those who argue that logical forms have the eternity of Platonic forms hardly understand Dewey's point. Another way of putting it, Nagel said, is that Dewey's logical forms are relations between means and consequences.

Nagel said that Dewey's logical forms are postulates for inquiry. Dewey is essentially saying that the distinctions of the proximate subject matter belong to things only in specific inquiries. In these terms, logic becomes the formulation of the conditions of successful inquiry.

Nagel remarked that a functional concept of knowledge is sometimes attributed to Dewey; but unfortunately, the term *functional* is vague and needs specification. Nagel said that there are two ways of specifying knowledge. One way is to say that we have knowledge when we have the truth, and to define knowledge in terms of its systematic characteristics, not in terms of how it is acquired. The other way of specifying knowledge is to say that knowledge is acquired through inquiry and that an essential way of characterizing knowledge in this sense is to characterize the context of inquiry. According to the latter view, which is Dewey's, inquiry begins or arises from doubt when there is a felt tension. What resolves the doubt or tension is knowledge, the resolution of the problem. Nagel remarked that Dewey's theory of knowledge is functional in two ways. It is functional insofar as knowledge is construed in terms of the resolution of particular problems; it is also functional in the sense that knowledge is identified in terms of a process (the process of inquiry) which can itself be overtly

located by reference to the behavior of certain organisms. For Dewey, knowledge simply becomes the terminus of inquiry, and this view rules out the question of the possibility of knowledge in general, or knowledge apart from a particular context of inquiry.

For Dewey, inquiry is a transformation of indeterminate constituents into a unified, determinate whole. Here Nagel quoted Russell's famous remark that this characterization would apply to a drill sergeant working with a group of recruits. Nagel pointed out that one difficulty in Dewey's theory is that of determining to what extent the definition of logic proposed by Dewey is adequate to the traditional problems of philosophy. Dewey seems to intend his definition as an empirical generalization, and he speaks in such broad terms that much of the revolutionary aspect of his thought evaporates when what he says is understood.

MARCH 17

Nagel began by considering Dewey's conception of the naturalistic character of logic. Nagel characterized a theory as naturalistic when a continuity is established between it and the biological operations out of which it grew; but Nagel then asked what this emphasis on continuity contributes to a logic interested in forms of warranted assertability. What importance does continuity have in this context? What is the point of raising it? Dewey's answer has already been stated; namely, hypotheses cannot be introduced independent of a context, and it is precisely the introduction of a context that leads us to the naturalistic analysis of inquiry.

Nagel then raised the particular question of the use of symbols as a distinctive case. Nagel stated that he failed to see why Dewey's emphasis on continuity would change or obscure the usual or traditional account of the role of symbols in inquiry. Continuity with biological operations, Nagel stated, seems irrelevant in terms of the specific functions of symbols in inquiry. Nagel also emphasized that Dewey's attempt to show the continuity between the logical and biological must be regarded as speculative. The present amount of accurate empirical information is insufficient to establish the relation. As an example, Nagel discussed *ponendo ponens*. Dewey, he said, takes over Peirce's view of rules of inference as leading principles; for example, *ponendo ponens* is a habit men have acquired which enables them to go from two premises to a conclusion. It is an efficient habit that is a generalization from experience; but Nagel argued that whatever biological foundations may underlie the genesis of the principle of *ponendo ponens*, its validity may be established independently of biological and physical interpretations.

As a second example, Nagel considered Dewey's interpretation of Aristotelian logic. Nagel said Dewey was right in asserting that the

sylogistic forms are not fruitful, but wrong in denying the validity of the syllogism simply because it was developed at an early stage of science. Nagel then stated that surely there must be some misunderstanding here. Possibly what he was saying was an incorrect interpretation of Dewey. Nagel said he was calling attention to the close connection between genesis and validity for Dewey, and he raised the question of whether a person who ignored the biological evidence would be a supernaturalist. In Nagel's view, surely not.

As a final example, Nagel remarked on Dewey's treatment of the principle of identity. For Dewey, it is not just the form *if p then p*, but rather the carrying through of the term so that it has one meaning. It formulates a rule for the handling of terms. Nagel said that for Dewey it then becomes a synthetic principle rather than a tautology.

MARCH 19

Nagel began with some remarks about symbols which, I believe, were meant to reflect Dewey's views, although my notes are vague on this point. Nagel said that symbols are artificial signs. Between natural signs and their object, there is *signification*. Between artificial signs or symbols and what they stand for, there is *meaning*. We can have clusters of symbols or artificial signs, but not clusters of natural signs. For Dewey, all inquiry essentially involves the use of symbols or artificial signs. This is a point which much of the criticism of Dewey's logic seems to have missed.

Nagel then considered the important term *situation* in Chapter IV of the *Logic*. For Dewey it is not possible to define the term *situation*, for all definitions are made within situations. There are two points of Dewey's discussion that Nagel said were important to note. The first is that perception itself occurs always within a situation; the second is the sense in which perception is cognitive. The central point here is that Dewey denies that perception per se is cognitive. Isolated acts of perception are for Dewey not knowledge; they are neither true nor false. Validity or invalidity is relevant only if we consider the signification of the perceptions. Throughout his many discussions, Dewey criticizes the doctrine of immediate knowledge, that is, the doctrine that direct or immediate knowledge arises from sensation. Nagel repeated that it is essential to realize that in Dewey's logic knowledge can never be the case of simple perception alone. The reason for Dewey's claim is clear. Perception is not the outcome of inquiry, but this is the most important characteristic of knowledge; consequently, perception is not knowledge.

Relevant to this discussion, Nagel turned to Dewey's important distinction between *having* and *knowing*. For Dewey, Nagel said, knowing is the terminus of inquiry, but having is essentially an aesthetic experience.

Knowledge is capable of being formulated in discourse, but that which is had is not. Here we can see how perception fits into Dewey's scheme of things. Perception is having. Dewey's criticism of philosophical idealism is that it does not admit the distinction between having and knowing, and thus, does not permit us to break through the egocentric circle. For Dewey, Nagel pointed out, knowing is an instrument of having, but Nagel remarked that it is perhaps impossible to define clearly what having is for Dewey, and it is often hard to distinguish between having and knowing. In fact, Nagel said, he had a certain difficulty in understanding what knowledge is for Dewey. Even if it is agreed that knowledge is the terminus of a situation or an inquiry, it is not clear whether this terminus is a having or a knowing. It seems to be both, but in different respects for Dewey.

At this point Nagel digressed in order to consider Dewey's distinction between scientific and common-sense knowledge. Scientific knowledge has no reference to the immediate situation. Common sense does, but it is also vague. Common sense is interested in qualitative differences for ends of use and for enjoyment. Science is nonqualitative. Science is interested in non-qualitative differences for purposes of knowledge. On the other hand, science originates in common sense. In Dewey's view, the Greeks' separation of art from science and their belief in pure reason slowed scientific development tremendously. (Here I suspect that Dewey, like other philosophers, has been seduced by the traditional Platonic tale. It is scarcely possible to claim that the deep and important development of mathematical and observational astronomy by the Greeks represents a theoretical or practical belief in pure reason as a method of learning about the world. On this point, Dewey, and perhaps to some extent Nagel, is simply repeating a common view of Greek science.) For Dewey, the difference between science and common sense is really social and not logical. It is more or less accidental that thus far science has tended to concentrate on different problems from those of common sense. In Dewey's view, prescientific ideas have held sway too often and for too long in morals and politics. This has made for an essential split in common sense that is reflected in philosophy—the split between pre- and postscientific thinking. Nagel concluded this digression by pointing out that Dewey's central point is to emphasize the fundamental unity of the two kinds of inquiry and not to sanction any absolute difference between them.

Nagel concluded this lecture with a brief discussion of Chapter V of the *Logic*, which deals with the needed reform of logic. Nagel mainly reviewed Dewey's claims as to why a reform is needed, that is, why classical logic no longer applies or is appropriate. First, classical logic is qualitative only. Second, Greek science, the context in which classical logic arose, asserted heterogeneity of substance and motion, whereas ours asserts homogeneity of the two. Third, in Greek science all quantifications were accidental rather

than essential. Fourth, relations were in general also accidental, and now they are the prime subject matter of science. Dewey wants modern logic to serve present science and culture in the way that Aristotle served the science and culture of his own time. (It is not clear to me to what extent Dewey realized that Aristotle's logic was in no sense adequate to Greek mathematics or astronomy. In any case, the thrust of this chapter seems to be one of the weaker parts of the *Logic*, and, like Nagel, we can quickly dispense with it here.)

MARCH 24

In this lecture Nagel turned to Part II of the *Logic*, which deals with the structure of inquiry and the construction of judgments. Nagel emphasized that we cannot hope to get the sense of what Dewey is saying by examining minutely any specific argument. Nagel said that Dewey's definition of inquiry illustrates this point perfectly. Russell's criticism of Dewey is well justified if we take strictly the single italicized statement of Dewey in which he defines inquiry (pp. 105–106): "*Inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole.*" Nagel's point is that it would never do to take seriously for careful analysis this single italicized definition of inquiry. What we have to do is to read the many passages in which Dewey discusses inquiry and put together for ourselves a more or less inductively constructed picture of what Dewey means by inquiry. Nagel then said he would try to give some feeling for how this might be done. He began by saying that the situation with which inquiry begins is indeterminate. The constituents of the situation do not hang together. The organism wants to know in what way they do not hang together, for surely in other ways, they do. Nagel said that apparently the problem is raised in the mind of the inquirer, because he cannot understand the structures of the various parts of the situation. In this sense, the situation is doubtful or indeterminate. It is important to emphasize that for Dewey this sense is not merely a subjective one. Complete determination does not hold for the environment. Dewey says that evidence in the physical sciences about indeterminacy of physical events is evidence that the sense is not purely subjective. Nagel remarked that this argument is questionable, but that the reasons were too complicated to discuss at this point. Here Nagel mentioned Dewey's lecture on time two years before (1945). Nagel's version of the lecture was that Dewey held that time and individuality are connected. Individuality is development in time, and Dewey claimed that to some extent his view was derived from statistical mechanics. Nagel asserted that using such evidence from physics to discuss human individuality was, in his

view, bad philosophy. He said he would agree that the *cause* for doubt can be outside the body of the doubter, but this does not make the situation itself doubtful. Nagel asserted that, as far as he could see, the element of indeterminacy exists wholly, or almost wholly, in the observer. (The sophisticated thing which Dewey might have attempted is a biological interpretation of subjective probability. It seems to me that this is the best line along which to claim that indeterminacy is more than subjective, or at least to take the sting out of the claim that it is subjective.)

MARCH 26

The discussion of Dewey's conception of inquiry was continued. Nagel said that he would assume that what Dewey meant by an indeterminate situation was not enough. Nagel went on to the second main point, namely, that the existence of the indeterminate situation is not enough; the further step of formulating the problem must be taken. Formulation of a problem involves for Dewey partial transformation of the situation itself. Nagel emphasized that Dewey seems to use the concept of transformation to mean an actual physical change in the situation.

Nagel then examined more carefully Dewey's notion of a problem. He first emphasized that for Dewey a problem is something that must have a possible solution. For Dewey the statement of a probable or indeterminate situation as a problem has meaning only if in the very terms of statement there is a possibility of solution. Nagel said that this may be Dewey's version of the verifiability theory of meaning. At this point Nagel reviewed briefly some standard versions of the verifiability theory. Nagel felt that, in spite of Dewey's vagueness, his approach had a certain body and fullness on these matters that the positivistic version of the verifiability theory of meaning lacked.

Nagel then commented on a number of related points. For Dewey, he noted, factual conditions determine probable conditions. There need to be settled facts or constituents in a situation. Nagel said that Dewey's affirmation of the need for settled facts raises the previous question as to what is meant by doubt in the situation as a whole. Nagel asked what Dewey regarded as the facts. The answer seems to be, he said, that the facts are constituents in the situation that can be noted through perception. But he commented that later Dewey says that a subject (in relation to a predicate) always consists of those perceptual elements that help to identify the problem. Nagel remarked that this leads to an ideational element. For Dewey, ideas are anticipated outcomes of possible solutions. The terms of a problem, or the boundary conditions (to use a terminology not used by Dewey), are facts. Ideas, in contrast, are possible solutions of problems. Nagel said that this "in a nutshell" is Dewey's theory of judgment, which

he would discuss in greater detail later. To support this analysis from the text, Nagel quoted the following passage from page 111 of the *Logic*.

In logical fact, perceptual and conceptual materials are instituted in functional correlativity with each other, in such a manner that the former locates and describes the problem while the latter represents a possible method of solution. Both are determinations in and by inquiry of the original problematic situation whose pervasive quality controls their institution and their contents. Both are finally checked by their capacity to work together to introduce a resolved unified situation. As distinctions they represent logical divisions of labor.

Nagel noted that the distinction between perceptual and conceptual materials made in this passage is perhaps the basic distinction for Dewey. The fundamental thing for Dewey is that there is no dualism of perception and conception but rather a functional differentiation. Dewey's theory of inquiry is an attempt to show how two different processes that are widely separated in traditional philosophy and epistemological analysis are but two different functions within a single framework of inquiry.

Nagel reviewed the steps in inquiry as Dewey conceived them. We begin with an indeterminate situation. We transform that situation into the fixing of a specific or definite problem. The next step is the introduction of reasoning or symbolic operations in order to determine the acceptability of the possible solutions. What is important about Dewey's conception of reasoning, which we shall examine in more detail later, is that it is always an intermediate operation. A mathematical investigation or, it would seem, any purely theoretical work is always a phase of inquiry and cannot be the whole of inquiry. The reason for this is that a purely theoretical study does not constitute the formulation of a problem in terms of observation, nor apparently in terms of the explicit and immediate feeling of indeterminacy of an actual physical situation. Nagel emphasized that in making these observations he had been supposing that the conception of factual material does not include the observation of symbols as carriers of meaning. It is apparent that from a formal standpoint this would be a way of conceptualizing a theoretical investigation as a complete inquiry, and in my own judgment, it would be very much in the spirit of Dewey's general philosophy to give such a radically empirical account of pure mathematics. However, it should be emphasized that Nagel did not support this view, nor is it easy to support it by any direct remarks on Dewey's part.

Nagel concluded the lecture by noting that it seems appropriate to assign mathematics to the immediate operation of reasoning. He noted that Dewey's use of the word *problem* is more restricted than the ordinary use and does not include such things as mathematical problems. In this discussion of mathematics, Nagel referred to page 405 of the *Logic*. Several of the passages there do suggest to me that a radically empirical interpretation of mathematical activity would perhaps provide a better reading of Dewey than a more conventional one. I quote here the passage of most interest.

In its early history, problems of strictly existential subject-matter provided the occasion for mathematical conceptions and processes as means of resolving them. As mathematics developed, the problems were set by mathematical material as that itself stood at the given time. There is no contradiction between the conceptual, non-existential nature of mathematical contents and the existential status of mathematical subject-matter at any given time and place. For the latter is an historical product and an historical fact. The subject-matter as it is at a given time is the relatively "given." Its existing state occasions, when it is investigated, problems whose solution leads to a reconstruction. Were there no inconsistencies or gaps in the constituents of the "given" subject-matter, mathematics would not be a going concern but something finished, ended.

As was intimated in an earlier context, material means and procedural means operate conjugately with each other. Now there are material means, having *functionally* the status of data, in mathematics in spite of their non-existential character. They constitute the "elements" or "entities" to which rules of operation apply, while the rules have the function of procedural means. For example, in the equation $2 + 3 = 5$, 2 and 3 are elements operated upon, while + and = are operations performed. There is no inconsistency in the identity between the *logical function* of existential data and mathematical elements or entities and the strictly non-existential character of the latter.

APRIL 9

Nagel continued his discussion of the pattern of inquiry. He noted that for Dewey the facts are operational in inquiry in the sense that they are selected in connection with a particular problem, to test particular solutions of that problem. Ideas are also operational in inquiry because it is their function to direct inquiry. For Dewey the facts interact with one another, but Nagel was skeptical that this was an appropriate way to talk about facts. As an illustration he mentioned that from the observation of fingerprints we infer the man was present at the scene of the crime. Is it appropriate to say that the two facts interact? Nagel said he would prefer to talk about our organization of the facts.

Referring to pages 118–119, Nagel said that an important distinction for Dewey between content and object of inquiry had been misunderstood by some of his critics, who had taken Dewey as holding that inquiry creates its subject matter. As Nagel conceived it, the distinction Dewey intended was between subject matter undergoing inquiry and the subject matter of a completed inquiry. Dewey wants to use the term *subject matter* for material undergoing inquiry; he specifically calls this *content*. The outcome of an inquiry, which he sometimes calls the outcome of subject matter, is what he means by an *object*. Because this language sounds a little unusual, it may be useful to give the explicit quotations from Dewey on page 119.

When it is necessary to refer to subject-matter in the context of either observation or ideation, the name *content* will be used, and, particularly on account of its *representative* character, content of propositions.

The name *objects* will be reserved for subject matter so far as it has been produced and ordered in settled form by means of inquiry; proleptically, objects are the *objectives* of inquiry.

Nagel then turned to the explicit discussion of the nature of judgment for Dewey in Chapter VII of the *Logic*. Nagel's first point was that for Dewey judgment is not inquiry itself but the settled outcome of it. Thus, judgment is never found in inquiry except on a partial basis. Secondly, judgments are to be distinguished from propositions, which do not have direct existential import. For Dewey a judgment issues in existential consequences. It is a decisive directive for future activity, but the judgment itself is not the set of activities that ensue. It has a propositional form, and thus in general, its truth or falsity can be investigated. Nagel indicated that for him this analysis presents a difficulty. Knowledge is defined by Dewey as the terminus of inquiry; but this characterization of judgment indicates that knowledge is, strictly speaking, not the terminus of inquiry, for following the assertion of a judgment a further transformation takes place, namely, the directive for future activity contained in the judgment. (Nagel did not discuss the distinction between judgments as imperatives or directives on the one hand and as true or false indicative sentences on the other, but the reasons for not pursuing this kind of distinction are clear to anyone who has perused, even cursorily, the *Logic*.)

Nagel noted that for Dewey a final judgment is always individual in character. Nagel remarked, in a characteristic vein of his own, "This is a hard saying," for many judgments have the form of universal propositions. Nagel raised the question of how we reconcile Dewey's assertion that judgments are individual in character with what appear to be the patent facts in many inquiries. Nagel remarked that one way of looking at the matter is that many inquiries by theoretical scientists must be regarded, as previously remarked, only as partial inquiries. Secondly, he said that it was necessary here to make Dewey's distinction between singular and individual. For Dewey, singulars are named by demonstratives such as *this* or *that*. Propositions about singulars occur during the course of inquiry, but the final judgment is about the total situation, which is individual. (It seems clear that Dewey's views on these matters have been influenced by the way we think of legal judgments of a court, which, almost always, do deal with an individual situation and are not expressed in terms of universals. This particular interpretation was not discussed by Nagel.)

In this discussion of judgment Nagel emphasized the overweening importance for Dewey of practical activity in contrast to theoretical investigations. Nagel said he would interpret Dewey as holding that the scientific inquiries of a mathematical physicist would never be regarded as a completed inquiry, at least not until they were used in some aspect of practice or at least in direct, experimental investigation.

Nagel then turned to Dewey's view that every judgment has the logical

form of subject, predicate, and copula. (That Dewey held this view is substantiated by many passages in Chapter VII.) Nagel raised the question whether Dewey was ignoring the central fact of modern logic that many propositions are relational in form. Dewey, he said, seemed not to be ignoring the modern logical viewpoint, but to be distinguishing between propositions which are not true or false, but more or less useful, and judgments which are true or false. Dewey seems to take the view that propositions are guides, maps, or blueprints; they are, in other words, means for making more effective judgments. In certain respects, Nagel said, Dewey's view seems to be close to Wittgenstein's verifiability theory of meaning. For Dewey only those things are fully warrantable, that is, true or false, which are individual in character. General propositions do not have this property but are useful only as guides. However, it should be emphasized that for Dewey a judgment is not warranted by a simple perception. Nagel pointed out that if Dewey's view is taken seriously, then it is not only the concept of truth for general propositions that is endangered but the whole concept of confirmation and scientific testing of theories, in the sense of determining the extent to which evidence confirms a theory or, in ordinary terms, the extent to which the theory seems to hold for relevant phenomena. This has the consequence that there is no direct question of induction for judgments because judgments are always particulars. They are not related in functional fashion to general propositions. As a result, induction holds only for intermediate stages of inquiry and not for the terminus or final judgment of inquiry.

APRIL 14

In this lecture, on which my notes are rather brief, Nagel turned to a more detailed discussion of Dewey's analysis of the subject, predicate, and copula, that is, of the constituents of judgments. As already remarked, for Dewey a subject always has a subject-predicate form. Nagel stressed that Dewey's emphasis on the form of judgments helps to bring out in what sense the logical form accrues to a subject matter. Something is a subject matter not because of its ontological character but because of its logical character, which amounts to a rejection of Aristotelian substance. Contrary to many classical epistemological views, for Dewey a fact functions only as a part of inquiry. To say that something is a subject is to say that a fact has acquired a logical character it did not have previously. In this connection Nagel cited a significant passage from Dewey (pp. 128-129).

The condition—and the sole condition that has to be satisfied in order that there may be substantiality, is that certain qualifications hang together as dependable signs that certain consequences will follow when certain interactions take place. This is what is meant when it is said that substantiality is a logical, not a primary ontological determination.

Certainly these views on the problem of substance are consistent with Dewey's general position.

Nagel then emphasized Dewey's view that predicates provide a method of solution and do not themselves constitute a solution. I find my notes on this discussion very thin. I suspect that I probably did not understand very well what Nagel was saying. In a modern vein, it seems appropriate to me to say that when Dewey talks about predicates as methods of solution, he is emphasizing the use of language for purposes of communication in inquiry and here, as always, playing down the use of language for the bare expression of fact.

Nagel then turned to Dewey's view that the copula expresses a functional correspondence of the subject and predicate. In particular, the copula expresses, as Dewey puts it,

the act or operation of "subjection"; that is, of constituting the subject. It is a name for the complex of operations by means of which (a) certain existences are restrictively selected to delimit a problem and provide evidential testing material, and by which (b) certain conceptual meanings, ideas, hypotheses, are used as characterizing predicates. It is a name for the functional correspondence between subject and predicate in their relation to each other. The operations which it expresses distinguish and relate at the same time [pp. 132-133].

After completing this discussion of the copula as such, Nagel emphasized Dewey's view that a judgment is a temporal affair; or, as Dewey puts it, "that judgment is a process of temporal existential reconstitution." Most philosophical readers will be troubled by this obscure phrase, but the idea that judgments are temporal occurrences does in itself tie in with recent discussions of utterances and statements. In any case, Nagel summarized Dewey's position as amounting to the view that a judgment consists in overt transformation of the situation or in the actual doing of something, rather than simply in the assertion of a proposition.

APRIL 16

In this lecture, Nagel turned to an analysis of Chapter IX, "Judgments of Practice: Evaluation." Nagel began by pointing out that declarative propositions are only intermediate and instrumental. They are statements of what conditions do exist. In contrast, judgments of practice contain overt transformations, of the sort to which the classical theory of judgment often denies status. The classical theory asserts that even in the case of a practical judgment there is in the judgment itself no overt transformation. Nagel mentioned that Dewey attempts to separate the linguistic situation from the psychological one. The mere existence of a practical syllogism does not in itself indicate the presence of a judgment of practice. If this syllogism is a matter of habit on the part of the user, then no issue of

judgment arises. It is only when there is a question of doubt and inquiry that a genuine judgment of practice is made.

Nagel pointed out that if we accept this account, then many judgments ordinarily taken as final must be classed as instrumental. A judgment of practice for Dewey always involves a transformation of antecedent conditions.

In this connection, Dewey defends the position (pp. 167–168) that moral evaluations have the character he has ascribed to judgments of practice and are not, as often thought traditionally, predetermined and given ends in themselves. What Dewey has to say about ethics is often better and clearer than his comments on other topics. The following passage puts his view very well.

The notion that a moral judgment merely apprehends and enunciates some predetermined end-in-itself is, in fact, but a way of denying the need for and existence of genuine moral judgments. For according to this notion there is no *situation* which is problematic. There is only a person who is in a state of subjective moral uncertainty or ignorance. His business, in that case, is not to judge the objective situation in order to determine what course of action is required in order that it may be transformed into one that is morally satisfactory and right, but simply to come into intellectual possession of a predetermined end-in-itself [p. 168].

At the end of this lecture Nagel remarked that a source of much misunderstanding of Dewey in his discussion of practical judgments, and in particular, moral judgments, is Dewey's distinction between evaluating and valuing. The distinction for Dewey is parallel to that between having and knowing. It is the distinction between having a value experience and evaluating that experience.

APRIL 23

In this lecture Nagel discussed Chapter X, "Affirmation and Negation: Judgment as Requalification." In this chapter Dewey considers such matters as his view of the traditional A, E, I, and O propositions. Nagel began by emphasizing, once again, that declarative propositions are not simply enunciatory for Dewey, but are means leading to solutions. It is in this light that Dewey's discussion of affirmative and negative judgments must be viewed. Nagel recalled that the concept of affirmative and negative judgments was introduced by Aristotle in the *Prior Analytics*, and is ordinarily regarded as a grammatical distinction; but for Dewey the basis of the distinction is not grammatical, but is rather a difference in function. Affirmative propositions represent agreement of subject matters in their evidential capacities. Negative propositions represent subject matters to be eliminated because of their irrelevancy or indifference to the evidential func-

tion of material in the solution of a given problem. In this connection Nagel remarked that it is rather difficult to find statements that are negative in Dewey's terms, but affirmative in grammatical form. In any case, Nagel emphasized that for Dewey both forms of proposition have an intrinsic connection with change. Dewey does not mean that every such proposition reports a change, but that affirmative or negative propositions are logically grounded in the exclusion of alternatives.

Nagel then turned to Dewey's interpretation of the traditional square of opposition. As might be expected, Dewey emphasizes that the traditional relations of contrariety, subcontrariety, and contradiction have to be understood in functional and not in formal or mechanical terms. What is inadmissible for Dewey is the interpretation of propositions as independent sets of objects to be considered by and of themselves and in their relation to each other. For Dewey the traditional opposition of contraries is to be interpreted in terms of setting limits within which specific determinations must fall. His concrete example is that what we know about marine vertebrates must fall between the A proposition "All marine vertebrates are cold-blooded," and the E proposition "No marine vertebrates are cold-blooded." For Dewey these contrary propositions cannot represent conclusions or the terminus of an inquiry, but are the results of a preliminary survey. In interpreting this view of Dewey's, it is important always to remember that for him the terminus of inquiry must be an individual judgment, not a general proposition. In terms of this general view it is quite clear and natural to maintain that A and E propositions cannot themselves be the terminus of inquiry. In this connection, Nagel made the point that in experimental inquiries it is usually not sufficient to operate with the bare formality of A and E propositions as setting natural limits of inquiry. Usually much more detailed and more specific information is available. For example, in investigating the temperatures of marine vertebrates we would not ordinarily look at the contraries "All marine vertebrates have a temperature of 60°F." and "No marine vertebrates have a temperature of 60° F." We would rather investigate a range of temperatures and would have an entirely different formulation of the relevant propositions to be tested. At this point Nagel said that he really did not know what Dewey would have said to this objection.

For Dewey, subcontraries are more determinate than contraries but are still indeterminate compared with the individuality of final judgment. In Dewey's view, subcontraries are used only if they are determinate, that is, if they have some ground for support. At this point Nagel considered Russell's famous analysis of the sentence "The present King of France is bald," and he said that in his judgment it was better to make explicit what you mean by *proposition* before you consider contraries and subcontraries in relation to factual data or material. Dewey seems to hold that the mean-

ing of propositions is determined by factual data, and this Nagel felt should be avoided.

Nagel next turned to Dewey's discussion of contradictories. He pointed out that for Dewey a universal or general proposition is negated not by the indeterminate "some" but by the determinate singular. Nagel admitted that Dewey is correct in terms of much actual practice and inquiry. General propositions are denied by the use of a singular proposition and not merely by an existential statement. Nagel made the point, however, that there is a standard, broader usage. It is possible to establish a particular or existential proposition without using singular propositions; insofar as this must be accepted as established doctrine or procedure, Dewey's position must be qualified. My notes do not show that Nagel discussed this point in detail. Finitistic or constructive positions about the foundations of mathematics would seem to offer specific support of Dewey's position.

APRIL 28

In this lecture Nagel turned to Chapter XI, "The Function of Propositions of Quantity in Judgment." Nagel began by noting the traditional distinction between universal and particular propositions, and emphasized Dewey's criticism that this classical Aristotelian distinction is too restrictive for modern science. Dewey's point is that in the context of modern quantitative science, the qualitative distinction between *all* and *some* is so crude and general as almost to be irrelevant. Nagel pointed out that Dewey did not have a very thorough understanding of the role of quantifiers in modern logic and of their relation to the construction of the real number system on the foundations of set theory. He gave as an example the way in which quantifiers may be used to express the sentence that there is exactly one mayor of New York City. What Nagel said is certainly correct and sound. It can be said on Dewey's behalf that his remarks were aimed really at the kind of applications of Aristotelian logic to scientific matters to be found in Aristotle and not to the formal doctrine itself. It is certainly true that much of the discussion in Aristotle and in particular those applications that hew as closely as possible to the line of his logic are not scientifically very deep or satisfactory.

Nagel noted that for Dewey distinctions between kinds of quantity are for functional purposes, and measurements are instrumental always in relation to certain aims. Throughout this chapter Dewey emphasizes this instrumental character of measurement in contrast to what he likes to call the mistaken cosmological and ontological framework of Aristotle.

Nagel then turned to the discussion of some of Dewey's constructive views about measurement. One of the first things to note in reading the

chapter is that Dewey generalizes the common conception of measure to include any comparison. In other words, for Dewey it is not necessary to think of measurement as assigning numbers to objects. An example would be the specification that liquid A is denser than B when B will float on A.

It is also a characteristic thesis of Dewey's that there is no fundamental antagonism between quantitative and qualitative distinctions. For Dewey there is an underlying qualitative continuum at the basis of all quantitative measurement. For example, in the measurement of length we assume the quality of spatial extension. What we do in measurement is to ignore certain qualities and to take others into account.

Against the critics of quantification, Dewey says that we have enhanced the control of the emergence of certain qualities by the introduction of quantitative techniques. The objection to measurement raised by many philosophers is not a sound one. Here, Dewey had in mind the objection that the reduction of a subject matter to numerical measurements made it dead and bare. As Dewey emphasizes throughout the chapter, the development of modern science renders that thesis rather ridiculous.

At the end of this lecture Nagel digressed to reject the Kantian view that measurement always involves space. I still have a vivid memory of this discussion. What Nagel had to say about this Kantian view seemed to me to exemplify just the kind of thing a philosopher should be saying and doing. Nagel considered a number of examples from the physical sciences of measurement and asked, in each case, whether or not it was possible to dispense with spatial extension in measurement. After examination of a number of cases, he argued that it was not always required that spatial concepts be involved in measurement and he cited as the primary instance the measurement of time. Unfortunately, my notes do not show the detailed remarks Nagel made about the measurement of time, but in any case it would be a digression to enlarge upon this point here.

APRIL 30

This lecture was mainly devoted to Chapter XIII, "The Continuum of Judgment: General Propositions." Nagel first discussed Dewey's analysis of the types of existential propositions. There are first particular propositions. These are propositions which qualify a singular. An example would be the proposition "This is sweet." Singular propositions, on the other hand, determine a singular as one of a kind, for example, the proposition "This is a dog." Nagel pointed out that for Dewey the notion of kind is important and is to a large extent borrowed from earlier logicians, particularly Mill. For Dewey the presence of a kind means the co-occurrence of traits, so that one can serve as the sign for the others. As has already been noted in earlier discussion, in Dewey's hierarchy of propositions, singular proposi-

tions have a more complicated function and a more central position in inquiry than do particular propositions. Their relation to judgments and determination of inquiry has already been noted.

Nagel next turned to Dewey's concept of generic propositions, which are a species of general proposition. They are primarily propositions about relationships of kinds. What is recurrent in generic propositions is the power of certain qualities to serve as signs. For Dewey it is never the immediate qualities of things which are general, but the mode of using signs. Nagel pointed out that this is a point of consistency in Dewey. It characterizes his effort to show distinctions as logical rather than ontological, and to show that logic arises and operates within inquiry. Thus, generality arises from a certain habit that has been established so that an individual acts in a certain way when confronted with signs of a particular kind. Nagel contrasted this view with the traditional assertion that universals arise from certain kinds of signs that stimulate certain responses. Nagel pointed out that instead of saying that a particular color red is a universal because the redness recurs, Dewey says we can claim individuals react a given way to this stimulus because of certain habits. Nagel pointed out, however, that if we say that the recurrence of the habit is due to a common element we have pushed the analysis back only a very small step. For Dewey this would be a matter of generating a new inquiry. Nagel said Dewey could always reply that we need not commit ourselves to a Platonic idealism, but can always say that signs merely function for other things and that we need no Platonic universals for taking care of the facts. Thus, for Dewey, universality consists not inherently in the thing itself but in the mode of response. Pursuing this line of thought, Nagel noted that the inquiry into the response itself requires a response, and thus we have an infinite hierarchy of responses. On the other hand, it is not a vicious regress since for knowledge we do not need to know all levels. As an example of this, Nagel mentioned an animal exposed to an auditory stimulus. The animal is able to respond in appropriate fashion and yet is not able to conduct inquiry at a deeper level.

MAY 5

This lecture was devoted to Chapter XIV, "Generic and Universal Propositions." I find my notes on this lecture to be rather unsatisfactory, and in an effort to bring them into better order, I have read Chapter XIV once again. I must confess that I find Dewey unusually obtuse in this chapter. The whole discussion is at a level of such vague generality that it is difficult to pin down and evaluate his central theses. It seems fair to say that in this lecture Nagel was dealing with very recalcitrant material.

Nagel began by pointing out that the distinguishing feature of generic

propositions for Dewey is that, unlike universal propositions, they deal directly with that which is existential. Universal propositions, on the other hand, connect attributes in a necessary fashion, necessary at least in the context of inquiry. In a characteristic turn of phrase, Dewey says that universal propositions are modes of action or possible ways of acting. The possibility is expressed by the traditional *if-then* form. A universal proposition tells us the conditions that inquiry aims to introduce. In this respect, universal propositions are in some sense definitional in character. They are definitional in that they constitute an analysis of a concept into its constituent elements. As an example, Nagel gave Newton's law of gravity. It is a universal proposition; and insofar as it expresses a universal and necessary property of material bodies, it is also a partial definition of material bodies. Here, I think, Nagel was saying something that was clearer as a doctrine in his lectures than is the corresponding set of ideas in Dewey.

Nagel mentioned that for Dewey there are two types of universal propositions. He referred to Chapter XX, on mathematical discourse, and in particular to page 397. One type of universal proposition is exemplified by physical laws and the other by propositions of mathematics. Nagel then asked what these two types of universal propositions have in common. Dewey's answer seems to be that both are in some sense definitional in character. On the other hand, Nagel pointed out that Dewey distinguishes different kinds of physical laws, some being generic and some universal. An example of a generic physical law would be the proposition that all whales are mammals. This proposition is generic because it asserts a relation of kinds, more explicitly, an existential connection between kinds. Nagel pointed out that for Dewey the logical status of a generic proposition is that of an I or O proposition, an essentially contingent type of proposition. A universal proposition, on the other hand, is a necessary proposition which is not capable of being refuted by experience, but may be abandoned in the light of inquiry.

There is no doubt that Dewey intends to deal with some traditional logical distinctions in Chapter XIV, but it is difficult to be very sympathetic with his enterprise, or to believe that he is making distinctions of much contemporary use in this chapter. Even if the distinctions are significant, the maddeningly vague and muddled way in which he discusses them makes it hard to take him seriously.

MAY 7

Nagel continued the discussion of generic and universal propositions. He said that he would like to give his own explanation of how universal propositions are intended to function in Dewey's system, by referring

to Peirce's well-known distinction between premises and leading principles. He made the point that leading principles provide a means of making a transition from premises to conclusion, but also avoid the infinite regress illustrated by Lewis Carroll's parable of the tortoise and Achilles. He spent some time in discussing the tale of the tortoise and Achilles in order to bring out the necessity of having some rules of inference. He outlined the situation here with great clarity, but I shall not summarize his presentation, because of its general familiarity as an example illustrating the need for rules of inference.

Nagel then pointed out that sometimes premises can be converted into leading principles. He gave as an example the following syllogism: All A is B, all C is A, therefore all C is B. We could change this by converting the first premise into a leading principle and then having only the single premise, all C is A.

Nagel then remarked that this discussion of Peirce's conception of leading principles is germane to Dewey's distinction between generic and universal propositions, because for Dewey universal propositions function primarily as leading principles in inquiry. Universal propositions formulate the kind of operations that are used to determine the sets of traits common to a kind. Nagel then considered some examples, contrasting mathematical and physical propositions in the discussion.

Nagel first asserted that it is in one sense patently false to say that Newton's second law is as necessary as $2 + 2 = 4$. For the denial of Newton's second law will not lead to a contradiction, as in the case of $2 + 2 = 4$. On the other hand, he would agree with Dewey that universals are not used for descriptions of matters of fact. Nagel then showed how Newton's laws could be used as leading principles. He referred to Carnap's *Logical Syntax of Language* and said he would follow Carnap's distinction between premises, rules of inference, and conclusions. He pointed out that rules of inference are usually regarded as logical rules, but there was no reason that there could not also be rules of physical inference. Newton's second law could be taken as such a rule of physical inference. He gave as an example the standard formula for computing how far a body has fallen in t seconds. The formula, $s = \frac{1}{2}gt^2$, acts as a principle of physical inference. We are given the premise that the body has fallen for 4 seconds. Our conclusion is to state how far it has fallen. It is easy enough to convert the formula, $s = \frac{1}{2}gt^2$, into a rule: Given the numerical value of the time, we calculate the distance by multiplying the time by itself, multiplying that result by the constant g , and dividing by 2. The resulting number is the number of feet that the body has fallen.

Nagel pointed out that such physical rules of inference not only determine physical consequences, as in the example just discussed, but also in part determine the meanings of terms employed in the premises and in conclusions. According to Nagel, Dewey is suggesting that universal proposi-

tions of physics, for example, are necessary in the sense that the meanings of terms that we use in investigations are partly fixed by these propositions. If the universal propositions are abandoned, then the meanings of terms necessarily change.

Nagel said that he did see a difficulty in the sense that what Dewey calls universal propositions are in fact often used as premises and not as leading principles. Nagel did say that it is possible to look at the matter functionally and to claim that a given proposition can function in some contexts as a premise and in others as a rule of inference. Nagel said that he would put the matter this way: it would be possible to introduce a greater degree of "relativization," which would permit us to use a proposition either as a premise or as a leading principle of inference.

Nagel concluded the lecture by discussing some of the advantages of regarding universal propositions as leading principles. In the first place we test them only insofar as they are useful. For the pragmatist and especially for Dewey, theories of science are simply the means of getting from one set of singular propositions to another. Nagel admitted that initially this viewpoint does seem to clear the air. We can then assert that physical laws do not necessarily reflect the structure of things in the universe but simply provide tools for getting from one singular proposition to another. Nagel did say that he felt there were difficulties in this view as well, but there was not time to pursue them on this occasion.

MAY 12

In this lecture Nagel dealt with that part of Chapter XVII concerned with what are often called the laws of thought or formal canons of logic. Traditionally, this discussion has centered around the principles of identity, contradiction, and excluded middle, and Dewey discusses each of these principles at the end of the chapter.

Nagel began by saying that the function of laws of thought or formal canons is to state the ultimate conditions which propositions must satisfy to function properly in inquiry. He turned then to the discussion of the first principle, that of identity. He remarked that this principle is not to be found in Aristotle, and that probably the first explicit formulation is found in Leibniz. Traditionally the principle expresses an ultimate condition on any subject matter, but for Dewey it expresses something different. He here cited Dewey's own formulation (p. 344) that the principle is "the logical requirement that meanings be stable in the inquiry-continuum." Nagel remarked that this interpretation of Dewey's is obviously different from that given by realistic logicians (*realistic* is here, of course, an ontological term).

Nagel next turned to the principle of contradiction. He stated that for

Dewey this principle sets the ground of complete exclusion. It is "a condition to be satisfied." Put another way, Nagel said that for Dewey the principle states a condition that propositions must satisfy to be used in inquiry; thus it says nothing ontologically.

Next, Nagel turned to the principle of excluded middle. He formulated the principle, both in the form that everything has either the property A or not A, and also in the form p or not p . He quoted Dewey's own remark on page 346: The principle "presents the completely generalized formulation of conjunctive-disjunctive functions in their conjugate relation." Nagel also emphasized that for Dewey the principle is a logical condition to be satisfied. It is a directive for making definitions.

Discussing the three principles together, Nagel then emphasized that for Dewey the three principles have no ontological status, but quoting Dewey, page 346, "as formulations of formal conditions (conjunctive-disjunctive) to be satisfied, they are valid as directive principles, as regulative limiting ideals of inquiry." In this connection Dewey discusses the classical objection to the law of excluded middle, that the law does not apply to changing relations. Nagel affirmed that he felt Dewey's answer was wholly sound. The principles are meaningless for changing relations unless they are considered as conditions to be satisfied.

Nagel concluded by pointing out that it is essential for Dewey's logic that these laws are not descriptive of traits that exist outside of inquiry, but play a logical role within the context of inquiry. He mentioned that a predecessor of Dewey in this line of thought was F. C. S. Schiller.

It should be mentioned that Nagel spent some time explaining the standard logical formulations of each of the three principles, and I have omitted that material here.

MAY 14

In this lecture, the last one of the term, Nagel began by discussing Dewey's views on induction. He stated that Dewey's views on induction and more generally on scientific method were fairly orthodox, but as he would show later in the lecture his views on causality were not. Nagel remarked that Dewey is concerned to show that a given sample or class has representative connections for the whole. This is one formulation of a classical problem of induction. The difficulty, of course, is to know how to state the criterion of representativeness. Nagel pointed out that beyond stating the problem correctly, Dewey says little more. For instance, at no point does he discuss, even at an elementary level, general principles of statistical inference. Nagel remarked that it was disappointing to find so little specific discussion in Dewey, considering the definiteness of much of the literature on induction.

Nagel then turned to a discussion of Chapter XXII, "Scientific Laws—Causation and Sequences." He first pointed out that for Dewey causation is taken as having a logical, rather than an ontological, character. Nagel said that he thought that Dewey's analysis of causation was one of his most successful efforts. His attempt to give causation a logical status, to place it in the context of inquiry, and to deny it a status in nature, as such, represented an attempt to say something important and new. Dewey continually tries to make it clear that we must be wary of asserting anything about order in nature. Causal laws for Dewey are a means of introducing links between events, but he emphasizes that in his view the links do not exist prior to inquiry. In this respect he is very much against Mill's view of causal laws as necessary and unconditional. According to Dewey, what Mill should have said is that causal laws are means by which a certain kind of uniformity between events can be established. Dewey continually reiterates, in contrast to Mill, that the subject of science is not sequences of events but the establishing of links between traits or characters of events.

In summing up Dewey's analysis of causality, Nagel expressed the view that Dewey's analysis of causation is one of the most original parts of the instrumentalist-pragmatist position. The particularly distinctive feature is the view that all general propositions have a significance only within inquiry. To ask the question that has repeatedly been asked in the history of philosophy about the representativeness, or even the ground of general propositions, is to raise questions that pull the propositions out of context. What a general proposition is can only be determined by what it is used for. Interpreted this way, we do not take general propositions as representative of the structure of nature as such. It is fair to claim that the adoption of this view permits a wholesale "deontologizing" of a wide range of propositions. This view, which Dewey defends so consistently, provides quite a fresh viewpoint in the history of philosophy. Regarding the further question of whether Dewey can disprove the ontological interpretation against which he argues so vigorously, Nagel said it seems fair to say that Dewey can show only that such an ontological interpretation is not required. The assigning of an ontological status to propositions is in no way necessary for understanding them. However, the final question to be asked of Dewey is whether he can avoid by this move all questions of metaphysical status. Nagel ended the lecture by stating that this question is a matter of considerable debate.

The reader should remember that the synopsis of Nagel's lectures given here is a very much abbreviated version, and, perhaps just as important, is a version based on the notes of a new and rather naïve student of philosophy. If the reader feels that some points are put too simply or inaccurately, the fault is almost surely mine rather than his. In spite of such faults, the recording of these notes may still be of some service, for

Dewey has possibly the most impenetrable prose style of any serious philosopher since Hegel. On the other hand, like Hegel, he has important and fundamental things to say.

It seems fitting to end with the closing lines of Dewey's *Logic*, which describe so well not only the major thrust of his work but the dominating spirit of Ernest Nagel's philosophy as well.

Since scientific methods simply exhibit free intelligence operating in the best manner available at a given time, the cultural waste, confusion, and distortion that results from the failure to use these methods, in all fields in connection with all problems, is incalculable. These considerations reinforce the claim of logical theory, as the theory of inquiry, to assume and to hold a position of primary human importance.