
SEAL OF THE UNIVERSITY OF CALIFORNIA
LET THERE BE LIGHT
1868

SEMICENTENNIAL PUBLICATIONS

OF THE

UNIVERSITY OF CALIFORNIA

1868-1918

UNIVERSITY OF CALIFORNIA PUBLICATIONS

PHILOSOPHY

VOLUME 3

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY
1918

FOOTNOTES
TO
FORMAL LOGIC

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PREFACE

The psychologist, on the one hand, and the metaphysician and the epistemologist, on the other, have crowded our present day discussions in the field of pure logic into a very narrow and uncomfortable position. No sooner does the logician raise the question as to the origin and nature of the thinking process, than the psychologist warns him that he is trespassing in fields not his. Especially is this true when we venture to discuss such questions as the process whereby judgment develops into inference or is depressed into conception. This we are told is not logic, but genetic psychology. On the other hand, when the logician raises the question as to the nature of knowledge in general, he is again rebuked for passing into the domain of metaphysics, epistemology or ontology. It has been said that if the logician should accept these restrictions which his neighbors have imposed upon his field, there would be little left of logic, except a mere collection of misleading formulae coupled with a little elementary grammar.

I think the situation is not quite so desperate as this, and I hope in some small measure in these studies to justify the present tendency to widen the field of logic. When we attempt to define the nature and scope of logic, or of any other of the philosophical sciences, we find our inquiries passing by imperceptible steps from one field to another until presently each subject in turn claims to be the whole of philosophy. I believe it to be a mistake to divorce logic—even for educational purposes—from the other philosophical sciences. I do not see how it is possible to answer the questions that are more than ever today besetting logical doctrine until we have first settled some of the fundamental problems of philosophy. Formal Logic is again on trial

for its life. In recent years, at least four* important volumes have been entirely devoted to this modern indictment of traditional logic. Having now for some fifteen years been charged with the responsibility of teaching Formal Logic, and to more than half a thousand students each year, I feel morally necessitated, as one of the humblest of the disciples of Aristotle, to give some justification for the faith that is in me.

In the introductory pages of his *Formal Logic*, Professor Schiller remarks, in a somewhat disheartened mood, "it is not unlikely that this whole revolt will come to nothing and that Logic will continue to be taught on the traditional lines." He takes comfort, however, in the belief that the failure of the reform movement will not be due to any intrinsic error or weakness in the movement itself, but to the fact that the prestige of tradition is so overwhelming, the force of habit so insidious. Dr. Mercier in the preface to his *New Logic* also expresses gloomy misgivings as to the fate of his volume. He says "by the time the New Logic has stood two thousand years . . . no doubt it will have had all the guts taken out of it." I think, however, that no serious attempt will be made to disembowel his book. Dr. Mercier has been disappointed, so he says, that none of the older writers, Bosanquet, for instance, have replied to his criticisms. It seems more likely therefore, that his volume will be allowed to dry up with its entrails in it and become an interesting object for antiquarian research in the generations to come.

I have chosen the title *Footnotes to Formal Logic* for these studies, rather than the more pretentious title *Logical Theory*, or *Principles of Logic*, in order that I might convey my own consciousness of their incompleteness and shortcomings. But, while the collection of essays is by the title confessed to be fragmentary, I hope I have made plain a thread of continuity running through them all. I have not attempted to present a brief for Formal

* Schiller, F. C. S., *Formal Logic*, London, Macmillan, 1912; Sidgwick, A., *Elementary Logic*, Cambridge, University Press, 1914; Dewey, John, Essays in Experimental Logic, Chicago, University of Chicago Press, 1916; Mercier, Charles, *A New Logic*, Chicago, Open Court, 1912.

Logic that is without qualification; for I have at times said some severe things about the ancient system. However, I think on the whole my efforts will be regarded as a defense of the Traditional Logic, and to that I shall not object. For, to use a very apt phrase of Dr. Mercier, if I have to choose between the New Logic and the Old Logic, I should "plump for" the latter.

CHAPTER I

THE MODERN INDICTMENT OF FORMAL LOGIC

I.

The new theories of thought all make a common criticism upon the old idealistic Formal Logic. Whether we call these modern theories of knowledge pragmatic, realistic or empirical, matters little for our present purpose. They all agree in saying that the conceptual, a priori logic has never undertaken to set forth the conditions out of which actual thought has arisen: nor has it defined the principles that estimate the success of thought's accomplishments. It has no theory of the *whence* and the *whither* of thought. "What we have to reckon with," Professor Dewey writes, "is not the problem of How can I think *überhaupt?* but How shall I think right *here and now?* not what is the test of thought at large, but what validates and confirms *this* thought."[1]

I wish to submit at once, and it will be one of the central contentions of these studies that it is unfair to the formal logician, even of the old orthodox type, to say that he is unwilling to take notice of the concrete facts, that he has a contempt for the particulars, that the universals are more precious to him than the particular cases to which they apply. Only a hasty and reckless idealist affirms any such doctrine. An essential part of thought is always engaged in the effort to reach final truths—propositions that are not merely finally true in the sense of being a complete and adequate adjustment to an immediate situation, but truths that are certain and universally valid. Even the most zealous defender of the modern "flowing philosophy" admits the existence of this logic *überhaupt*, albeit, he insists that it is a useless

[1] *Studies in Logical Theory* (University of Chicago Press, 1903), p. 3.

pursuit. Another part of thought, which regards itself just as essential, attempts to arrive at practical truth; it is concerned with the reconstruction of the "immediate situation." Now, Experimental Logic asserts its competency to pass judgment not only upon its own pragmatic process, but also upon the epistemological aspirations of the Real Logic. And it is to this basic doctrine of the new school that the old school registers its earnest caveat.

The idealism represented in these pages is of a very old-fashioned type. It essays to defend even so abstract an idealist as Plato against the assaults of the modern realist.[2] It has often been said that the logic of Platonism, or any absolute idealism, drives one either to pure intellectualism or to pure mysticism. But even Plato did not put the whole emphasis in his thinking on the theory of knowledge. Philosophy was for him, to be sure, primarily a discipline of the mind; but it was a discipline which ended always in the service of action; it was the propaedeutic for character. Thought was quite as pragmatic for Plato as it is for any of the modern voluntarists, only it was pragmatic, I should say, in a thoroughly defensible sense. The mind's essential nature is exhibited in its everlasting aspiration after truth. But perfect insight, genuine wisdom, has as *its* essential characteristic the inevitable necessity of expressing itself. The knowledge that the mind wins must flow out into character. Man's complete life consists not only in thinking perfect thoughts, working them out like nuggets of gold, but also in coining them into action. Plato insisted always that Logic is the absolutely indispensable prerequisite of Ethics, and, conversely, that Ethics was the inevitable outcome of Logic.

[2] In these studies I shall often speak of instrumentalism, realism, and pragmatism as if they were identical doctrines. I am, of course, fully aware of the several points of vital difference which have been insisted upon by various members of the two schools. But for the purpose of the contrast with idealism we may neglect these differences and deal with their central agreement. Both realism and instrumentalism declare that thinking is instrumental or reconstructive and not constructive, as idealism always professes. They hold that thought finds real brute existences in the world of presented fact—structures that are not created but discovered.

Logic in the fullest sense of the word is therefore the source, but not the final goal of the Platonic philosophy, or of any serious idealism. Insight is not for its own sake but for the sake of action. Knowledge turns not inward upon itself, but outward upon conduct. It is practical; it is pragmatic. According to the sublime Platonic formula of life (even in its most modern interpretation by Caird, Royce, Howison and others), knowledge is virtue, not, knowledge is knowledge. Plato would have agreed entirely with a modern up-to-date metaphorical epigram; "knowledge that turns inward upon itself creates a current so hot that it burns out the fuse."

Knowledge begins with surprise and ends in the rational dissipation of surprise; it is original, underived, reminiscent. This is the basic doctrine of Plato's philosophy which has been echoed and reëchoed through twenty-three centuries of idealism. But now we must bear in mind that it is not pure wonder, just unalloyed surprise, but rather a troubled wonder that is the source of knowledge. We are not and cannot be just the passive happy spectators of a stream of fugitive impressions flitting across the stage of consciousness. The presentations from the sense world come as competing alternatives. This it is very important to remember in considering any conceptual logic. The Platonic conception of wonder has lent itself to poetic imagination and striking rhetoric, but it is a misunderstanding of it that makes it synonomous with pure reverie, mystic contemplation. Consciousness is not merely passive, it is essentially active. All waking consciousness is one continuous affirmation, an affirmation which, to be sure, always expresses itself in a disjunctive judgment, as we shall see later. Now Plato insisted—at times with almost indignant emphasis—that sense presentations are incapable of thickening up into any final meaning, or validity of their own. Objects of sense perception are always particulars. And no accumulation of particulars by sheer juxtaposition or association can yield true knowledge. An aggregate of particulars is just

another particular. Knowledge presupposes universals. There is, therefore, a world of ideas above this world of fleeting sense perception. And the mere beginner in the study of Platonic philosophy knows that the ideas are entities, genuine objects of knowledge, and that they must never be taken as states of consciousness merely.

The New Logic cancels the distinction between origin and validity, between what we discover about a particular fact through an analysis of its present content, and what we learn about it by an historical study of the conditions of its birth and development. Professor Dewey[3] says of the orthodox logician: "He deals with the question of the eternal nature of thought and its eternal validity in relation to an eternal reality. He is concerned, not with genesis, but with value, not with a historic cycle, but with absolute distinctions and relations"; and again: "We have no choice save either to conceive of thinking as a response to a specific stimulus, or else to regard it as something 'in itself,' having just in and of itself certain traits, elements, and laws. If we give up the last view, we must take the former."

It is an engaging and important question which instrumental Logic asks, How does empirical science come by its general principles, and particularly how does it prove them? But the idealistic Logic has always insisted that this is not the same as the determination of the principles of knowledge. If the New Logic intends merely to assert that we never reach a conclusion unless we have already come by it through experience, no idealist will take exception. There is a deep truth in the assertion that we believe first and prove afterward or not at all. We do not know because we have reasoned but we reason because we know. Kant was very explicit on this point. He says, "Logic, on the contrary, being the general propaedeutic of every use of the understanding and of the reason, can not meddle with the sciences, and anticipate their matter, and is therefore only a

[3] Studies in Logical Theory, p. 14.

universal Art of Reason, the art of making any branch of knowledge accord with the form of the understanding. Only so far can it be called an organon, one which serves not for the *enlargement*, but only for the *criticism and correction* of our knowledge."[4]

I need only refer to a significant fact that has been pointed out frequently, namely, that several different meanings—some of them quite diametrically opposed—have been given to the term "practical" as applied to judgment. Even the pragmatists who may now be said to have appropriated to themselves the "trade mark" of the term practical, seem to differ widely in their definition of it. In Kant's distinction between theoretical and practical reason, the theoretical reason is always practical, or pragmatic, although certainly not in the sense in which the word is employed in some of the recent theories of judgment. When the pragmatist declares that all judgments are practical, does he mean to assert that the object of the judgment is *created* in the act of judging? The question as to precisely what the expression "creates its own object" may mean—the question upon the answer to which depend so many vital issues in Logic—will be considered more fully in a later chapter in dealing with the postulated objectivity in thought. I wish only to say, in passing, that this creative activity is the essence of all the alleged theoretical judgments in any type of idealism, even the most ancient. The primary object of the *Critique of the Pure Reason* was to show that thought does actually create its object: or, the least we may say, is that it assists in its creation, in so far as it supplies the form that matter must take in knowledge.

Any Logic that regards all judgments as practical labors under this inherent difficulty. How can any concrete, particular instance of knowing hope, at one and the same time, to *create* a valuable object and to *know* its creation as valuable. I am restating, I know, a very familiar and old criticism of prag-

[4] *Introduction to Logic;* translated by T. H. Abbott (London, Longmans, 1885), p. 3.

matism when I say that value cannot be regarded as the hidden worth within a situation, which needs only to be brought to light, or evaluated. Value is not the self-determined issue of facts. Value proceeds from the activity which relates particular to universal, fact to law. The world of value is beyond the world of fact in the same sense that the straight line is beyond the curve which it determines.

Pragmatic logicians are over-filled with the spirit of natural science. This they say, begins with practical definitions and follows practical methods to practical conclusions. Natural science has come to have such an enormous place in the common life, as well as in the academic world, that we can readily see how the New Logic has come by its over-weaning sense of the importance and certainty of the scientific method. The enthusiastic devotees of natural science easily win the approbation of the fickle public, when they contrast the definite advance which the so-called pragmatic sciences have made, with the confusion and dispute which we seem still to find in the world of speculative Logic. The experimental logician insists that the difficulty with all the philosophical sciences—and not less so with Logic than with any of the others—is that they are all destitute of either accurate, initial definitions or certain methods, for the solution of their problems. The analysis and the evaluation of judgments of practice without external points of orientation would be as difficult as the determination of a system of conics without the axes of reference. The conditions of assertion are manifold—sometimes operating singly, but for the most part combined in amazing complexity.

It is the task of practical thought (upon this point the idealist agrees entirely with the pragmatist) to determine in what measure each of the antecedents enters into the joint effect. The difficulty in accomplishing this task is the same as the difficulty that we meet elsewhere in the inductive sciences, for example, in the application of Mill's Method of Agreement. There the plur-

ality of causes renders the causal determination uncertain. And as in the world of *outer* natural sciences we find plurality of causes and intermixture of effects so in the world of *inner* natural science we discover each phenomenon to be the meeting-point of converging strands of conditions coming out of the past and diverging strands of effects going out into the future. They are like the knots in a net into which and from which various cords run. All of this is a most interesting study in Psychology but it is not Logic. However cleverly phenomenena may be explained as the cross-section of the evolutional series, that is, as the meeting-point of forces, there still remains to be explained the essential identity or form of the whole.

II

Every act of thought is in the first instance an immediate presence, but it is also embedded in a continuum. This continuum, in its entirety, is reality. It includes the present thinking, and it is or may be the object of that present thinking. We have illustrated here the axiom of higher mathematics that the part can be put into a one to one correspondence with the whole of which it is a genuine part. On this point I should differ from Professor Dewey in the central thesis of his system that "thinking is set in a continuum which is not an object of thought."[5] On the view which I am presenting it is evident that the term reality is not so "particularly treacherous," as Professor Dewey thinks. There is no contradiction in its two uses—as a term of indefinite reference and as a term of discriminate reference. The part of the continuum which is out of sight and is, therefore, not an object of thought is in the instrumental view, nevertheless, always *suggested* by the present thinking. Now the difference between the idealistic and the instrumental theory of judgment hinges upon the meaning of the word *suggest*. The instrumentalist says that this suggested aspect of the continuum

[5] *Experimental Logic*, p. 10.

is never a part of the *given;* the idealist insists that the suggested fact is already in a profound sense a present fact, otherwise it would not be even suggested. Idealism provides, without contradiction, for both the discrete and the continuous aspect of the whole within which present thinking is set. Bradley and his followers, in making reality the ultimate subject in judgment have kept in mind these two uses of the word.[6]

Moreover, I can not think it wholly just to the traditional theories of knowledge to say with Professor Dewey that they were concerned entirely with the "question of the eternal nature of thought and its eternal validity in relation to an eternal reality—that they were engaged, not with the genesis but with value, not with a historic cycle, but with absolute distinctions and relations."[7] The old pre-Darwinian metaphysics did not ignore the question of genesis, but it saw that all historical questions are at last dependent upon questions of value, upon absolute distinctions. Even Plato recognized the fact that truth and falsity were organically related to practical life, to action, to the very needs in concrete experience upon which the logic of pragmatism lays such emphasis. And it is not attributing to Plato doctrines that are not his, to say, in the terminology of the new theory, that he did not teach that truth and falsity should be wholly divorced from the particular activities that we perform at a specific need. But he would reply to the pragmatists today in the spirit of his reply to the sophists, "The constructions of these specific activities are not true unless they conform not only to the intra-temporal *is* but to the supra-temporal *ought.*"

Professor Schiller asks the logician of the old school a simple question which he rightly says cannot be shirked: "When he asserts what seems to him a truth does he take any steps to ascer-

[6] Bosanquet says: "The subject in every judgment of Perception is some given spot or point in sensuous contact with the percipient self. But as all reality is continuous, the subject is not *merely* this given spot or point." *Logic* (ed. 2; Oxford, Clarendon Press, 1911), I, 78.

[7] *Logical Theory*, p. 14.

tain whether or not it is 'objective,' and whether other men (all or any) agree with him? If he does, what are they and what is their logical value? If he does not, why should not his claim be treated as a random one?"[8] But now this is precisely the question which a score of critics have been asking the pragmatist for the last two decades. In an essay on "Pragmatism and the a priori" printed in 1905, I said:

> A judgment must be more than a mere effort to reconstruct the situation in which we find ourselves from moment to moment; so much is, of course, the first condition it must fulfil. But in addition to being a successful present response, it must be true. This requires that it not only conform to a passing *is*, but to a permanent *ought*. Each judgment of mine is, in one aspect, my response to a present situation. But before I am entitled to call it true, I must know why the response has been what it is; that is, I must be able to say that another than myself would have responded to the situation in precisely the same way.

Experimental Logic tells us that we must take all of our problems, logical, ethical, and even religious, to experience for solution. We must let the particular concrete facts of sense experience tell their story. But the result is, as I have tried to point out, experience has in the end no necessary story to tell. Did not Hume prove that once for all? If we follow the realist far enough, as he lets facts recite their tale of explanation, he invariably brings us back to the point from which he set out. He displays a remarkable combination of true insight, with what seem inexcusable lapses from reason in his empirical explanations. These modern apostles of the "flowing philosophy," are standing upon a platform from under which all support has been taken. The pragmatist proceeds with his empirical test for truth paying no heed to the constant protest of the idealist against the circular reasoning that is involved in any attempt to make experience self-explanatory. To the idealist's question, How do you explain the contradiction in experience? he replies naïvely, "There are no contradictions." Of course no contradic-

[8] *Mind*, n. s. XVIII (1909), 402.

tion will ever be discovered in experience if he test experience by itself.

The difference between the idealistic and the pragmatic interpretation of experience is to be found in the way in which each of the two schools reads off the relationship between external and internal meaning. For the idealist the whole problem of knowledge reduces itself to the question, How are primary or internal meanings of ideas related to their secondary or apparently external meanings? For the realist, the pragmatist, and in fact for every type of positivist, the question is, How are the brute facts of the primary objective reality related to the secondary apparently internal meanings which we call ideas? If experience be taken in a wide sense as synonomous with the entire content of consciousness, and thus made to cover both the active as well as the passive aspects of thought, then of course the idealist would agree with the empiricist that the laws of thought, as well as the laws of existence come from experience.

III

The critics of Formal Logic have failed, I venture to think, to distinguish between the thought form and the language form in which that thought form expresses itself. The two are not the same; and Formal Logic deals with form in the first, not the second sense. Professor Sidgwick says, "Preoccupied as Logic has chosen to be with forms of statement, it cannot wholly desert the idea that the meaning of a statement is something that belongs to its form, instead of the form being a more or less successful attempt on the part of a speaker to express a meaning."[9] Not all teachers of Formal Logic, I am sure, would agree with this statement. The translation of the literary or rhetorical forms of statements into the logical form of thought, is the work of the grammarian and the philologist. We admit that the

[9] *Elementary Logic*, p. 166.

grammatical form is often highly ambiguous, and that it is a more or less successful attempt on the part of the speaker to express a meaning—it is a thought form. But the thought forms are not ambiguous, although they have manifold meanings. It is the work of the formal logician to explicate the various implications, or manifold meanings.

It is a significant fact that in its indictment of the Traditional Logic the New Logic does not condemn formal reasoning *in toto*. Sidgwick says: "We do occasionally reason about the extensive relation of two accepted classes to each other by means of the relation of each of them to a third class, and for that purpose we may put letters like X, Y, and Z, in place of the terms and so test the validity of a syllogism apart from the truth of its premises and conclusion." (*Elementary Logic,* p. 164). Now the defenders of Formal Logic may well regard this as a concession of the greatest importance. If there can be found a single instance where the form of thought does not have to wait upon the matter, controversy is at an end and the formal logicians have won the debate. This is all that Formal Logic has ever contended for, and we do not here avail ourselves of the principles that the exception proves the rule in the narrower sense of that axiom. These instances, where it is admitted that we reason formally, are abstractions from the concrete situations, and if the form can be divested of its matter in a single instance there is nothing to prevent our applying the principle universally.

Formal Logic, today, has set for itself the task of determining all indefinable concepts and all indemonstrable propositions. The several contributors to the volume on *Logic* in the *Encyclopedia of Philosophical Sciences* are quite in agreement on this point. We must bear in mind, however, that the modern process of logical definition consists in pursuing a concept back to some prior indefinable concept. And we must always remark that, when we are dealing with a class of inter-related concepts, it is

often immaterial which of the group are taken as the indefinable prerequisites of the others. In like manner the present-day Formal Logic regards the process of demonstration as the reduction of all propositions to the least number of indemonstrable propositions. And here, too, in considering any collection of propositions constituting a real group it is immaterial to the structure of the group which is placed in the position of the indemonstrable proposition, and which are its derivatives.[10]

IV

Of the four authors who in recent years have led the attack on Formal Logic, Dr. Mercier is the most vehement in his denunciations of the traditional system. He thinks it a serious indictment that among the foremost writers on the subject, since the time of Aristotle, no two are agreed on what the subject matter is, what its limits are, or even whether it is a science or an art. He insists that it is neither logical nor useful to write upon a subject without first determining the nature of the subject matter. But this I think is not a serious indictment. Many investigators are doing most logical and most useful work in Dr. Mercier's own special province of insanity, and yet we may say of these workers, as Dr. Mercier says of the formal logicians, that no two writers on the subject since the time of Pinel have agreed as to precisely who should be included in the class, insane.

In his attack upon the Traditional Logic, Dr. Mercier has said that the system which he has propounded is so different from all previous expositions as to warrant the title, *A New Logic*, which he has given to his book. But in the opening pages of the volume we find him giving an account of the nature of the reasoning process almost identical with that which Aristotle gave

[10] Cf. Croce, *Encyclopedia of Philosophical Sciences*, I, 186. "It depends on us whether any particular axiom be taken as a theorem and any particular theorem as an axiom, according to the order which we adopt in our deductions."

in the *Prior Analytics*. Dr. Mercier maintains that there are three processes of reasoning—induction, deduction and analogy. Now, however much logicians through the centuries may have differed from Aristotle in their own personal opinions of the nature of the reasoning process, they have all admitted that we owe to him the tripartite division of the reasoning process into analogy, deduction and induction. Although Dr. Mercier has condemned in very emphatic language the whole of Traditional Logic, yet when he comes to his own account of the three types of reasoning he says, when writing about deduction: "The Logic expounded in that book is the Logic of Inference; of Consistency; of Proof and Disproof; of Form. Useless in the discovery of Fact; ignoring the truth or falsity of the matter of which it treats; its value is in testing Consistency; in argument, in explicating, convincing, refuting. This is the field of Traditional Logic."[11] We thus observe that while denying the uselessness of the Traditional Logic in the discovery of facts, Dr. Mercier nevertheless accords to it a wide field of usefulness in other directions.

Dr. Mercier criticizes the logicians of the old school because they employ a nomenclature that is often inappropriate and ambiguous. He discovers, in the words describing the classification of propositions as real and verbal, a clear misnomer in the term, verbal; "for all propositions," he says, "are expressed in words, and are therefore verbal. Here therefore at the very outset of our logical studies, we meet with a striking instance, the first of very many, of the inaccuracy, looseness, and ambiguity with which words, the material of their craft, are used by logicians."[12] But I submit that we should none of us write much upon the subject of Logic or upon any other subject, if we waited until words said exactly what they mean, or meant exactly what they said. It is interesting to observe, also, that

[11] *New Logic*, p. 11.

[12] *Op. cit.*, p. 17.

the classification which Dr. Mercier suggests, instead of the one ordinarily found in textbooks, is itself not free from ambiguity of the very kind which he criticises. We are all of us at the mercy of vocabulary.

The idealists join the empiricists in deploring the imperfection of language as a means of conveying thought about first principles. It is not a new discovery that language is inadequate to speculative thought. Nor does it require elaborate proof to show that language was created for the utilitarian purpose of communication in the world of appearances. The idealist, therefore, describes his conceptions of final reality very unsatisfactorily by means of a vocabulary which has had its origin in the world of relative reality. All who believe in the world of things that abide, must therefore express themselves imperfectly by myth, parable or metaphor. Plato, Christ and Buddha often deplored the defects of language in their attempt to teach the glad tidings of salvation through the sense of the universal. The scientist and the pragmatic thinker in general, who traffic in things seen, are not so handicapped by the short comings of language as are those who are concerned with the unseen. We make many allowances for the scientist when he expresses himself in halting ways by means of our imperfect instrument of language, which does not keep pace, in its revisions, with the revisions of knowledge. We understand the astronomer when he says, "Tomorrow when the sun rises I shall make some observations." We do not rebuke him for the inaccuracy and expect him to say, "Tomorrow when the earth revolves and causes the sun to appear to rise, etc." The idealist bespeaks a like patience and tolerance from his hearers when he attempts to describe the still more distant realities by means of illustrations from the world of sense. He is fully aware that his metaphors are faulty, defective, and inconclusive.

V

The genetic theory of judgment, upon which pragmatism rests its entire logic, is stated most clearly and concisely by Mr. Schiller:

> I cannot but conceive the reason as being, like the rest of our equipment, a weapon in the struggle for existence, and a means of achieving adaptation. It must follow that the practical use, which has developed it, must have stamped itself upon its inmost structure, even if it has not moulded it out of prerational instincts. In short, a reason which has not practical value for the purposes of life is a monstrosity, a morbid aberration or failure of adaptation, which natural selection must sooner or later wipe away.[13]

In the present essay I wish to reaffirm the central criticism that idealism has made upon the logic of pragmatism ever since its birth—in its present reincarnation—in Professor James' lecture on "Philosophical Conception and Practical Results," before the Philosophical Union of the University of California in 1898. I shall attempt to show, as I have maintained elsewhere[14] that thought is not merely an instrument in the struggle for existence, not simply one of the devices with which nature has equipped us to secure a more comfortable adaptation to our environment. I shall contend that aside from being a useful instrument in the struggle for existence—its secondary and derived function—it has the more important primary office merely to be true. It has been asserted often in the history of Logic that thought has an external meaning, through which it refers to an end beyond itself, and an internal meaning which constitutes an end in itself. It is one function of judgment to be useful, that is, to reach out beyond itself. But its other and more fundamental function—a function without which that other function is meaningless—is just to be true, to be self-consistent.

Some pragmatists have hestitated to commit themselves to the doctrine that all judgments are practical. Such leaders, how-

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[13] *Humanism: Philosophical essays* (London, Macmillan, 1903), p. 7.

[14] "Pragmatism and the *a priori*," Present series, I (1904), pp. 72–91.

ever, as Schiller, Sidgwick and Mercier have unhesitatingly declared, not only, that all truth works, but also that all that works is true. But Professor Dewey seems always to leave his readers in doubt as to precisely what view he holds. In his very latest utterances he has again failed to make his position clear.

In an article entitled, "An Alleged New Discovery in Logic" Mr. D. S. Robinson criticises Professor Dewey's *Experimental Logic* and remarks[15] that he is in doubt whether Professor Dewey would say that all judgments are practical. In his rejoinder Professor Dewey admits "There *is* danger of a serious ambiguity in discussing practical judgments as a distinctive type and also intimating that in some sense all judgments may be practical." But when Professor Dewey "intimates" (not asserts), that "some" (not all) judgments "may be" (not are) practical, I, too, find myself in doubt. I am still old-fashioned enough in my idealistic convictions to think that the pragmatist can not avoid committing himself to at least one assertion that is not practical—or at any rate not practical in the same sense as the others— namely, this very judgment that all judgments are practical. And it is not mere quibbling to say that the judgment that all judgments are practical, is not itself a practical judgment. It is another way of saying that the judgments of utility are in one dimension of thought and the judgments that pronounce upon the members of the series of useful judgments are in a different dimension of thought.

Empirical Logic[16] has always declared that all definition presupposes a psychological treatment of mental states; and

[15] Jour. philos. and psych., XIV, 225, April 26, 1917.

[16] There is an important sense in which every theory of judgment is empirical. When I say that a judgment, or anything else, is empirical, one implication always is that it might have been otherwise. And in our theory that judgment is just such a selection from competing alternatives presented to the mind, this constitutes one of the earliest and most basic characteristics of the judging consciousness. Wherever we find the possibility of error, we are dealing with empirical facts. And there is this paradox about facts: to be real facts they must possess the inherent possibility of being different, and hence not facts.

idealists have always admitted that a study of psychic facts as they are immediately presented to consciousness is indispensable to any doctrine of truth. But they insist that this is not the sufficient condition of truth; the apperceiving or unifying of the sense-presented facts is performed by the self-active principle of mind. If there is value to our individual experiences, as they come to us strung along in time, and if it is unnecessary to make this temporal validity rest back upon a validity that is not in time, all talk about a world of absolute truth and perfection is meaningless. If Experimental Logic is self-sufficing, then there is no Logic *überhaupt*.

Experimental Logic would explain my present thought by locating it between an a priori situation out of which it emerged and a subsequent situation into which it flows. Idealistic Logic maintains that the three situations—past, present and future—even when thus casually connected in the chronological series are not self-explanatory. There is exhibited in Instrumental Logic, we hold, the ancient fallacy of failure to distinguish between psychological cause and logical ground.

The logical coherence in our judgments, according to Experimental Logic, is our interest in the situation in which we find ourselves, when called upon to judge. We are constrained to reconstruct that part of the world with which we are in immediate contact. The union of the subject and predicate in judgment is the outer expression of this purpose or interest. This is certainly true as a psychological account of the judging process. But having said that interest or purpose is the cause of the interconnection of ideas, we still have on our hands the more serious problem of finding the ground of the present purpose. This, as the idealist has often insisted, is not self-explanatory for cause and ground are not identical. It is one thing to say that we judge because we have a need, an interest, or a purpose; but an entirely different thing to discover the ground of this need. How may I know that this present purpose to reconstruct reality is a

true purpose? Only when I have laid hold of a higher and ultimate purpose, namely, a criterion of this specific purpose. In short, I fail to see how purposes are capable of self-evaluation.

Experimental Logic while emphasizing effects of action as tests of validity, does not furnish a criterion by means of which we may distinguish good from bad effects. Every judgment reconstructs reality, and thereby helps to continue the present order, say the defenders of the new theory of knowledge. We pronounce the judgment true if it contributes to the existing order, and false if it does not. But now, in order that we may distinguish a good effect from a bad one, we need some criterion extrinsic to the situation to tell us why it is best to have the present system perpetuated. In every experimental logic, truth means objectivity, and its criterion is utility. But in the practical world there are different kinds of utility. If the useful is the true, we ought likewise to have grades of truth, and be able to speak of the true, the truer and the truest. This is, indeed, precisely what the pragmatist does say—a doctrine open to criticism, to say the least. Moreover, even if we admitted the possibility of gradations in truth (for the logic of realism insists that this is by no means manifestly absurd), the pragmatic test furnishes no criterion for distinguishing between the different kinds of truth. But it is evident that it is not mere utility, but utility of the right kind, that is needed to establish the objectivity in judgment.[17]

In every judgment, according to the pragmatic theory of knowledge, something new is added to the system of cognitions already in the possession of the one who judges. The test of

[17] Cf. Windelband, *Ency. Philos. Sci.*, I, 24. "And here we come on a double aspect of all logical laws: on the one hand they are rules for the empirical consciousness, according to which all thinking which has truth for its aim should be carried on; on the other they have their inner and independent significance and being, quite independent of the actual happening of ideational processes, which are or are not in accordance with them. We may call the latter their *value-in-themselves*, the former *their value-for-us*."

the rationality of this *new* element is its compatibility with the *old*. If it works it is pronounced true, and is given its appropriate place in the established order. If it does not fit in with the old it is rejected as false. But this definition of truth is more adroit than accurate. Is not the pragmatist all the while begging the whole question? Does he not presuppose the truth or rationality of the *old*, namely, this thought system which he possesses at the moment of judgment? His criterion of inner consistency works very well, if we grant him enough rationality to start the process. The instrumentalist, I should say, borrows just enough of the idealistic insight to set his scheme in motion and then disavows the debt. The idealist has ever insisted that this determination of the primal rationality can never be achieved by a posteriori methods. That which is workable is not, for that reason alone, true. A new fact may fit in with the old, and yet may not know itself to be error, because it does not know the system into which it has been accepted, is false.

I cannot think that the total meaning of an idea is to be found by searching only forward from the idea to its consequences, as Professor James teaches, nor yet by looking both forward and back as Professor Dewey and his disciples insist. The deepest truth about thought is found in an entirely different dimension. It lies in a world that is logically prior to the postulates of either of these forms of pragmatism. Thought is constructive as well as reconstructive. It is not merely an instrument in the struggle for existence, but is itself legislatively sovereign over the process of evolution within which it manifests itself as an instrument. Not what an idea has come out of, nor what it is just now seen to be, nor what it is going to do hereafter, but what it eternally *is*, must furnish us with our deepest insight into the nature of thought.

VI

The agnostic realism at the heart of every form of pragmatic logic is not easy to refute. It has descended directly from the agnosticism of the *Critique of Pure Reason*. The only way to dissolve this realism is to make use of Kant's own discovery, and pursue his logic to the legitimate conclusion of its own movement. Kant pointed out the path that must be pursued in order to explain the inherent contradictions in the realistic conception of causality. He demonstrated, it would seem for all time, that the principle of efficient causality cannot belong to reality, but that it is the mind's contribution to experience. However, he failed to see that for this very reason there can be no genuine datum in knowledge. If the facts of experience are really *given*, if they are thrown at the mind from the world of things in themselves—then this transcendent reality possesses the principle of efficient causality. This, however, Kant's own doctrine explicitly denies. His insight enables us to see what he himself seems never to have been fully aware of, that if the things-in-themselves have not in them the principle of efficient causality they are incapable of *giving* anything to mind. Things-in-themselves can not contribute *causally* to the content of knowledge.

The fundamental point at issue between Plato and Aristotle on the import of judgment has been perpetuated, in philosophical discussions, to the present day. The idealists say with Plato that necessary truth is that from which every purely material external or given element has been cancelled. The only truth is formal truth. The later-day pragmatic or instrumental logicians have insisted that truth as thus defined would be relegated to the world of mathematical abstraction, to the realm of "bloodless categories." Plato provided for a more vital connection between the universal and the particular, the abstract and the concrete than appears on the surface. Aristotle's attack on Plato on this subject was not entirely defensible. And no serious idealism

at the present time imposes this requirement on knowledge. Plato did not demand that the given, the concrete, the particular element in knowledge should vanish entirely. Now it is obviously a question as to the precise meaning of the *given*. The *given* may be so defined that it can be kept as a constituent element of the highest knowledge. A datum which is just hurled at a passive mind would, of course, contaminate knowledge and forever reduce it to relativity and incertitude. In perfect knowledge there can be no *Streng-gegebenes,* nothing genuinely novel or totally different. But the logic of naïve realism declares that such a *Streng-gegebenes* is an inexplicable and irreducible element of the knowing process. Absolute knowledge, it declares, is forever impossible; such opinions or beliefs as we have, we arrive at by a posteriori methods entirely. The logic of naïve realism and the Instrumental Logic declare that we are not at all concerned with the ultimate beginning of thought. In fact, thought cannot be traced back to its source. It cannot see itself start; it must simply accept itself as fact. But now it can be pointed out, even to the proverbial *plain man on the street*, that there can be no *arriving* at knowledge or anything else without *starting*. There must be a beginning somewhere, an initial point of departure which is itself underived.

VII

Empirical Logic has always dealt extensively with the word *fact*. All knowledge, it says, must have its foundation deep down in the world of concrete fact. To this we may reply: In order to *realize* itself, thought must, to be sure, pass through fact. This Plato never denied, and the student in the philosophy of Kant learns, almost in his first lesson that the a priori forms of thought are empty and without meaning, until they have received their material filling. Thought does not see itself start. But we are not warranted in saying that because it does not see itself start, it arrives without starting. Of course, men reasoned accu-

rately before they knew the reason for their accurate reasoning. They followed out premises to their conclusion, or traced conclusions back to their grounds, guided by principles of correct thinking before those principles were noticed or understood. Aristotle was preceded by many centuries of exact thinking. It was not his primary purpose to make men rational—that, for the most part, they already were. He was interested to show men, by critical analysis, in what their existing rationality consisted.

Thought does first become aware of its own movement as it passes through fact—as it issues out of one situation to go over into another. But this is not the last step in its self-realization. It is an unjustified arrest of thought's activity not to allow it to pass through fact and, returning to itself, to discover the *underived* laws of its movement. Thought does find itself by the way of fact, but when its activity is unhindered it passes to the higher level where it sees that itself furnishes the prior condition of the discovery of itself in the facts. To think actually, we must indeed think about something; this something, the object matter of thought, whatever it may be, must in the first instance be supplied through the medium of the senses. Thought itself does not become an object of thought until after it has been called into exercise by objects presented from without. But while the material or external element varies with every successive act of thought, the formal or internal element remains the same in all; thus the necessary law, or form, binding on the thinker in every instance, is distinguished from the contingent objects, about which he thinks on this or that occasion. Obviously the words *material*, *external*, and *object* are not here employed in any naïve sense. In a later chapter, when we come to discuss more in detail the nature of the objective element in thought we shall define the object entirely in terms of the expected self-transcendence of the subject.

The new pragmatic Logic and the modern realistic meta-

physics underlying it — so their devotees frankly confess — acknowledge important contributions which they claim modern natural science makes to their doctrine. There has been a very prevalent tendency in the thinking of the last quarter of a century, to abandon or to ignore almost entirely what through all the ages has been considered the highest concern of the human mind, namely, the search for first principles, logically prior to the causal series and its validating ground in time and space. This tendency to abandon all attempts to orient our temporal experiences—our dynamic lives—by resting them back upon a static encircling reality is undoubtedly due to the enormous place that the method of natural science has come to occupy in the higher intellectual life of our time. The vast and comparatively sudden development in the biological sciences under the guidance of the master principle of evolution has filled many minds with an overpowering sense of the importance, the certainty and the usefulness of this principle in other fields. But there are yet many unshaken idealists,[18] who still believe that Kant's first question, "What can I know and how do I know it?" has to be raised and answered, too, in a final and affirmative fashion, before the scientist has valid possession of his method even within the field where alone it is applicable. The validity of the scientific method, lies entirely in its application to its proper object, namely, the facts of sensible experience both inner and outer. But it does not follow that, because science can give no certitude in the real world beyond sense, there is no method of certainty possible in that super-sensible world. Metaphysics is absolutely indispensable to the existence of Logic or of any other science.

The theory of judgment that is offered in these pages demands an objective system which the judgment itself confesses must lie beyond its primary activity. But this postulated objectivity in

[18] E.g., Windelband says: "Modern Metaphysic, with its attempts to piece itself together out of borrowings from the sciences, is far more contemptible than the old Ontology which, starting from the realm of validity, had at any rate the courage to attempt the deduction of the interconnection of the universe as an articulated whole." *Ency. Philos. Sci.*, I, 65.

judgment, as I shall try to show later, is not inconsistent with a monistic theory of the universe; it is even compatible with the most naïve subjective idealism. However, it provides for a relaxing of a too-rigid monistic ontology. When we declare that the subject awaits its object, and then define that object as no other than this expected self-transcending, synthetic achievement of the subject, we avoid the contradictions of an epistemological dualism on the one hand, and an ontological monism on the other. Both for knowledge and for existence the idea and its object are—to use Bradley's very apt expression—"coupled apart."

The New Logic is distinguished from all the older idealistic systems by its refusal to accept the distinction between *ground in fact* and *ground in thought*. As has now frequently been pointed out, pragmatic Logic dispenses entirely with ontology in the historic sense of the word, and therefore, identifies the *cause* of the existence of serial facts— in their serial manifestation— and the *ground* of our thinking them serially. We hold that this distinction is vital and that, while there is a practical viewpoint from which it may be ignored, it cannot be totally cancelled. This is one of the first and most persistent criticisms that various idealists have made upon the instrumental theory of judgment.

The genetic theories of judgment are all compelled to admit that the ground of belief is finally an unsolved problem. Psychology seems to have discovered that chronologically we believe things first and afterwards demonstrate them. Thinking as distinguished from believing is retrospective rather than prospective; it is demonstration rather than inference. Now it is not only Psychology that confesses itself baffled with this puzzling question of the reason for our beliefs, but Logic also finds the ground of knowledge in a sense inexplicable. As I have already said, knowledge is a postulate of logic; it is a fact that must be assumed before logic itself can come into existence. If Logic is "thinking about thought," then this thought is obviously taken for granted when the thinking about it begins.

Professor Dewey has often admitted,[19] by implication at any rate, that he has not remained true to the Hegelian idealism of his earlier writings. And yet many of his later utterances seem to me as entirely opposed to the naïve associationism of the earlier empiricists, Locke, Mill, and Bain, as is any idealism. And there are also serious divergencies from the even more radical empiricism of the later pragmatists, Schiller, Sedgwick and Mercier. For Professor Dewey's ideas taken by themselves are entirely discrete facts. They are continuous only when embedded in the specific situation out of which they arise and into which they descend. And yet I must repeat that I fail to see how the "situation" with all its "brute" objectivity can ever provide for the continuity that is necessary for "knowing things together."

I wish to offer a homely illustration of an illusion of continuity in the optical world analogous to the essential discontinuity that lurks in the instrumental theory of thought. Each of the various moments of a motion picture as they are flashed on the screen might be described in terms of what precedes and what follows it. We say we watch the scene being enacted, we follow the plot and we think we see explanatory continuity there. But if an imaginary being, living in that screen world—totally unaware of the projecting power of the stereopticon—were asked to give an account of what really does happen, he would say precisely what Hume said about the world that we actually see. No causal continuity is found on the screen. One picture appears and then disappears and another totally disconnected from the preceding one takes its place. The clever makers of the motion pictures, taking advantage of actual discontinuity, can feign all kinds of continuity by piecing together parts of films taken miles and days apart. The only truly explanatory continuity is found when

[19] Cf. *Studies in Logical Theory*, p. 36. "There is no such thing as either coincidence or coherence in terms of the elements or meanings contained in any couple or pair of ideas taken by itself. It is only when they are co-factors in a situation or function which includes more than either the "coincident" or the "coherent" and more than the arithmetical sum of the two, that thought's activity can be evoked."

we read our way back at each instant to and through the projecting power of the stereopticon itself. So, too, must the states of consciousness that appear chronologically in the instrumental theory of judgment be translated into a thought process that transcends time and of which that outer evolution is but the projection.

A less concrete, and therefore in some ways a more satisfactory illustration may be taken from geometry to show the essential discontinuity in the stream of consciousness. The points of a parabola, for example, take their places *seriatim* in obedience to the requirements of facts external to themselves. Each point obeys the law of keeping equidistant from a fixed straight line and a fixed point; as a particular fact in the series, it is independent of the points that lie next to it. An external spectator might imagine that the points arranged themselves in this orderly fashion by a kind of reciprocal reference to each other. Each point, it might be thought, could find its place in the series by taking its bearings from its predecessor and passing the angular reading on to its successor. But the curve has no such intrinsic principle for its spatial determination; it is the result of the individual compliance of each point with entirely external conditions. The straight line, however, can and does define itself as a quantity in extension by precisely such an intrinsic principle. One has a practical illustration of this in watching a company of soldiers "fall into line."

CHAPTER II

APPREHENSION, QUESTION AND ASSERTION

I

It has frequently been maintained that Logic is not concerned with the question as to the structure of the idea, or how many ideas may be grasped in a single pulsation of consciousness, or any other of the many questions in which *one idea* is involved. The unit of Logic, we are told, is the judgment, and every judgment contains at least two ideas. Bradley and his disciples have rightly rejected the view that judgment is the comparison of two ideas. However, there is a sense in which we may say that *two ideas* are involved in every judgment. The ultimate molecule of knowledge, to use a chemical metaphor, is always diatomic. Conscious judgment is the idea that I have an idea. To have, or to entertain an idea is to refer it to reality; but this reference of the idea to reality implies at least one other idea which might have been referred to reality instead. If we had only one idea we should never, I think, distinguish between it and reality and we should never talk of referring it to reality.

Obviously, these questions which lie in the borderland of controversy between Logic and Psychology can never be settled until we know precisely what we are to understand by *one* idea. If we mean by an idea a state of consciousness so immediate and withal so simple and single in its structure as to exclude all internal multiplicity, then Logic can have nothing to do with it, and perhaps not Psychology, since the existence of a mental state described by Jevons and the earlier logicians and psychologists as simple apprehension, has justly been called in question. That may always be regarded as one idea which includes within

its synthetic grasp all the secondary ideas which a purposive will cares to make in it. It is the purpose to hold the multiplicity as a single object of attention that makes it one idea. The only true individual is a will-object. From the point of view of the act of synthetic attention the idea is one, but it is not on that account simple. For this reason the expression simple apprehension is a misnomer. Apprehension may be of multiple content. For the purpose of the present discussion we need not go further into this controversy.

It should be pointed out, however, that the expressions, mental states, state of consciousness, idea, image, are all of them ambiguous, and this ambiguity when carried over into the logical debate becomes the source of hopeless confusion, and the "cause of all our woes." No word in Logic has caused more confusion than the word *idea*. Even in ordinary usage it has been taken to stand for both a universal and a particular content of consciousness. It would be better to regard the idea as one aspect of the concept. My concept of a tree may be analyzed into three moments: (1) the existence of an image in the mind which might be called my idea of the tree, (2) the aggregate of inner qualities, (3) the external reference or significance. Bradley, as is well known has characterized these three moments as (1) the *that*, (2) the *what*, and (3) the *meaning* of the idea. Logicians and psychologists still use the word *idea* instead of *concept*, which is freer from ambiguity. The concept is not exhaustively understood when it is treated psychologically only; it is more than just a simple psychic act. The word idea in its more limited use does stand for such a focus of analytic attention. But no idea is mere idea; the cognitive function, that is, the relation to something beyond itself, which it *means*, is necessary to the very being of the idea. And yet, self-contradictory as it may appear, we must say that when we have an idea of an object that object is already an essential part of the idea. For Logic, the idea, or mental state is a *one* enwrapping a *many*. It is a content contemplated from a mul-

tiple, that is, a dual viewpoint. From one of these points of view the idea or concept is a plurality; in its outward relation to the rest of the universe it is many. But when it faces the thinker, it is one; its former plurality has now become the object of a single act of attention.

Some psychologists have analyzed thought out into a serial arrangement of its acts in which we find the concept placed between the judgment and abstraction. The judgment depends upon the concept and the concept in turn depends upon the process of abstraction. No serious objection can be made to this serial arrangement if we do not construe the relationship of dependence as a uni-directional function. The structure of the concept and the judgment are different only for Psychology, for Logic they are identical. When I say the *sky is blue* there is precisely the same thought of the relation in the act involved as when I say the *blue sky*. The differenee lies in the fact that the conecpt is pure receptivity while the judgment meets the datum with a reaction in the form of an acceptance or a rejection.[1] The judgment discovers the concept as an isolated state of consciousness, atrophied or bereft of the support of reason. It rehabilitates it by connecting it again with its reasons. There is, therefore, partial justification for regarding the concept as prior to the judgment. But on the other hand the concept in the first instance was constituted by an act of judgment or abstraction, and so there is truth in the remark that judgment both precedes and follows the concept. Again we must observe here the distinction between idea and concept. The idea is always particular; it is composed of sensuous elements and is static. The eoncept is uni-

[1] Croce seems to discredit unduly such an analysis of the content of consciousness. He remarks: "This division concept, judgment and conclusion involves the assumption that three different moments can be distinguished within what is really a single and unanalysable act of thought. As a matter of fact, no one will ever succeed in thinking a concept, a real concept or a judgment which is not at the same time a conclusion, being connected in a system with other conceptions and judgments." It is doubtless true as Croce says that no one will ever think a concept by itself, but it is not impossible to think the concept in its coördinated position within the whole of a specific content. *Ency. Philos. Sci.*, I, 202.

versal; it is the power or capacity of a perception to mean something—to stand for something external to itself. The idea is the psychical image that comes and goes. The concept is the signification or the fixed content.

Berkeley and the other nominalists were plainly right in their criticism of Locke's doctrine of abstract ideas. Locke described the process of abstraction as an affirmative act of mind. Thought, on this view, selected the common characteristics in several objects, and tied them up in a separate bundle with an existence and meaning of its own. But it is more accurate to speak of abstraction as the result of negative thought. The abstract or general we get, not by attending to what is like in several objects, but in neglecting what is unlike. A great deal of the difficulty that hangs about this subject would be removed if we observed the distinction between having and possessing an idea. It is one thing merely to have an idea and quite a different thing to have it as your own—to possess it—that is, to have it in relation to other ideas. It is the old familiar distinction between cognition and recognition.

II

The object of description must be an object in relation. Unrelated objects are, as Hegel rightly said, indescribable; they cannot even be named. The attributes in terms of which I describe any object immediately presented to consciousness, are all of them expressions of the relations of the presented object to objects not now present—that are elsewhere in space and time. Descriptive judgment must, therefore, always be conceptual or representative. If there were only one object in existence we should not need a name for it, although we might need a word to distinguish between the existence and the non-existence of this single object. Naming is an act that belongs to the world of exposition and communication. We attach labels or names to objects only for the purpose of distinguishing them from other objects.

But prior to our knowledge of the object as described, we know the object as merely apprehended. There is, to be sure, serious objection to saying that we *know* the object in this first simple *awareness*. The word *know* is full of all sorts of ambiguities and it is one of the purposes of these studies to isolate some of its meanings. When we say that we know the object, in both common and technical usage, we mean that we are not only aware of it, but that we are aware of it in its describable relations. Knowing is a relating activity. But it is quite impossible to find a word that will perform any less ambiguously the self-contradictory task of connoting the absence of connotation. However, there can be no doubt about the fact.

The expression, *immediate consciousness* which is often employed to describe this primitive datum of knowledge, stands for a mental state that is already well along toward the stage of description by means of relations. The word consciousness itself, etymologically at any rate, connotes a *togetherness*. But it is very important to distinguish between internal and external relatedness. We shall insist that this first direct awareness brings to us knowledge of isolated concrete wholes, within which we see, or appreciate, or know qualities in relation.

It must be repeatedly emphasized that the state of mind that has now so often in Logic and Psychology been called simple apprehension is one of just *pure acceptance or acknowledgment*. It is a psychic experience in which there is no distinction between our apprehending the object and the object which is apprehended. Psychologists and logicians have been pretty much of one mind on this point, but there has been little agreement upon a word to set forth the mental state itself. Hobhouse has described the general characteristics of immediate consciousness of a fact by the word assertion; this has somewhat released the fact so known from being related to other facts. But the word *assertion* has now too often been employed as a synonym for affirmation to warrant its being transferred to this *primitive awareness* or pure recep-

tivity. And doubtless the same objection could be made to the term *acceptance;* the latter, however, is freer from the notion of activity, or decision. The expression "assertion of the object" already suggests that thought has gone out to meet the object with question, criticism, and decision. I think the word *acknowledge* is the most satisfactory for this primitive state of consciousness. In letter writing we distinguish between acknowledging and answering a letter. So when the mind receives its facts it may just acknowledge them, it need not go further and reply to them.[2]

Every fact is, indeed, related to other facts in the real world, but I need not know this in order to proclaim my acceptance of one of the related facts as an isolated thing. I can take it at its face value; I can bow my acceptance or acknowledgment of it. When I merely contemplate the red rose, that is, when I apprehend it simply, I *acknowledge* something immediately present, and nothing more. I am aware of the red color, but am not aware of the relation of the red color to anything else. When I say, the tree in my garden is tall, I am undoubtedly describing the object by means of its relation to other objects. I am also quite truly, although not so obviously, describing the tree through its relations when I say the tree is green. But such description is subsequent to mere apprehension, and is always in the interest of communication. The descriptive judgment functions socially.

The apprehended content cannot contain the relation of the object apprehended to any other object. It merely envisages its own system of inner relations. In looking at a net from a distance, I can be aware of the knots without thinking of the threads that run from knot to knot. I can gaze at the star, Sirius, contemplate, accept, *acknowledge* it without consciously relating it to other stars. But as soon as I wish to describe—that is, com-

[2] The critical analysis of the thinking process had revealed even to the Greek logicians the two factors of apprehension and assertion in every judgment. They distinguish clearly between Κατάθεσις and συγκαταθεσις. These two aspects of the judging consciousness are also recognized, it seems to me, in the distinction between *urtheilen* and *beurtheilen*, which several modern writers have proposed.

municate to my fellows—what I have thus apprehended, I must betake myself to the discovery of the relation of Sirius to other heavenly bodies. Every description of an object, of course, proceeds always by means of relations; but the object so described was undoubtedly already present as an unrelated fact. It was once merely acknowledged. To accept or acknowledge the fact is one thing, to describe it another.

Now it is not until we arrive at the stage of description that we may properly speak of the psychical process as judgment. The mental state which I have here called acceptance, or acknowledgment, has often been described as inchoate judgment, or sensory judgment. There can be no serious objection to such an account of this primitive stage of acknowledgment provided we keep in mind the real difference between it and true judgment. At the second stage we have the *possibility of error*. In simple apprehension, or acknowledgment, there is no question of truth or falsity, and hence no possibility of error. The object presents itself and we accept it without comment. Moreover, the object of an unquestioned simple apprehension—an *acknowledgment without comment*—is always unalloyed fact, that is, fact present and unembarrassed by attachment to any fact not present. We can make no mistake in such an acknowledgment or acceptance. It is only when we comment upon the acknowledged fact, when we venture out along the relations of the present fact to other facts not now present that error arises. But then we are no longer merely apprehending the object we are making a judgment about it.[3] We must distinguish therefore between assertion without comment or risk, that is, just acceptance or acknowledgment, and assertion with the risk that accompanies the necessity of selecting from competing alternatives. The latter is true decision, it is

[3] I cannot therefore agree entirely with Bosanquet that "being distinctly aware of reality is another name for judgment." (*Essentials of Logic*, p. 40). If we should make use of the well-known distinction between *clear* and *distinct* knowledge, of Descartes and Leibnitz, in which distinctness points inward and clearness outward, we might say that being *clearly* aware of reality is another name for judgment, and being *distinctly* aware of reality is another name for the simple apprehension as I view it.

affirmation or denial. As Hegel has said, to assert that a carriage is passing the house is not a judgment unless we are in doubt whether it is a carriage or a cart.

It has been doubted, and with reason, whether we can ever entertain a significant simple apprehension without decision. It must be admitted, that as occurrences in a continuous psychological process, apprehension of fact and decision concerning it are inseparably connected. They are, nevertheless, logically distinguishable. In our normal adult life any longitudinal section of consciousness would reveal a highly complex mental state. We should never find in such cross-sections of the stream of consciousness, at first apprehension and then judgment. Both would appear in each and every cross-section. And we can take thought about any one of the elements in the complex content only by abstracting from the real organic process itself. The two acts, *apprehension* and *judgment*, though theoretically separable are joined in one concrete state of consciousness. We do not first find apprehension, and then decision and then action. All normal waking consciousness is one continuous affirmation, and, within this persistent judgment, simple apprehension is seen to be a distinguishable, though not a separate element. Moreover, it must not be supposed that the two aspects, apprehension and judgment, merge by imperceptible gradations one into the other. We have already seen the true differentia. Simple apprehension is naïve in its attitude toward the apprehended fact, judgment comes with the discovery that the observed fact might have been different.

Midway between immediate *awareness*—the primary datum of knowledge—and the full-blown *judgment*, there is found the impersonal judgment. This type of judgment has caused much trouble, but only to those logicians who set up arbitrary and impassable barriers between the different compartments of mind. There is no especial difficulty in understanding the impersonal on the view that regards all waking consciousness as an organic

whole, and that thinks of the concept, the judgment and the syllogism as the varying degrees of explicitness in which this whole expresses itself. Much of the controversy in the history of Logic about impersonals would have been entirely removed if the distinction between the judgment and the proposition had always been distinctly recognized.[4]

Now there can be little objection to the assumption—and obviously it must forever be an assumption—that the earliest states of consciousness in the development of the individual mind, are of this undifferentiated character. In childhood, and perhaps in the animal consciousness, we find simple awareness the sole content. There is more difficulty in the view that we may again relapse into this level of simple awareness, from our later normal adult consciousness, in which we are cognizant of the distinction between subject and object, the self and the non-self. Bradley is certain that, both prior to and subsequent to the stage of consciousness in which there is a distinction between subject and object, there is a stage in which we are not thus aware of the distinction between what is known and the knower thereof. We are quite justified, it would seem, in our inference as to animal intelligence from our own human experience of the stream of ideas, or reverie.

It is in one sense wrong to call simple apprehension the primary operation of the mind. In describing simple apprehension as the primary datum of knowledge I have pointed out that the terms, earlier and later, are out of place in any account of the relation of judgment to simple apprehension. Every immediate apprehension is simultaneous with a judgment and every judgment with an apprehension.

There is a point of importance that must now be noted. We

[4] I think, for example, that Couturat, who is otherwise very mindful of this distinction, has ignored its importance in his discussion of the impersonal proposition. He says: "*It rains* is an indeterminate and incomplete judgment. This example shows us at the same time that there are judgments without terms, without subject or attribute." *Ency. Philos. Sci.*, I, 139.

have seen how judgment transcends simple apprehension by inquiring into the outer fortunes of the apprehended fact and discovering its external relations. As merely apprehended the fact was unequivocal; it was an immediate feeling, a knowing and being in one. But now the discovery of the relations of the apprehended fact to its fellow facts in the objective order is the discovery, also, that each of these relations might have been different. Thought has thus transcended the unambiguous simple acknowledgment of fact. But in passing to this higher stage of decision, or judgment, that is, the stage of selection from among possible relations, the original simple apprehension does not disappear; it remains continuously in view as the foundation of the later selective knowledge. Immediate awareness is not a stage that appears and then disappears.

III

It will not be out of place to pursue this analysis a step further. Can we not discover a stage in the complex content of consciousness prior to apprehension? Do we not first *have* the fact in the experience of one moment and then in a subsequent moment *apprehend* it? Such a distinction has been made. It has been held that *to be in consciousness* and *to be apprehended* are not identical stages, that mere presence in consciousness does not imply even in the faintest degree the subject-object relation, while in apprehension the relation of consciousness to the presented fact has for the first time become explicit. But, in my opinion, this is a refinement of distinction that cannot be defended. To be in consciousness and to be apprehended as being in consciousness are identical facts, and both postulate the subject-object relation. The content of simple apprehension is non-relational but this does not exclude internal variety in the content itself. This immediate awareness unrelated in itself but yet embosoming distinctions is, I believe, what Bradley has continually spoken of as "feeling."

It has been urged as an objection to every such analysis of the logical content of consciousness that it hopelessly confuses the psychological with the logical point of view. Logic, it is said, demands real distinctions—definite lines of demarcation. But I see no reason for contending that logical consciousness is any more definite in its entire content than is psychological consciousness. We do not go wide of the mark when we say that the logical apprehensions, like the psychological sensations shade by imperceptible gradations from explicit to implicit and vice versa. The content of sensation has its focal point of greatest clearness from which it fades away to a zero point of indefinitness; also, we apprehend, or comprehend, or know by means of the concept, the judgment, or the syllogism in varying degrees of explicitness of the content.

We must insist again that this immediate experience does not represent a stage in the psychical development which is at one time present and necessary and later disappears. When the discrimination between the self and the non-self has arisen and we find the relational type of consciousness, this primary awareness must still be a felt aspect of the whole content. As Bradley has said, "all that is thus removed is the mereness of immediacy." The one point which I wish to repeat with especial emphasis is that it is an error to suppose that our conscious contact with the world of objects starts with judgment. Reality has been presented to mind in its first simple awareness—the object has been accepted as a constituent datum of knowledge. The expression "a mere suggestion" hints at this stage of simple apprehension where fact has been accepted without affirming it.

It would, perhaps, be a more precise account of the primitive datum of knowledge to call it an inner movement of analytic attention confined entirely to an immediately presented fact. But we should guard against the mistake of thinking that in this earliest stage of consciousness any act of classification is involved, for this would imply a comparison with other facts not

now present. We must also distinguish between the judgment to which we have passed in proceeding outwardly to a classification of the given fact with other not-given facts, and the ground of this judgment. Theoretically at least, we may say that the ground varies from the zero point of complete indifference, or unmotived assertion, to complete conviction, or internal self-sufficing satisfaction. But now, this stage of apprehension, which we are attempting to fix, is at a level below the zero of sheer doubt. The doubt is always a decision not to decide. Apprehension, however, has not even this characteristic, for here we have just the self-revelation of the inner content of the datum, and about that there is no doubt.

It will be seen that this account of the relation between apprehension and judgment is in close agreement with Wundt's theory that all judgment in the last analysis involves an act of will. Professor Adamson has challenged this view, asserting that judgment requires no reference to reality beyond the "sensible pressure," that it is just the belief in the existence of the objects from which the sense perception issues. Judgment, he says, "requires in addition to the belief that something exists, no consideration as to whether the belief itself be true." This, I think, is a doctrine that is opposed to fact. In our account every judgment calls for a decision as to the validity of the fact. In this state of consciousness that Professor Adamson has described as already the beginning of judgment, we have only analytic attention to the pressure from the sense-presented fact, not analytic judgment.

CHAPTER III

THE IMPORT OF JUDGMENT

I

The various questions about the nature of judgment—the relation of subject to predicate, of percept to concept, of analysis to synthesis, of form to matter—all presuppose that the word *is* has one well-defined meaning. But the problem of the copula is beset with world-old difficulties. Russell, who is always temperate in his statements, has said, "*Is* is terribly ambiguous,"[1] and has pointed out five quite different meanings. And DeMorgan before him, with his eagle's eye for paradoxes and ambiguities remarked: "The complete attempt to deal with the term *is* would give the grand cyclopedia, and its yearly supplement would be the history of the human race for the time."[2]

It will not be necessary for our present purpose to go far into the subtleties of these modern discussions of the meanings of *is*. It should be pointed out, however, that these ambiguities are not new discoveries. Aristotle was fully aware of the unavoidable ambiguity in any word that is made to serve as connecting link between subject and predicate in judgment. Following his teacher, he spoke most often of the relation between the world of concrete things and the world of ideas, which is expressed in the judgment, as one of participation. And for twenty-three centuries, from Aristotle to Bradley, the expression "participate in" has been condemned for its metaphorical vagueness and ambiguity. The important thing to be borne in mind is that at heart it is always the same relation, whether we say that a thing

[1] *Principles of Mathematics* (Cambridge, University Press, 1903), I, p. 64.
[2] *Formal Logic* (London, Taylor, 1847), p. 49.

is a *copy* of the idea, or that it *participates* in it, or that it *is* the idea. And the essential characteristic of this relation between subject and predicate in judgment is that it is *non-temporal*. This fact, namely, that the *relation* is not in time, while the *relata* are, will receive fuller elucidation in the sequel. It is for the reason that the time element is both *in* and *around* the judgment that some part of the verb *to be* has always been preferred to express the relation between subject and predicate. As has so often been pointed out, if there were no reason why the verb *to be* should be used as the sign of predication it would be difficult to explain its presence in so many languages.

Among the many meanings of *is*, its existential import should, of course, be considered first. The copula in the proposition, *S* is *P*, in the first instance, stands for the fact that in every judgment there is undeniably present to consciousness a something. However widely they may differ in other ways all theories of predication are agreed upon this point. We are not now interested in the question whether this affirmation of presence is of something present *to* consciousness or *in* consciousness, that is, whether it is to be regarded as a *datum* or *ideatum*. The "presence" characteristic of *is* must be taken as original—it is not derived from or constituted out of relations between the presented object itself and another object. It has no temporal origin. The present which is asserted in the judgment is not a *somewhat* coming after a priori past. Nor is it to be defined as the imaginary line of demarcation between the past and the future. The present is not that which comes after something past, but the past is something which came before the present. *Is* stands always as the reminder that knowledge is won by the extension of the present.

It is no disparagement of the underived validity of the *present* to show, as may be shown, that we have not achieved knowledge until we have thus expanded the present into its relation with things other than itself. If thought were confined strictly to

the present it would not know it, and we should never be impelled to judge. In judgment the *present* yields to the internal constraint to transcend itself. But the apprehension of the present and the effort, in judgment, to pass beyond the present must not be confused. They are different acts. The present as immediately apprehended is singular—it is a *this* unrelated to any *that*. But as a *this* it is the unification of its own unique attributes; as apprehended fact it owes no allegiance to its *other*. But *knowledge* of *this* as distinguished from its *apprehension* does require an insight into the relations of the *this* to the *that*.

The system of Hegel differs from other idealistic philosophies on the question of the time factor in judgment. Hegel discredits immediate consciousness, declaring that the conception of immediacy breaks down under the strain of its own inherent self-contradiction. I can apprehend an object presented to consciousness in one act and in a second act of thought I can be aware of the first state, but not as immediately present. I cannot think that I think, I can only think that I thought. But this does not seem to me to be a valid objection to immediacy of consciousness. It is true that we can never communicate descriptively the present state of consciousness without judging and thereby causing the present to slip away from itself into the past. The second act, indeed, is not immediate in the same sense as the first act. When I say "I think that I thought," the "I thought" which is the object of "I think" is, indeed, other than that which thinks it, but otherness is here unjustifiably construed as equivalent to past. The Hegelian recourse to memory is unnecessary. Introspection, I think, will also discover that memory plays no such part, as Hegel thought. When we examine the thought that has this possession of an immediate content, we do not find in it any act of remembering, as this doctrine declares. The mind seems truly to be noting something which is present to it then and there. "What I feel" says Bradley, "that surely I may still feel though I also at the same time make it into an object before

me." None of the various words that are compounded with self—self-consciousness, self-contemplation, self-reproach, etc.—suggests a combination of the present with remembered aspects of itself. Subject and object are both in the same present time. This is illustrated in the humorous poem the first line of which runs "Says I to myself, says I."

It is true that the complex content of immediate consciousness may experience one aspect of itself to be more vividly present than another. But these remote or less vivid aspects are not therefore to be relegated to the past. Differences in the "felt immediacy" are like the differences in the marginal vision of the eye. They are all *present* in varying degrees of definiteness. I can not, obviously turn the whole content of consciousness into an object at once. A part of the self must be held in reserve, so to speak, to be the experiencing subject of the part that has taken its place as object to be experienced. And the line of cleavage within the whole content may differ for different purposes. Also the sameness of the parts does not exclude differences. In the line "Says I to myself, says I," the person speaking and the person addressed are the same and yet obviously different, for the better self is addressing the evil self.

It is important in discussing the meaning of *is* to distinguish between *being* and *existence*. Every conceivable thing, every object of thought has its being, but not all have existence. The minimum requisite of being is the quality of number. Anything that can be thought of as having membership in the number series has the quality of *being*. But things have *existence* only if they "stand out" in systems of special inter-relationship. We may deny the *existence* of anything only if we are able to save its *being*. Contradictory as it may seem we must say that what does not exist must still *be* something. The assertion "*S* is not" is on the one side either entirely false, or, on the other, more than idle—just empty breath. If *S* were just nothing at all, it would be meaningless to say "*S* is not." *Being* is the general attribute

that belongs to anything that can stand as subject of a proposition. This truth was expressed in an earlier paragraph in the statement that in every judgment there is unmistakably present to thought a something. The judgment "*S* is *P*," means to assert that reality has the characteristic, *S–P*.[3]

II

In considering the nature of the concept or idea we saw that it is difficult to discover any difference in kind among the cognitive states of consciousness, from simplest concept to the most complex judgment. That the concept seems to shade by imperceptible gradations into the judgment was recognized by Aristotle and before him. And in the modern discussions we find writers who, having defined the concept and the judgment in static terms, in independence of each other, are much embarrassed by the discovery of forms of thought that refuse to be classed as either. There are forms which have already burst the conceptual shell and yet are classed as concepts; and, on the other side, there are forms which are classed as judgments that are lacking in the essentials of judgment. The recognition of this distinction led Bain to call the verbal proposition the "notion in the guise of a proposition."

Nevertheless, when one describes thinking as a movement from the particulars of concrete sense experience to conceptual universals, he disregards a most important aspect of the knowing process. In its analytic attention thought makes distinctions (or we should say, heightens distinctions already vaguely present), and these distinctions when synthesized form the generals. But this is only one-half of the process. These abstractions which

[3] Plato long ago pointed out the paradoxical fact that when you call a thing a non-entity, a mere illusion, you do not thereby get rid of it. There is a deep metaphysical significance in the remarks of the colored man passing by a church yard at night: "I don't believe in ghosts nohow, but I hope they never find it out, it might make them mad to think a fellow didn't believe in them."

lie at the end of the movement in this direction are not kept in cold storage, but are thrown back again upon the concrete instances from which they arose. And in this return movement the concepts, or universals, always put a new meaning into the concrete instances. Nevertheless, in this reciprocating movement, thought is not acknowledging its inadequacy to reality. This is not a make-shift, or compromise, confessing thought's incompetence; it is an exhibition of the highest type of control of reality. A transverse cross-section, so to speak, of the movement would reveal the seeming contradictions of idleness and falsification. Any moment of the process would exhibit tautology, or novelty, when detached from its setting in the whole. But a longitudinal section would reveal the true nature of the process in its totality, where the tautology, in the light of the anticipated novelty, is not to be condemned as idle; and the novelty, resting back on the identity, rescues the judgment from the charge of falsity.

As bearing upon our search for the essence of judgment we may revert to the significant distinction that has often been made between *knowing* and *understanding*. It is alleged that we are here dealing with thought processes that are sufficiently different to require two different words. Understanding is a later and and higher phase of thinking. We have understanding when we appreciate or evaluate knowledge, when we know that we know, and why we know. Although the distinction between the two kinds of knowledge has frequently been pointed out, there has not been offered, it seems to me, a convincing account of their relation. Bearing in mind that these words represent stages in the development of knowledge, and therefore have something in common, the question at issue in the relation between the two types of knowing is What precisely have they in common? Are they different in kind or are they, as has been remarked, an earlier and a later stage in what is essentially a simple process? That there are these two kinds of mental activities is evidenced

by the fact that most languages have two different words to represent them: *scire* and *cognoscere*, in Latin; *kennen* and *wissen* in German; *savoir* and *connaitre* in French, stand for these two kinds of knowing. In English, in addition to the words *knowing* and *understanding*, we have several aspects of the same distinction expressed in the phrases, "knowledge of acquaintance" and "knowledge about."

It will be well to examine more closely the difference that is here intended. We need to discover, if possible, the point at which there is a change in kind as we pass from the lowest form of sensory judgment to the highest type of reflective judgment. Knowledge of things by acquaintance is not far removed from Hegel's unrelated immediacy; it is just simple apprehension or existential awareness. But now all who have ever attempted to describe and explain this simplest form of knowledge have admitted the difficulty in giving it any logically independent standing. It seems to have no existence apart from the higher knowledge, the knowledge of truth. Even Russell, while claiming logical independence for the knowledge of acquaintance, says: "It would be rash to assume that human beings ever, in fact, have acquaintance with things without at the same time knowing some truth about them." All that we seem justified in saying is that we find these two distinguishable, but not separable stages in the natural course of thought—first immediate awareness, then being aware of the awareness. I can think, and then I can think or recognize that that is one of my thoughts. The second, or complex stage is the stage of description, definition, evaluation. But already in the first or simple stage there are implicit these characteristics which on the reflective level have become explicit.

This distinction between the two types of knowing we have in Professor James' familiar illustration of the difference between cognition and recognition. A bird flutters against my window pane, and I acknowledge the event in its first stage of

immediate awareness with "Hello, thing-a-bob." And in the second stage of evaluation I say, "Ah, robin." But even here, is the difference more than relative? Is the transition from one pulsation of consciousness to the other marked by any difference in kind? The first judgment is in the form of *S* is *P* in which there is already a partial definition which the second judgment *S* is *P* only makes more explicit.

Some writers suppose that there are in the thought process, more than the two stages we have just considered. Adamson says: "The real order is sensation and sensory judgment, conception, memory and memorial judgment, experience and experiential judgment, inference, inferential judgment, inferential conception."[4] But the more stages one marks out in the process the more does one emphasize the fact that consciousness is a single continuous affirmation in which there is nothing at the end of the process which was not also present at the beginning. In other words, there is no distinction between beginning and end. We may read off the story of our analysis in either direction, thus revealing the true nature of thought as the exhibition of a whole through its genuinely simultaneous differences.[5] *Temporal arrangement* in the proposition is an entirely different thing from *logical coherency* in the judgment. The relation between the parts of a logical whole is unique, it is altogether different from sequence of time and from contiguity of space. Logical coherence has been confounded with sequence in time

[4] *Encyclopedia Britannica*, XVI, 880.

[5] Cf. Bradley, in *Mind*, n. s., XVII (1908), 170. "The content of the judgment is one thing and its psychical duration is another thing, and in principle we have seen that the duration is irrelevant. But on the other hand every judgment is a psychical event and has therefore duration. Wholly to deny this aspect seems a fundamental error."

[6] Cf. Bosanquet, *Essentials of Logic* (London, Macmillan, 1895), p. 73. "The separate existence of the spoken or written word, produces an illusion which has governed the greater part of logical theory so far as concerns the separation between concept and judgment, i.e., between entertaining ideas and affirming them in reality. In our waking life, all thought is judgment, every idea is referred to reality, and in being so referred, is ultimately affirmed of reality."

and with contiguity in space, because in speech and in writing we do produce mental and physical symbols subject to time and space.[6] But it should be remarked that it is not sufficient to say that in most modern and highly developed languages, the subject, predicate and copula in the proposition are separate words, while in the ancient and undeveloped languages they are welded together in a single form. Some explanation of the phenomenon should be offered. If "I am loved" is equivalent to *amor*, it would be interesting and important to know what principle of evolution has produced the former differentiated expression. Is it entirely a phenomenon in the growth of language, or is it vitally connected with certain stages in the movement of the judging process itself?

No judgment can ever become so complex as to escape embracement in a single idea. But the related parts of this enwholing idea are not themselves just ideas in relation. Judgment is not merely the affirmation or denial of a relation between the two ideas. This has been pointed out so frequently in recent discussions that I need only refer to it in passing. When I assert that an automobile is going down the street, I do not mean that my idea of an automobile is traveling down my idea of a street. What I mean to affirm is that the objective world does have in it a complex of related facts which I characterize as automobile-going-down-the-street. But, as I have already insisted, the object to which the idea refers its content is in no wise alien to that idea. Every idealistic theory of judgment must of course hold that this object is just the *self-transcending character of the idea*. What I wish to emphasize is the fact that the ideas *between* which the relation exists are not the same in kind as the idea *within* which the relation is embedded. A dispersive category operates in the former instance and a synthetic category in the latter.

III

Among the disputed problems lying on the borderline of Psychology and Logic is the question, which we have already noted, of the difference between perception and the perceptive judgment. Bradley and others have insisted upon the importance of distinguishing between these two mental states. We have already discussed one aspect of this subject. In pure perception there is a direct reference to an object, which is a *datum* in the etymological sense of the word. The object is something given to the subjective activity independent of that activity. The perceptive judgment, however, is an inner ideational process proceeding from the spontaneous activity of the subject, in response to or as a reaction upon the perception. The difference lies in the essential distinction between activity and passivity. The ultimate object in every assertion or enunciative act of consciousness is an individual. In the perceptive judgment this objective is given to thought directly, and implies the existence of two things only, namely, that object and the mind that thinks it. But in the cognitive or reflective judgment the object—again an individual—is given indirectly. In the reflective judgment the object is only vicariously present in the concept, to which concept other like objects have already been given and to which future objects may in turn be presented. The transition from perception to perceptive judgment is made in the interest of communication.

The proposition as the outward expression of the inward fact of judgment is primarily an instrument of intercourse—its function is purely social.[7] It begins with an undifferentiated whole in the position of subject, and concludes with this same whole

[7] Windelband has laid great stress on the social character of knowing. "Perceiving and knowing," he says, "as empirical functions are entirely social in their nature. They are integral parts of the common mental life—for the lonely strivings after truth of the individual are a late product of civilization which is always rooted in some historical community of knowledge and tends to discharge itself into it again." *Ency. Philos. Sci.*, 1, 617.

differentiated into members, one of which takes its place in the position of predicate. The analysis of this undifferentiated whole is what the speaker accomplishes, when by means of a descriptive, elucidative, or demonstrative judgment, he undertakes to instruct his hearers—when as we say he communicates information. Now the logician who stresses the non-temporal character of judgment finds it difficult to account for these different meanings that are found at the two significant dates in the life history of the subject, namely, its meaning before and its meaning after the differentiation. The judgment is thus seen to be neither exclusively temporal nor non-temporal. It may be both without contradiction.

The failure to recognize this fact, namely, that the judgment claims to be both temporal and non-temporal has thrown the new theories into hopeless confusion. The *judgment* is not in time, but the *judging* is. The judgment in the speaker's mind, prior to his determination to express its meaning—to tell his hearers something—is not in time. But the judging, which unfolds itself outwardly in the proposition is in time. The empirical theories of judgment have with right insisted that there is a sense in which the judgment, or more accurately the judging process must be regarded as in time. But this temporal expression of itself is just the standing reminder of the irrationality of sense, or the ill-adaptation of conception to perception. If thought were entirely adequate to the task of communication, it would not adopt this apparently self-contradictory device for its outward expression. But the a-priorist has also rightly insisted that the judgment (not the judging) is non-temporal. It has no parts that may be arranged *seriatim* like the parts of a sentence. The relation between subject and predicate is not a relation between successive mental states, but is itself a unitary progressive state.

Professor Schiller says "We have steadily kept in view the fact that Judgment is the primary act of thought and that the

attempt of Formal Logic to 'analyse' it into something more elementary is a fictitious procedure, which can be justified only by its convenience and success.[8] Now many who are distinctly not pragmatists would agree entirely with Professor Schiller that judgment is the primary act of thought, and that only by abstraction can we arrive at anything more elementary. Also in the majority of the ordinary textbooks, where the first chapters treat of terms and ideas, the authors are careful to point out that such discussions belong properly to philology, and to psychology. Even Jevons who is so outspokenly an associationist in his view as to the nature of the thinking process says: "The continued study of Logic convinces me that this doctrine of terms is really a composite and for the most part extra-logical body of doctrine."[9]

It is true, as Aristotle remarked, and as since then so many logicians have repeated, a word has no reality in living language, and the idea no reality in living thought. We must not regard the proposition as a synthesis of words, nor the judgment as a synthesis of ideas. And yet, when once the act of judging has been performed a retrospective analysis discovers ideas to be *different*, but *not separate* aspects of the judgment.

The data of knowledge appear to come in a stream of isolated sense-presented facts, which the mind is called upon to weld together into wholes of ever increasing complexity. The sequence in the mental states seems to be first the idea A, then the idea B, and lastly the judgment A in relation to B. Some of the older empiricists were bold enough—even in the face of the insurmountable difficulty at the third stage—to say that such a process of crystallization by the external accumulation of ideas is the true explanation of the thinking process. But the impossibility of ever achieving any real continuity in this process of knowing things together, led the later associationists to substi-

[8] *Formal Logic*, p. 92.

[9] *Studies in Deductive Logic*, p. 1.

tute analysis for synthesis as the central function of thought. On this view the most elemental judgment—or if we are not prepared to call this primary state a judgment—the most primitive datum of knowledge is an undifferentiated feeling or sensation. Judgment then, is not a combination of two ideas into one, but is the separation of this primary undifferentiated feeling into its two correlated aspects. But this analytic process is also embarrassed by at least three unmanageable difficulties: (1) What precisely is the original feeling, (2) what is the principle of differentiation and how does it operate, and (3) what are the two facts or aspects to which the division leads?

The ancient dilemma of *ignava ratio* which conceals the fallacy of incomplete disjunction has been perpetuated in the modern attack upon the validity of judgment. Predication is discredited today in almost the identical language of the Sophists. Either our predicate is contained in the subject or it is not. If it is not, we have no right to say that the subject *is* the predicate, and the judgment is false; if the predicate is already in the subject, the judgment is idle. Now I submit that this argument is cogent only in the sphere of quantity where the term "contained in" has application in an intransitive relation only. In the quantitative world an object cannot be both inside and outside of a class. But the relation between subject and predicate in judgment depends upon a totally different conception of a class. The two alternative positions in which the predicate is placed in the ancient dilemma—inside or outside the subject—do not exhaust the possibilities. With a different conception of the relation of a term to its class the predicate may be both inside and outside of the subject; there is both novelty and identity in judgment—stability and risk. This very important subject of novelty and identity in judgment I propose to discuss farther in a special chapter.

IV

It will not be necessary for the general purpose of this inquiry into the nature of judgment to go into any detailed consideration of the perennial question as to whether the *class view* of predication is logically fundamental. I shall discuss the class view of predication and the subject of the relation of extension to intension in considering the validity of the syllogism. I must, however, point out at this time what seems to be a very prevalent mistake in the more recent criticisms of the *class view*. Windelband says:

> As far back as Aristotle, Logic has given way to the temptation of regarding the subject thus conceived as falling within the sphere of the predicate as the type of all judgment, and subordination or subsumption as the prevailing meaning of the copula. This is an error in principle of the scholastic logic, "Gold is a metal," is indeed a real subordination; but "Gold is yellow" never means in living thought that gold ought to be subsumed under yellow, which would be obviously nonsense—and certainly not always that gold is to be reckoned among yellow bodies, but rather that gold has the property of yellowness. Subsumption may be thought of as a side issue, but it is not the precise meaning of the judgment.[10]

Windelband has failed, in my opinion, to state the precise grounds of the distinction between a "side issue" and a "precise meaning." If these two expressions are to be taken as synonymous with "essential" and "accidental," then by definition the side issue or accidental characteristic of judgment cannot be regarded as the prevailing meaning of the copula. But if the side issue is always an essential side issue, that is, if it is a real property in the scholastic sense, we may for certain purposes consider it the precise meaning and relegate the former precise meaning to the position of side issue. If the judgment has various meanings, all equally present, by what criterion shall we decide between the primary and the secondary meaning—the precise meaning and the side issue. How much we mean when

[10] *Ency. Philos. Sci.*, I, 37.

we say "all men are mortal," how we reach these meanings, and how we rank them in importance, is the basic question in Logic.

This distinction between the main issue and the side issue, the bona fide meanings and the spurious meanings has been carried into the distinction between the problematic and the apodeictic judgments. Professor Sidgwick has said: "No proposition can, after all, be more than *true;* that no piling up of adverbs like 'certainly' or 'necessarily' will intimidate the actual facts."[11] But the modal adverbs, I submit, have no intention to "intimidate the facts"; they apply to the *thought* about the facts, not to the facts themselves. The attempt to dispense with modality in propositions rests back upon the denial of the scholastic distinctions between *rationes cognoscendi* and *rationes essendi.* The reasons for knowing, or perhaps we should say the *reasons for belief,* may vary from the zero of pure doubt to entire conviction. The *reasons for being* exhibit no such gradations. It is, indeed, a contradiction in terms to speak of reasons for being. But there are, and must be, reasons for knowing, and when knowledge searches for its reasons it epitomizes these supporting or inferential judgments in modal adverbs. The necessity in apodeictic judgments depends upon scientific or demonstrative evidence, while the necessity in assertoric judgments depends solely upon enumeration or observation.

The act of comparison which our theory regards as the primary function of judgment is not so simple a process as on the surface it appears to be. Comparison involves cross-reference of one object to another, that is, each object submits to being assessed by a principle which is inherent in the other object. Bosanquet thinks that comparison is not necessary to every judgment. Comparison he holds can not be expressed with complete convenience in a single judgment. Now it is true that the comparing act is not evident in the judgment in its simple form; but when the entire content of the judgment becomes explicit

[11] *Elementary Logic,* p. 71.

and it is made fully aware of its reasons, then comparison is seen always to lie at its heart.

More is needed for an act of judgment than just the juxtaposition of subject and predicate in consciousness. Comparison means more than simple association. The association theory of thought is incapable of bridging the gap between the two facts, taken simply as facts in relation. Thought must betake itself to the circumambient universal at each step. However, the universal which is thus operative in each particular state of consciousness is not always manifest. As Bosanquet has said:

> Its operation is extended throughout a series of the fugitive psychical facts or ideas, and although in *logical* thinking its operation is conscious, i.e., selects and modifies within the content of these ideas, yet it is not in itself necessarily a conscious activity. It acts in consciousness, but need not be conscious of its own principle of action.[12]

V

The teaching of ordinary Logic, that every proposition is a sentence but not every sentence is a proposition, is not entirely free from criticism. It is alleged that only the declarative sentences are true propositions. But every sentence has a meaning, even the imperative, optative, and exclamatory sentences; though these, to be sure, cannot be said to be either true or false, in the form in which we find them expressed. The old familiar definition of a sentence—that it is an expression of thought in words—tells a hidden truth about those forms which are commonly not admitted to the rank of real propositions. A thought is always implied in every command, wish, or exclamation. A complete analysis of the states of consciousness corresponding to the various so-called sentences would reveal both a cognitive and an emotional aspect in each. In the indicative mood the cognitive characteristic is overt and the emotional characteristic is implied. In the other moods the emotional aspect is expressed

[12] *Logic*, II, 6.

and the judgment, or assertion, or cognitive characteristic is implied. The *exclamation* "fire," the *command*, "avaunt," the *wish* "a horse! my kingdom for a horse," each implies an *assertion* which is not expressed. Instrumental Logic is quite right in maintaining that for the purposes of complete definition and in our practical lives we should take into account these implications. But it is wrong, in my opinion, to assert that it is impossible to detach the cognitive factor for exclusive study.

A state of consciousness may be simple and unequivocal while its outward expression may be duplex, that is to say, one judgment may require for its expression two propositions. And on the other hand there may be a multiple content in mind—two or more judgments—with only one proposition to represent them. Illustrations of the former we find in the rhetorical devices for securing emphasis through tautology, repetition or elaboration. "The last rose of summer is gone. It is fled," are two sentences or propositions, but one judgment. "All the planets except Venus and Mercury are outside the earth's orbit," "None but the brave deserve the fair," are duplex propositions. Each is in form a single sentence containing two assertions. The name *exponible* which was given by the older logicians to these propositions with multiple meanings was etymologically somewhat unfortunate. Any of the more modern words *plurative*, *duplex* or *portmanteau* propositions is to be preferred. A careful analysis of these *portmanteau* propositions, particularly the exclusive propositions, which are either omitted or given only slight consideration in most discussions of the import of propositions will throw light upon the nature of judgment and of inference. In the exclusive proposition "None but the brave deserve the fair," we have the interesting situation of two judgments and two propositions telescoped into one sentence. It is likewise interesting as an illustration of an attempt on the part of the speaker to recognize the existential import of propositions but

to provide, in the form of the assertion, for a non-committal attitude toward the question of the existence of the subject.

It is often said that the educational value of elementary Formal Logic consists chiefly in the exercise of paraphrasing poetical or rhetorical assertions into the type-forms of propositions, with the least possible sacrifice of meaning. I do not think this is true. The translation of propositions from their rhetorical to their logical form is a literary occupation. This is a task that properly belongs to the grammarian and the philologist, not to the logician as such. This is an interesting and important work, but it is no more the special business of Logic than the translation of a foreign language would be. The *translations* of propositions should be distinguished from their *transformations*. The task of the logician begins after the student of language has translated the poetic or rhetorical form into the type-propositions. He has the task, then, of transforming the standardized proposition into its various implications. Logic is the *science of inference*, not the *art of translation*. Given an unequivocal type-form it is the business of the logician to classify all the other propositions that deal with the same subject and predicate as true, false or doubtful. And this involves an intellectual discipline of great interest and value. The recent successful developments of Symbolic Logic exhibit more truly the proper scope of Logic, than does Genetic or Instrumental Logic. I repeat the criticism so often made, that the latter is not Logic but Psychology.

An excellent illustration of the failure to distinguish between Grammar and Logic is found in Dr. Mercier's treatment of propositions. He writes:

> For logical purposes, the most important distinction between different propositions is that between the Incomplete and the Complete. This is a distinction new to Logic, but it is one of the greatest importance. An incomplete proposition is, as its title implies, a proposition of which an element is missing. Every proposition expresses a relation; and, as we shall find further on, a relation consists of three elements—two related terms,

and the ratio which expresses the relation between them. Any one of these elements may be missing. . . . In the proposition "A is B," the term A may be missing; but we can keep the proposition in form until the missing element can be supplied, and at the same time introduce a reminder that the term is missing, and needs to be supplied, by putting in place of the missing term the relative "what." By this means we obtain the incomplete proposition, "What is B." Similarly, if B is missing, we can throw the incomplete proposition into the form, "A is what?" These are manifestly questions, and should be characterized as questions by the addition of the interrogation sign; and we then get the incomplete propositions, "What is B?" "A is what?" which at once preserve the form of the proposition, and remind us that the proposition is incomplete and clamors for completion.[13]

Here it seems to me, Dr. Mercier has disregarded the vital distinction between a question and a proposition. He is quite right in asserting that all propositions are preceded by questions of some sort. The question may, indeed, be most vague and amount merely to a psychological restlessness, but this question is one thing, and the assertion that follows upon it quite another. If instead of writing these so-called propositions as a question, for instance, "What is *B?*" he had written it as an assertion, "Somewhat is *B*," he would have been closer to the facts as we find them in the mind. These so-called incomplete propositions correspond not to incomplete but to indefinite judgments. It is not true that there is *no* subject but that the nature of the assertion is such that we are not able or not concerned to specify it. The whole meaning of the judgment has gone over into the predicate, and in the subject position we have a *that* without a *what*. This, I believe, is the true account of the impersonal propositions.

[13] *New Logic*, p. 30.

VI

Every judgment claims to be true; if it did not, it would forfeit its right to be called a judgment. This claim to be true, means that the mind that judges distinguishes between idea and object, in recognizing that it might have an idea which is not in agreement with the object. Here, again, it is necessary to distinguish between a judging consciousness and one that merely apprehends. The difference between the two is that one confesses the possibility of error, while the other knows nothing of the distinction between truth and falsity. There is an essential difference between the simple *apprehension* "This is *A*," and the *judgment*, "This is *A*." The judgment is never merely the awareness of something present. It asserts qualities that are derived from relations which transcend the present. And in this reference to facts not present there is the risk and the possibility of error which differentiates the judgment from the apprehension.[14]

Error is the most perplexing subject in the whole field of Philosophy. Why does it exist? Or is there perhaps no such thing as error, as the sophists alleged? Plato felt called upon to devote an entire dialogue to the refutation of the sophist's view and after twenty-three centuries the new realists find it their most embarrassing problem. There would truly never be any error, we should never make mistakes in judging, if we never took any risk in the predicate, if we always said "*A* is *A*," and never attempted to predicate of *A* something other than its

[14] On this point see Sidgwick, *Elementary Logic*, p. 196. "This risk, then, is always present when we make a predicative statement, however carefully worded the statement may be. There is no way of escaping it, short of ceasing to make any predications at all. It is the price we pay for the power either of generalising or of describing a Subject; it is a defect that belongs to a quality." I should agree entirely with this account of the essential risk in judgment, but should differ as to its interpretation. In the chapter on "Novelty and Identity in Inference" I have tried to show that the risk in judgment is not destructive of a stability that is just as essential as the risk.

bare identical self, something genuinely different from it. But we do take the risk and must take it. And it is the business of critical philosophy to ask for the reason why we take the risk and what is the success of our venture. We see at once, that the modern query, "How can one mind contain both the possibility of knowledge and the liability to error?" is identical with Kant's fundamental problem, "How are synthetic judgments a priori possible?" and this in turn is the same as Plato's question, "How can we affirm of a subject a non-identical predicate?"

It is very easy to state the difficulties about error, but far from easy to remove them. The Law of Excluded Middle declares that reality and non-reality exhaust the entire universe. Now from the purely subjective point of view, that is, before we attempt to classify any of the facts of universe, this law is compelling. A thing is either real or it is not real; we cannot accept anything between these two. When, however, we begin the process of classifying subjective and objective facts, on this principle, we get along very well until we come to the group of negative conceptions among which error is found. These stubbornly refuse to go into either of the two aforesaid classes. Error, for instance, refuses to be classed as either reality or non-reality. It insists upon having a third place made for it, for which as we have just seen, Logic at the outset makes no provision. There is truth in the remark that error is the occupation by an actuality of a place which does not exist.

Thus does *thought* discover a most interesting dilemma about *thought*. It can compel truth to reveal its own intrinsic falsehood. Also it can extract from error the confession of its essential reality and necessity. To put it otherwise, in the manner of Bradley, an appearance which *is*, must fall *somewhere*. But error, because of its intrinsic negativity cannot belong to reality, and again, it cannot belong to appearance, because that, with all its contents, cannot fall outside the Absolute. An appearance

entirely outside of Reality is naught. The essential characteristic of falsehood, error, fiction, is that an actuality should claim to be something other than itself. Many of the popular witticisms are based on this fundamental paradox. For example, the definition of a liar as one who tells the truth about something that never happened. It will be observed that I have differed from Bradley as to the place of error in judgment. He contends[15] that we can not, while making a judgment entertain the possibility of its error. One can not judge and doubt at the same time. I have insisted that one does not judge unless one does feel the actual constraint of a doubt.

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[15] *Mind*, n. s. XVII (1908), 154.

CHAPTER IV

NEGATION AND THE INFINITE JUDGMENT

I

There are four possible ways in which we may regard the relation between the affirmative and the negative judgment. We may hold that: (1) each is an independent and final form of thought's functioning—original, underived and self-directing; (2) negation comes after affirmation and is the result of a thwarted affirmation; (3) affirmation follows negation and is what we find left over after negation has destroyed certain possibilities; (4) affirmation and negation are correlated aspects of a more fundamental form of thought.

The first is the view of common sense and need hardly be discussed, although it is the innocent presupposition of some systems of Logic. It has been included in this fourfold classification for the sake of formal completeness. The second view, which makes negation subordinate to affirmation, has had many advocates, notably Sigwart and Erdman. The third doctrine, *omnis determinatio est negatio* has had able defenders from Spinoza to Venn. Although this controversy concerning the logical priority is many centuries old, the supporters of the second and the third views are still quite equally divided, which suggests that each side has hold of one aspect of a multiple truth. The fourth position maintains that neither affirmation nor negation is logically prior, and that while each necessarily involves the other, both are dependent upon a more central form of thought. This view makes possible, it seems to me, a genuine reconciliation of the divergent claims of (2) and (3).

Sigwart's view that every negation presupposes an affirmation, has been characterized as "monstrous" by Bosanquet.

However, we must admit this is a true and accurate description of a stage in the complex whole of the judging process. That reality is a system of inter-related facts is a postulate of every judgment. This affirmation of an orderly whole which is the logical presupposition of every specific judgment, always takes the form of a disjunctive judgment. It is an assertion to the effect that reality offers alternative possibilities to the judging consciousness. "*S* is either *P* or *non-P*." Bosanquet[1] and Bradley[2] are doubtless right, however, in saying that this postulate can not properly be called an affirmative judgment. Judgment implies belief and we can hardly be said to have judged and "believed" when the mind is poised between the balanced terms of a disjunction.

This postulate, or disjunctive affirmation, which precedes the negation is not the same in kind as the affirmation which comes after the negation. They differ as suggestion differs from assertion. It is true that in the life history of the judging process negation does occur between two affirmative states. But the one is an ideal construction and the other an affirmation of fact. The prior disjunctive judgment is a *crucial instance*, and has the same structure as a genuine hypothesis in science. It is strictly non-committal. It has been said that the suggestion in the disjunctive judgment is the same as the assertion that remains after the selective process of negation. This is the only view that lends support to Sigwart's doctrine, but this is clearly untenable. We can not say, as Sigwart's view would have us say, that negation is the rejection of an actual judgment. The acceptance of the bare presentation of the choice between alternative possibilities is not a judgment.

Bosanquet says, "Every significant negation, S is not P can be analysed as S is X which excludes P." But now we may properly ask "At what stage has the exclusion taken place?"

[1] *Logic*, I, 321.

[2] *Principles of Logic* (London, Paul, 1883), p. 110.

If there is no necessity for putting the verb *is* and *excludes* in the same tense, we may consider the exclusion to have been performed first and thereafter the discovery made that the inclusion of A in X had been affected thereby. The complex judgment would then read as follows: A (B having been excluded) is found to be X. This obviously would be a return to Venn's Theory of Judgment. Again we might stress the inclusion and say: A (in being X) has excluded B. The vital question is whether the exclusion is before, after or simultaneous with the inclusion? The logical analysis of the content of consciousness does give support to the view that the only meaning of any affirmation of a proposition is found in what it denies. Actualities can not be asserted, they arise spontaneously out of, or by the side of, the destroyed possibilities. The actualities we seem to get by the way of pure affirmation are always pseudo-actualities; they have never more than a hypothetical existence. And yet on the other hand, the *psychological analysis* always finds negation at a point farther from reality than affirmation.

The logical negative does in fact always contradict, but in contradicting never affirms the reality of that which has been denied. The dichotomy which is at the bottom of every negation, begins with existential reality, but in breaking up the whole into parts it is powerless to keep in each part the full measure of the reality of the whole.[3] The assertion that "S is not P" is the same as the denial that S is P, and both are equivalent to "S is P is false." And in no one of these three equivalent statements has thought passed beyond P into *non-P*. No assertion is made about the reality or the non-reality of P. Bradley has maintained that negation can not in any way be derived from affirmation, nor affirmation from negation, and yet he thinks it wrong to consider them coördinate species of a higher form. But although he is unwilling to accord to either the prior position in Logic, in Psychology he places negation

[3] Cf. Bradley, *Principles of Logic*, p. 118.

after affirmation. Since negation presupposes a positive ground, he says, "it stands at a different level of reflection." And this again is in accord with the view expressed earlier. No difficulty is found when we observe the distinction between the logical and the psychological aspects of judgment.

When Bradley says "Nothing in the world can be denied except on the strength of positive knowledge," he is after all admitting the main contention of those who hold that negation is a thwarted affirmation. It is true, as has already been shown, that the prior affirmation which he concedes does not refer the ideal content to reality with the same claim to truth as the later affirmation, namely, that which selects from among the presented alternatives. The first is a *suggested* affirmation while the second is an *asserted* affirmation. But Sigwart himself recognizes the essential difference between these two forms of affirmation when he says, "The primitive judgment should not be called affirmative at all; it would be better denoted as positive. The simple statement A is B is an affirmation only when opposed to the negative judgment." In view of this explicit statement I do not see why Bradley finds Sigwart's doctrine so "obviously absurd."

There is a prevalent tendency, especially in the elementary textbooks of Logic, to define affirmation and negation in terms of approval and disapproval. This is not precisely accurate, for there is also an aspect of approval latent in every negation. We accept negation as true or false, and thus approve or disapprove[4] It is impossible in thought to draw a line between affirmation and approval. We do not first affirm, and then, after having contemplated the object of our affirmation, pass to a second act of approval. Approval and affirmation are simultaneous. In discussing the relation between apprehension and judgment, we saw reason to distinguish between mere acknowl-

[4] On this point see Sigwart, *Logic*; translated by Dendy (ed. 2; London, Macmillan, 1895), I, 381.

edgment of a content without critical reaction, and true judgment or acceptance through criticism. But this we held was a theoretical distinction entirely. In living thought there is a simultaneity in the midst of the succession.

II

The infinite judgment has been much discredited. Since it attaches no positive and definite characteristic to the subject, it has been condemned as idle, practically worthless, and even illogical. Honesty is non-blue, for instance, is meaningless, because the negative term includes all possible predicates other than blue and does not even so much as insist upon the existence of the predicate. It is the farthest limit of indifference. This doctrine of the essential irrationality and futility of the infinite judgment is very old. By some it has been traced back beyond Plato to Anaximander. But I must point out at once, as bear-

Plato to Anaximander. But I must point out at once, as bearing upon a later defense of the infinite judgment, that the ἄπειρον of Anaximander was a *positive* infinite, and by him regarded as the source or original of all things. Modern writers think they find justification for the contempt which they heap upon the infinite judgment in Aristotle's own treatment of the subject. But we may doubt whether Aristotle would have approved of this later-day entire condemnation of the infinite judgment. This problem first presented itself to Aristotle in his discussion of terms. He saw as plainly as any one since his time that there is a paradox about the negative term. It must be defined as a term which implies the total absence of a quality. Technically speaking it connotes the absence of connotation. It is the self-contradictory attempt to make something out of nothing.[5]

[5] Bosanquet has stated the dilemma with admirable clearness: "The Negative Judgment presents at first sight a paradoxical aspect. We are bound to take it, qua judgment, as playing some part in knowledge, and

It is alleged to be a self-contradiction to say that a term may connote just the absence of a quality. It is not strictly speaking true, we are told, as is often supposed by the opponents of bare denial, that no term can be purely negative. But now it depends entirely on what we mean by a purely negative term. The class of privative terms, which logic has been compelled to recognize from the first, is a genuine class; and the definition of this class of terms must be greatly strained to allow even a modicum of positive quality in a privative term, in the ordinary interpretation of the word *positive*. A positive character of an entirely different sort it does possess. The negative term denotes an object which in the first place lacks the qualities denied by the negative term but has other qualities in terms of which that very lack is defined. Every negative must have a positive basis. A sheer naught can not be the ground of a denial. *Non-P* will always signify what an object will be, which might be *P*, but is not. But granted that these so-called privative terms do have a genuine positive connotation, even if slight, there seem to be, nevertheless, other terms which have no purpose other than to deny. An *alien*, even within a limited universe of discourse, is defined entirely in terms of what he is not. A *bachelor* connotes an unmarried man, and bachelors (as bachelors) have nothing in common save that they are not married. Such terms are positive as to denotation, but negative as to connotation. But even these terms can, I believe, be brought under our general rule. The positive term as understood by common sense and ordinary logic is positive directly and definitely, the negative term is positive indirectly and indefinitely, but none the less genuinely. In a later chapter on immediate inference I shall

as at any rate capable of contributing some factor to the ideal fabric of reality. But it assumes the external shape of ignorance, or at least of failure, and the paradox consists of this—that in negation the work of positive knowledge appears to be performed by ignorance. The contradiction arises, as we have seen other contradictions arise, from the adoption by thought of a shape which at best expresses it but partially, and the retention of that shape when the aspect which it did express has come to be dwarfed by other aspects of knowledge." *Logic*, 1, 293.

advance a new interpretation of the ancient rule for distribution based upon this distinction which I think answers the much debated question as to the validity of inversion.

We here encounter the same problem that confronts one wherever one has to do with the "relational way" of thinking. We begin with what appears a mere couple, a two in relation. But the "endless fission" breaks out and we discover that no relation is purely diadic. Relations are always *within* as well as *between;* and while they are explicitly *diadic* they are implicitly *triadic*. In earlier paragraphs we saw this to be true of the relation between form and matter, denotation and connotation, intension and extension. They are all correlatives having independent variability within some larger whole. Now this conception of the essential triadic character of every relation provides an explanation, I believe, for the class of bare denials which the relation of affirmation to denial requires. Every object denotes a *this* or a *that*, and connotes *thisness* and *thatness*. Now when a *this* goes beyond itself for its connotation and accepts *thatness* for its meaning, we have—stated most abstractly—a pure negation, a bare denial. And such abstract statement of the problem I venture to think is not a mental "fiction." We have thus properly provided for the outstanding "rare" cases where the mind halts between denial and affirmation.

All of this suggests, as Windelband and Kant before him, have held, that there is a third kind of quality between affirmation and negation, and in a sense coördinate with them. Where there is no sufficient positive ground for a direct assertion the mind is satisfied with probable, indirect or negative grounds. But, furthermore, it should be pointed out that every indictment of the infinite judgment, which begins, as most criticisms do, with a condemnation of the negative term, is an illogical procedure, for terms are not the prior units out of which the judgment is constructed. The judgment is itself the unit of thought

and the negative term is derived by abstraction, or dismemberment of a prior infinite, or limitative judgment. We do not find the *non-S*'s and the *non-P*'s lying about ready made and then proceed to affirmations or denials about them. These negative terms are the by-products of the reverse process. We first observe that *P* cannot be attributed to *S* and state this fact in the negative judgment "*S* is not *P*." Whereupon the query arises, if *P* can not be attributed to *S*, what can be? In answer to this question, *non-P* is created and the response is embodied in the pseudo-affirmative judgment "*S* is *non-P*." The negative judgment "*S* is *non-P*" affirms something *indefinite*. There is, therefore, abundant reason to assert with Lotze that the true meaning of this latter judgment is never available for practical purposes until it is restored to the negative which was it source.

But now it should be observed that the negative term *non-P* is not truly indefinite in the sense of being wholly undefined or unbounded. In the technical language of the schoolman, it is always distributed. And if it is genuinely distributed we do have some knowledge that extends over the entire class or else the ancient doctrine of distribution falls to the ground. To say that *non-P* is distributed is to declare emphatically that it is not entirely impossible to hold together the large and apparently chaotic group of objects comprised in *non-P*. The fact of distribution declares that there is at bottom an essential homogeneity in the group, and this guarantees the accuracy of all the transformations in which the negative term is employed in the various immediate inferences. Obversion, or infinitation, is for this reason a valid inference. I think no defender of the infinite judgment has ever claimed that *non-P* can exist as an independent concept. We can not, it is true, conceive such a class of objects, that is, we can form no mental picture of it. It is, therefore, *unintelligible*, but not on that account *unthinkable*. We can employ it both in the theoretical and in practical thought processes. The symbolic logician makes rigorous use

of it in his theoretical thinking, and the empirical scientist applies it continually in his search for causal connections. The scientist narrows the field in any inquiry by destroying, one by one, the possibilities of his multiple hypothesis. And, as I have already insisted, each destruction of a possibility is a positive advance towards his goal.

It is quite true that the mind is rarely ever satisfied to remain in the stage of bare denial. But it is precisely these exceptional cases where it does halt at bare denial, however rare they may be, that logic must take into account. We may ask two questions here: (1) Should we at any time be unable to pass through bare denial to denial with affirmation, have we made no logical advance whatever? (2) If the infinite judgment is illogical and impractical, how can we explain its persistence in thought and language? I shall attempt to show that it is no answer to these questions to say with Hegel that the infinite judgment is "idiotic."

The history of Logic has repeatedly taken cognizance of this dilemma about negation, and yet, in my opinion, there is no real warrant for the disparagement of the infinite judgment. The modern critics provide the answer to their criticisms in the emphasis that they place upon the difference between the assertion of impossibility and the denial of necessity. Absence of a reason for assertion, it is justly held, does not mean the presence of a reason for denial. To have no opinion against, is not the same as to have an opinion for. *It is possible*, is not a legitimate inference from *we do not know it to be impossible*. There is some justification for the view that there is no middle ground between affirmation and denial—that there is no such thing as suspended affirmation. But now whatever position we take on logical the problems here in question, it is nevertheless an undeniable psychological fact that the mind may put itself in three *different*—even if not correlated—attitudes towards any suggestion. It may not only accept or reject, it may also doubt.

At an election the counter records the "ayes" and "noes" and also the "not voting." And in Psychology we are told often of the indifferent zone that lies between the extremes in sensation. It is an answer not to the point to say that the state of consciousness called indecision is decision not to decide. The question is, Why do we require for Psychology and practical life a threefold division and for Logic a twofold division?

We see, therefore, that a careful examination of these considerations which seem to militate against the infinite judgment shows that they are unfounded. In the first place it can be shown that the infinite judgment, in the process of delimiting any universe of discourse, if not the whole objective system, has made a distinct forward movement. And this step does not have to be retraced, that is to say, a second infinite judgment in the next stage of division proceeds from where the first left off. It is not like the process of throwing a die where each throw is no nearer certainty than the one before it. The infinite judgment is no logical treadmill. In theory it is true, as Plato and after him Kant said, that the infinite judgment subtracts one from the infinite number of possibilities, and leaves remaining an infinite number. But in practice, the application of successive infinite judgments does very rapidly reduce the total sphere. Only half a dozen steps are needed in the *Tree of Porphyry* to pass from a *summum genus* to a very definite *infima species*. A practical illustration of the rapidity with which the successive infinite judgments will narrow a field of inquiry is found in the familiar parlor game of "twenty questions." Here one person undertakes to perform the apparently impossible feat of telling what another is thinking about by asking him twenty questions to be answered only by yes or no. This is often accomplished with surprising swiftness.

All the so-called *negative results* in the experimental work of scientific laboratories may be expressed in each instance in the form of an infinite judgment; and these negative results are

surely not without value. The scientist assumes that the object of his search will be found in a certain field, but after laborious investigation discovers that he has set up a false hypothesis, and must seek elsewhere for the cause of the phenomenon under investigation. He registers this fact in the infinite judgment, "*S* is *non-P*." And he intends that the judgment shall be genuinely affirmative, for he knows that the phenomenon must have a cause. The clearing of the field by the destruction of false hypothesis is not idle. The scientist never hesitates to publish his "failures to find" for the guidance of fellow workers in the same field. A negative Baedecker (if one dared to print such a guide book) which told tourists where not to go, might be more useful than the positive form. It would permit of real discoveries by the independent seeker.

III

The symbolic logicians have pointed out the significant fact, that the term *P* is no more indefinite than the term *non-P*. Why should we think that the objects that compose the class *P* are any more homogeneous than those of the class *non-P?* The belief that one of these classes is small and homogeneous and the other large and heterogeneous is an idea that is thrust in from without. Granted that the members of the class *non-P* have nothing in common save the absence of *S*, this does not make them a less coherent group than the class *P*. *Non-P* is, indeed, the contradictory or negative of *P*, but in Formal Logic either of the two terms which stand in the relation of contradictories may be taken as the positive and the other as the negative. For example, a powerful social, political or religious movement often grows from small beginnings when its adherents were described by some negative word. The Anti-Saloon party in some prohibition communities is overwhelmingly large, positive and coherent. The fundamental fact with which Formal Logic is concerned is that the two classes *P* and *non-P* are mutually exclusive and together comprise the whole universe of thinkable entities.

Symbolic logicians have also said that Kant's threefold classification of propositions into positive, negative and infinite has no theoretic defense; it depends entirely upon practical differences of meaning. The three forms "*S* is *P*," "*S* is not *P*," and *S* is *non-P* have their origin not in any strict doctrine of negation, but in the practical convention of something less than complete negation, namely, opposition. In all those judgments in which the predicate is regarded as an attribute, it is for practical purposes quite sufficient to use opposites, that is, terms which mutually exclude each other, as do contradictories, but which do not together include the entire universe of thinkable objects. The class of infinite judgments is a concession to contrary negation, and to the attributive view of predication. And this view, as I have already tried to show, is merely a necessary stage on the way to the class view of Symbolic Logic.

It has often been maintained that the assertion of a mere distinction, that is, an assertion of differences in degree is no assertion. This is only partly true. The common definition of negative or contradictory terms, that they are two terms that are mutually exclusive and that together exhaust the entire universe of thinkable things, needs some qualification. They are totally different, the definition says, that is, different in kind. Now this distinction between differences in degree and differences in kind is one which Logic has always regarded as of the deepest significance. But what, we may ask, is the criterion of this distinction between the differences in degree and the differences in kind? Entities which are different in kind must after all have something in common. They must belong to the same universe of thought somewhere, otherwise they would have ceased to be two and would have become nothing. The Hegelian criticism of the Aristotelian Law of Contradiction is just. Where there is a distinction there must be at least one principle of unification. Only one thing can both be and not be, namely, nothing.

While *A* and *non-A* are different in kind, yet it is evident that that which differentiates one of these conceptions from the other is not an intrinsic principle. There is nothing in the nature of the two conceptions which can tell us where the one ends and the other begins. The principle of this division is always extrinsic, that is, it lies in the purpose of the thinker. Every dichotomous division is made in the interest of an external need. Without such an extrinsic point of departure we should pass from *A* to *non-A* by imperceptible gradations within the same qualitative sphere. However far apart we place *A* and *non-A*, they will have something in common, otherwise they could not be thought together. The same norm that defines *A* will also define *non-A*.

CHAPTER V

The Nature of Inference

I

The dictionaries have found it necessary to give a score or more of synonyms to cover the many uses of the word *inference* by philosophers and laymen.[1]

Logicians have not been so much concerned with the ambiguity in the word, as with the contradictions that seem to lie at the heart of the process of inference itself. Aristotle, very early in his thinking about the fundamental problems of Logic, discovered the paradox in all judgment. No term it seems, can be truly predicated of another term; it can only be predicated of itself. The only true propositions are the identical propositions. You can not truthfully affirm that "*A* is *B*," but only that "*A* is *A*." This dilemma arises then, in saying "*A* is *B*," you predicate what the object *A* is not, and you therefore speak falsely; but on the other hand, if you say "*A* is *A*," you indeed predicate what it is, but you say nothing and the judgment is idle. So thought vibrates between the extremes of *tautology* and *falsity;* apparently with no possibility of a resting place between the two.

Now while the modern logicians profess to be seriously disturbed by this ancient dilemma they define *inference* in ways

[1] Some of the dictionary synonyms of inference are: analysis, anticipation, argument, argumentation, assay, assent, assumption, conclusion, conjecture, conviction, corollary, criterion, decision, deduction, demonstration, dilemma, discovery, elench, enthymeme, examination, experiment, experimentation, finding, forecast, generalization, guess, hypothesis, illation, induction, inquiry, investigation, judgment, lemma, moral, persuasion, porism, prediction, prevision, presumption, probation, prognostication, proof, ratiocination, reasoning, research, sifting, surmise, test, theorem, verdict.

that show they have for the most part ignored the paradox. The conclusion in any inference, mediate or immediate, we are told in varying language must be *another,* or a *new,* or a *different,* or a *fresh* proposition. But we find few serious attempts to define *otherness, newness* or *difference.* Again we are told that inference is the "explication of implications," or the "passage from one fact to another"; it must be "more than vain repetition." Or it is the "*supporting* of a judgment by its reasons," the "*discovery* of necessary connections," "combining of two premises so as to *cause* a consequent conclusion, or "*drawing* a conclusion from premises." And again none of the essential words are clearly defined. The writers often confess that they are employing the significant words of their definition in "new" ways, that the meanings that they attach to them are not in conformity with ordinary human usage. Hobhouse suggests that there is something unusual in his use of the word "new," by continually writing it with quotations.

It will be well to consider several of the typical definitions of inference; to show how they reveal in varying degrees the "circle in defining." Adamson says:

> Inference is that mental operation which proceeds by combining two premises so as to cause a consequent conclusion. Some suppose that we may infer from one premise by a so-called "immediate inference." But one premise can only reproduce itself in another form, e.g., all men are some animals; therefore some animals are men. It requires the combination of at least two premises to infer a conclusion different from both.[2]

Later we shall examine this view that rejects the immediate inference. I wish at this time to point out that the expression "to cause a consequent conclusion" is ambiguous, redundant, and inclusive. It tells us only, at best, that an inference is an inference. And this circle in defining lurks in all the other definitions. According to Joseph:

[2] *Ency. Brit.* XVI, 879.

Inference is a process of thought which, starting with one or more judgements, ends with another judgement made necessary by the former. The latter, which in relation to the judgement or judgements from which the process starts is called conclusion, which must in comparison with them be a *new* judgement; to repeat in fresh *words* our original statement is not inference, any more than translation is inference. For the most part a new judgement is only got by putting together two judgements, and, as it were, extracting what they yield. But there are a few conclusions which we appear to draw, not from any "putting together" of two judgements but simply from the relation to one another by putting together of the terms in one judgment. This is called *immediate* inference.[3]

Welton's definition reads: "Inference or reasoning is the process by which we pass from affirming one or more propositions to another *different* judgment which we make as the necessary result of accepting the first." Also, "Conclusion states the original truth in a *new* form."[4] And again, "Inference or reasoning is the deriving of one truth from another. By this is meant that the new judgment is accepted as true because, and in so far as, the validity of the judgment from which it is derived is accepted."[5] Bosanquet's much discussed definition is, "Mediate judgment or inference is the indirect reference to reality of differences within a universal by means of the exhibition of this universal in differences directly referred to reality."[6] Miss Jones says, "One proposition is an inference from another, or others, when the assertion of the former is *justified* by the latter and latter is, in some respect different from the former."[7] Windelband insists that "*Inference* is nothing else than a way of establishing judgments, and is indeed a judgment by means of judgment."[8] This definition is satisfactory until we come to see that the whole question at issue is just the meaning of this

[3] *Introduction to Logic* (Oxford, Clarendon, 1906), p. 209.

[4] *Manual of Logic* (London, Clive, 1891), V, 24.

[5] *Ibid.*, I, 256.

[6] Logic, I, 4.

[7] Jones, E. E. C., Elements of Logic (Edinburgh, Clarke, 1890), p. 139.

[8] *Ency. Philos. Sci.*, I, 27.

process of "establishing" judgments. Inference has very often been described as the extracting from a proposition of its implied meanings, or the explication of implications. But here we have again a *petitio*, for this description presupposes the definition of explication and implication. The symbolic logicians have recognized this inevitable circle and have for the most part frankly accepted among their indefinable notions the notion of implication.[9]

One of the commonest of all the vague words which we are tempted to employ in the definition of inference is the word *virtually*. Many writers say, that if the premise in an inference only *virtually* contains the conclusion, then, when the conclusion is "drawn from" or "extracted from" the premise, the "new" judgment at which we arrive will be both a different way of viewing and a different way of expressing the same truth. As a typical illustration of an account of inference which employs several of these ambiguous words I cite the following from Joseph: "In all inference there must be some *movement* of thought; we must conclude with something not quite the same as what we started with; though the *obviousness* of the inference is no ground for denying that it is inference."[10] This activity of thought as it passes on to a "fresh" point of view, this step which it takes as it clothes itself in a "new" form, is an inference. But such an account I am inclined to think does not get to the center of the difficulty. It has solved the problem by translating it into a new form. The vital question is, What is the difference between a judgment that is *actually* and one that is only *virtually contained in the premise?* Again we may ask, What have we added to the "old" when we say that thought has been "active" in "stepping" to the new point of view?

[9] e.g. Russell says: "A definition of implication is quite impossible. If p implies q, then if p is true q is true, *i.e.*, p's truth implies q's truth; also if q is false p is false, *i.e.*, q's falsehood implies p's falsehood. Thus truth and falsehood give us merely new implications, not a definition of implication." *Principles of Mathematics*, p. 14.

[10] *Introduction to Logic*, p. 217.

When is the change not a step? It is said, that the obviousness of the step is no objection to calling it an inference. And again, we have on our hands the word *obvious* which is quite as vague as *virtually, new, old* or *fresh*. Since inference is not really a transition in time, it is evident that a conclusion will not lose its character as inference as soon as it becomes obvious. Inference involves discovery but it does not cease to be inference when (the discovery having been made) thought vindicates the inference by proof. As Bosanquet has so well said, "*Discovery without proof is conjecture*; an element of proof is needed to constitute inference, and indeed to constitute discovery. The activity of inference cannot be identified with the perception of something new. It is quite a normal occurrence that the elements which are indirectly referred to reality should also be directly referred to reality."[11]

Hobhouse says: "Any assertion is 'new' (as compared with some other) as long as the two contents are in any way distinct. Whatever the real inseparability of the facts, as long as they are distinct to pass from the one to the other is to make a new assertion."[12] But it seems to me that Hobhouse has not reached the central issue either. To define the "new" as that which is "in any way distinct" is hardly satisfactory. We are at once confronted with the difficulty of showing how two contents may be regarded as distinct if they have, as he declares, a real inseparability. In all his discussions of the nature of thinking, Hobhouse has quite consistently maintained that it is the primary function of inference to reach "new" facts. But in the last analysis, by "new" facts he means those which have not been presented to the mind in any previous sense perception or act of memory. But the past is connected with the present by a continuous tie; therefore predication, which always passes beyond the present, can not be truly novel. Every theory of infer-

[11] *Logic*, II, 8.

[12] Hobhouse, *Theory of Knowledge* (London, Methuen, 1896), p. 216.

ence must finally go back to the world-old Platonic Doctrine of Recollection. Inference is the process of discovering what we already *logically* possess but did not observe that we possessed until we *psychologically* came upon it.

If consensus of opinion may be taken as a warrant for the assertion, the modern discussions as to the nature of inference have shown that it must be more than direct apprehension, or immediate experience. Welton says, "Inference involves 'mental process,'" and with this others, for example Joseph, agree. They declare that in all inference there must be some "movement of thought." But here again are we not begging the whole question? How shall we decide when and in what way thought has moved? What is to distinguish between a mental process which yields an inference and that state of consciousness which is not a process and which is therefore characterized as bare tautology. I confess that often in these pages I have myself had to resort to the expression "movement of thought," but I have tried to show that these words are meaningless unless they involve a reciprocating process—forward and backward, analytic and synthetic. The paradox of inference does not disappear when (as some writers seem to think) we attach adjectives to the terms, old and new, to the inference and the inferend. We are told that the conclusion of an inference must not be a *mere* repetition of the old—that there must be *genuine* novelty. But this does not dissolve the paradox. Any tautology is bare tautology and any novelty is genuine novelty.

The objection which Mill, and after him, Adamson and others have raised against the immediate inferences, namely, that there is in the conclusion no "new" truth, will hold also against mediate inferences and even against induction. The attempt to regard induction as different in kind from deduction breaks down under the weight of its own inherent self-contradiction. The logician who offers a theory of induction that attempts the self-vindication of its own processes has on his hands this

dilemma: either he tacitly presupposes the universal truths and hence his method is not their sole source, or, on the other hand, they remain unproved because his method is confessedly a method of probability only. The syllogism, as was pointed out by its earliest critics, is indeed incompetent to supply its own premises. But now, when induction steps in to furnish deduction with these universal truths for its premises, it is shackled by the same fetters from which it proposes to relieve deduction. Induction is itself a process of reasoning from premises, and must obey the fundamental law which governs deduction; the conclusion is true only if the premises are true. In a commendable, fraternal spirit, induction would remove the "mote" from its brother's eye, disregarding the "beam" in its own. The symbolic logicians are right, in my opinion, in their criticism of induction.[13]

II

The dictionaries, and many of the ordinary textbooks in Logic have defined inference in terms of judgment and judgment in terms of inference without recognizing or confessing the "circle." Many attempts have been made by recent writers, to establish either a temporal or a logical priority in favor of one or the other. Such discussions have generally resulted in the discovery that each of these functions may be taken either as chronologically or logically prior to the other. In attempting to distinguish between judgment and inference, we find that the ambiguity between these two words has made it possible for one writer to make inference prior to judgment while another makes judgment prior to inference. Both judgment and inference as

[13] Cf. Russell, *Principles of Mathematics*, p. 11. "What is called induction appears to me to be either disguised deduction or a method of making plausible guesses." *Also* Shearman, *Scope of Formal Logic* (London, 1911), p. xiv. "In so far as such studies set forth methods of proof the studies are formal in character, and in so far as they refer to matters that are preliminary to the application of proof, they are not Logic at all."

conscious processes pass through various stages of development. When we take inference at its early, rudimentary and unconscious beginning, we shall find it of a lower order than judgment, if at the same time judgment is taken at the highest stage of its development. And on the other hand primitive judgment is needed as a prerequisite for overt inference. Judgment is the lower limit of inference and inference is the upper limit of judgment; that is to say, in judgment the given fact, the process of its justification, and the product are merged into a single statement.

Bradley has made the difference between inference and judgment depend upon the directness or indirectness of the reference of the predicate to reality. He has defined judgment as the *direct* reference of a content to reality and inference as the *indirect* reference of a content to reality. This is a distinction that at first sight seems very clear. But we soon discover that we have only postponed the difficulty and have stated the original question in a new form. When we pursue our analysis into the distinction between *direct* and *indirect* we seem soon to be lost in another maze of bewildering perplexities. The essence of Bradley's doctrine is that whenever, on the strength of what we know about a *this*, we make an assertion about a *that*, we are inferring. But as we saw in a previous chapter, there is no distinct and intelligible line of separation between the *this* and the *that*. The whole theory hinges again upon the distinction between the *explicit* and *implicit* which is not a distinction in the form, but only in the matter of thought. However, I believe the "circle" is less objectionable in Bradley's way of distinguishing between judgment and inference than in any other.

Every judgment when called upon to exhibit its reasons develops into an inference. This statement does not refer to the inductive process of establishing the universal propositions that are required for deduction. We have seen that judgment begins its existence when it is observed that the predicate might have

been something else. Now in order to *cause* the judgment to become conscious of its reasons we have merely to hold in thought a suggested contradictory predicate as a substitute for the predicate actually found in the judgment. This *actual* predicate, in the process of rejecting the *possible* predicate, vindicates itself with a *because*. Thus the judgment "*S* is *P*" expands into the following disjunctive inference: "*S* is either *P* or *non-P*," but for such and such reasons "*S* cannot be *non-P*," therefore "*S* is *P*." Moreover, this fact that judgment vindicates itself by enlarging into an inference is another way of stating the general idealistic doctrine that all knowledge is a system of parts so interrelated that the whole may be unravelled from whatever point we begin.

As Hobhouse and others have said, there is no psychological evidence that inference is developed among the states of consciousness later than judgment, or that it in any way makes use of the completed process of a prior judgment. As soon as the object is presented to the mind it is stimulated not only to make an analysis of the fact itself but also to compare it, to notice its position in the system of facts. From simple apprehension, through conception and judgment, to inference, the process is one undivided whole. Both inference and judgment start with something given. Each represents a particular way that the mind has of reacting upon this datum. Judgment begins with terms which it either analyses or combines. The inference begins with propositions which it likewise analyses or combines. They differ merely in the character of the material upon which they operate, and consequently may be said to differ not at all, or to differ merely in degree. In the one case the difference between the datum and the conclusion is explicit and in the other it is more or less implicit. Although they are inseparable aspects of one mental fact, nevertheless explicit judgment comes into consciousness before explicit inference. Here, again, we have an illustration of that universal law in the evolution of thought,

namely, that we become aware of the concrete result or product first, and the process or law later.

A casual examination of any instance of "I think" reveals both a forward and a backward movement of thought. The one movement is from premises forward to conclusion, the other from conclusion back to premises or "reasons." In the former case we say "*M* is *P* and *S* is *M*, *hence*, *therefore*, *or consequently* *S* is *P*." This is commonly called *inference*. In the other we say "*S* is *P*" *because*, *for* or *since* "*M* is *P*" and "*S* is *M*." This is *proof* or demonstration. In discussing the nature of analysis and synthesis previously, I urged the importance of viewing these two movements as inseparably correlated aspects of any complete living thought. And again in the matter of the relation of inference and proof, both are always found together. There is never a forward movement of thought, that can know itself to be a genuine forward movement, if it does not always feel at its center its own latent backward movement. There is no inference—no true discovery—without proof. A discovery that is bereft of this validating backward movement would be pure adventure (if that were possible). But now, analytic attention to the thought process always finds one of these movements more prominent than the other. We might employ the word *reason* to denote the combined forward and backward movement in its logical totality. Then the word *inference* might stand for the process of attaining a belief and proof for the process of supporting the belief.

The real problem at issue in immediate inference is not the determination of the precise limits which any judgment places upon the various movements or aspects of its meaning. This is transformation or what Bosanquet has called "interpretative inference"; it is the determination of all the ways in which the predicate may be referred directly to the subject. "Substantial inference" we have when we pass from one content or relation to another indirectly. It is difficult to distinguish between a

direct and an indirect reference to reality. The difference is between what we see and what we do not see, but what we might see from another point of view. And this is not a distinction that depends upon obviousness or immediacy in their ordinary meaning. Inference is a process which changes our power of perceiving the object. DeMorgan remarks that "inference does not give us more than there was there before, but it may make us see more than we saw before." The perfect mind makes no distinction between direct and indirect reference to reality. It is not obliged to say, "The facts present are thus and thus, therefore I should infer that facts not present are thus and thus. (Omniscience does not have to compare facts in order to know them.) It has what might be called a unito-multiple point of view, from which the difference between the direct and the indirect insight disappears. It does not have to run around an object to see how it looks on the other side; it sees both sides at once.

III

The attacks on Formal Logic invariably proceed upon a mistaken understanding of the manner in which the idealist thinks of the relation between *form* and *matter*. Since Hegel, many logicians have reaffirmed his doctrine of the essential correlativity of these two aspects of reality. We have come to see that form and matter do not exist separately, nor can they even be considered entirely apart from each other. We should not think of them as we think of the seal and the wax in the classic illustration of form and matter. And yet we may speak of the form of reasoning as being different from its matter, without contradiction. In truth, while there is no final and complete separation of matter from form, there is yet a difference amounting to a relative distinction. Although the two are not a separated twain, they are nevertheless separable. They are, in fact, independent variables within their correlation. The mathematician

has to deal often with such binary systems of independent variables. In the world of sensory facts, too, we frequently find one and the same form encompassing a variety of contents at different times and places, and on the other hand, the same content manifests itself in a variety of forms. Moreover the independent variability goes so far, paradoxical as it may seem, as to permit the one to pass into the other. What is form in one relation becomes matter in another relation. This latter truth is of the greatest importance for the right understanding of the theory of thought that in current discussion calls itself dynamic idealism.

The serious question for Formal Logic is whether, in this correlation, we can ever escape the necessity of defining each by the other. There are many such circular definitions; for example, form is that which remains permanent when the matter changes and matter is that which remains permanent when form changes. It has often been remarked that all reasoning is in the last analysis circular, that no definition can escape the indictment of begging the question. But whatever position one may take on the vexed question as to the possibility of transcending reciprocal relations in definition and description, we may yet maintain that *thought* itself does pass from thesis to antithesis and thence to synthesis, although *language* may lag behind. The third stage of genuine synthesis, that is, the synthesis that does not itself in turn require an antithesis, must elude logical definition. Here it may be said is an instance of a judgment that has no exact counterpart in the realm of propositions; vocabulary has not followed thought. Now the thought which reconciles the contrasting correlation of form and matter can only be described by again employing the word, form. The Real Logic—the contemned Logic *überhaupt*—would be concerned with this form. This is what idealism has always meant by the synthesis of opposites in higher unities. It has not meant, for example, that good is bad, or that past is present, etc., but that these

correlatives have something in common. In like manner there must be something in common between the form and matter of thought.[14] But it must not be supposed that we are here reaffirming the very old view that the form is always the constant and the matter the changing characteristic. As I have just said the form may change and the matter remain fixed, or the matter may change and the form remain fixed, or finally both form and matter may vary. A wave, for instance, at no two moments of its life history has either the same form or the same content. Yet the wave unquestionably has an identity that persists amidst its changing form and matter. It is an individual because it is the object of a will-attitude.

Since the time of the great Stagirite, logic has been looked at under two aspects: (1) real logic, (2) formal logic. Both of these expressions are full of ambiguities—ambiguities that are, however, hardly avoidable. Real Logic deals with the problem of *correspondence*, Formal Logic with the problem of *consistency*. The truth of correspondence joined with the truth of consistency constitute total reasonableness. The question at issue is whether these two aspects enter into total reasonableness in different degrees of importance. Can the question of coherence be divorced from the question of correspondence? Is correspondence, at last, a kind of coherence? These two main senses in which we may speak of the validity of thought, have been the pivotal points around which the recent discussions regarding the nature of inference have revolved. The Instrumental Logic of today denies that there are these two aspects; it dispenses entirely with the ontological problem. Idealism has always insisted on

[14] Windelband has clearly recognized the necessity of distinguishing between these two points of view. "The two kinds of categories may be distinguished as transcendent and immanent in their relation to truth; so that I would say that the constitutive categories are existential and the reflective are valid. It is the final task of the system of categories to reunite the two divided series and to discover the forms of thought in which the two fundamental categories, the valid and the existential, are combined into a unity." *Ency. Philos. Sci.*, I, 35.

the distinction between the ontological and the epistemological problem, even when (as in the case of Hegel) it asserts that *Denkenlehre ist auch Seinlehre*. It declares that the relation of thought to reality is a real problem, and that the recent attempts to solve it by saying that there is no such problem or by asserting that it is of no consequence, is a profound error

The question, "Is this particular instance of reasoning accurate?" is at heart, always a duplex question. Although for practical purposes we may ignore one or the other of these two aspects, rigorous thought demands that we make the distinction. We may have had in mind to ask whether the inference is itself a manner of *Being*—whether we have laid hold of the real nature of things through this mental operation. In the second aspect of the duplex question, we disregard coincidence with reality entirely: we wish merely to know if our conclusion does follow from the premises in accordance with non-contradictory principles. In the face of all these recent indictments we still declare that Formal Logic is the science of that part of reason which is concerned not with total reality and complete reasonableness but with the truth which is contained in consistency. Consistency is a part of truth, necessarily, but it is only a minor part.

The form of thought is unanalyzable and indefinable. The best we can say of it is that it is the mode or manner in which thought *is*. It is not an external matrix, independent of thought, but is natural to thought. It is intrinsic in the nature of thought itself, and in so far it is an expression of that nature. But it is not a complete expression, any more than the form of a statue is a complete expression of the statue. It is, however, a genuine expression of the inner life of thought: an expression that is spontaneously taken by thought. To say that thought is determined by this form is inaccurate and insufficient. What we mean to say is that *thought is self-determining in its form*. The form of thought is essential to thought, though not equivalent to the fulness of thought; thought does not subsist without thought-

form. Thought, as thought, has this form, and without it thought in so far is non-existent. The form of thought is peculiar and untranslatable. Serious misunderstanding has arisen from the "wax and seal" illustration of matter and form of thought. It would be well if this and all other similar figures of speech could be expunged from logical discussions. These similes are largely responsible for confusion of *logical form* with *temporal sequence* or *spatial arrangement*.

Furthermore, logical form is not the same as that something in objects that we call the *beautiful* nor is it that other something in objects that we call the *good*. We cannot escape the conclusion that there exist in consciousness more than one principle of arrangement. But this admission must not be regarded an abandonment of our defense of Formal Logic. The elements in a certain sort of consciousness are arranged in a particular way, while the elements in another sort of consciousness are arranged in another way. We have the *time-principle*, and the *space-principle*, both existing and acting together in consciousness. Also we have the *esthetic* and the *moral principle*. Things may be satisfactorily arranged in regard to time and space, but yet not be beautiful; or they be harmonious as regards the esthetic principle, and still be lacking in goodness.

But there is yet another principle that we must add to the foregoing list. Between the time and the space principle on the one hand, and the esthetic and the moral principle on the other, comes the *truth principle*, and it this principle with which Formal Logic is concerned. Thus we get the whole series of the *five principles of estimate*, in which series the *logic-principle* is the third. There are two aspects to this third principle: in its highest aspect, the logical principle is that of truth absolute and entire; in its other aspect it is susceptible of degree. It is not in contradiction to what I have asserted elsewhere to say that the principle of reality or truth has degree: that a state of judgment may be on the way to the goal of complete truth and per-

fect reality, just as a thing may be on the way to the goal of beauty or of goodness.

The *new positivism* which postulates a world of independent objects—brute facts—rests back upon an unwarranted abstraction. It has taken this fundamental relation between form and matter and pressed the correlation to the point of breaking. The matter of thought is something that is finally foreign or indifferent to its form. This indifference constitutes its independence, since that aspect of thought which is indifferent to a changing aspect, it would appear, cannot be otherwise than independent. The fallacy in this reasoning, is due to a false analogy. In the physical world, matter does lie in the form, like the pudding in the mould. But the form of thought is not something that is laid over the matter nor is the matter anything injected into the form. The form is only the *class of relations in which the essential nature of matter may stand.* The systematic view of the ways in which its inner relations may express themselves is thought's form.

It is unfair to the Traditional Logic to say that it has divorced form from matter, that it has not held form in abeyance and obliged it to wait upon matter. No one has been more explicit on this point than Bosanquet who says, "We cannot and must not exclude from the form of knowledge its modifications according to 'matter' and its nature as existing only in 'matter.'"[15] Again Joseph has said: "The form and content of thought are not capable of separate consideration, like the mould and the pudding; what from one point of view is form is from another matter, and the same form in different kinds of content is not altogether the same, any more than is the same genus in different species."[16]

It is often believed that any successful indictment of the syllogism will carry with it the condemnation of Formal Logic,

[15] *Essentials of Logic,* p. 50.

[16] *Introduction to Logic,* p. 214.

as a whole. But this does not follow. The two doctrines are not so interdependent that they must stand or fall together. We may, with Bradley, deny the universality of the syllogism, and still hold that "all reasoning is formal and is valid solely by virtue of its form." Every inference belongs to a class. It has its own type, and it moves in accordance with a principle that governs not only it, but all other members of its class. Bradley is quite sure, however, that we can never determine the class of all such classes.[17] But this denial that there is a universal form of thought is itself just the final type for which we are looking. I confess that I see no other than the familiar traditional answer to this difficulty. The agnostic who says there are no final formal principles is asserting that there is at least one such principle, namely, the principle that declares that there are no principles.

It is alleged that we cannot understand fully the essential nature of the thinking process if we operate merely with symbols. The form of thought is vitally affected by that which is thought about. But the opponents of Formal Logic ignore a distinction that is of very ancient origin, namely, the distinction between the two kinds of assertion that we may make. We either assert a relation between *things* (or the attributes or condition of things), or else we assert a relation between *assertions*. This distinction between material implication and formal implication furnishes the incontestable basis for *Symbolic Logic*. The calculus of propositions—formal implication—is a study that may be pursued independently of any other implication.

IV

Many of the attempts that have been made to reconcile the empirical and the idealistic theories of the relation between the

[17] *Principles of Logic*, p. 471. "No possible logic can supply us with schemes of inference. You may have classes and kinds and examples of reasoning, but you can not have a set of exhaustive types. The conclusion refuses simply to fill up the blanks you have supplied."

universal and the particular in thought have been reconciliations in name only. They have generally allowed the opposing theories to make assertions that are logically contradictory. And when the pacifier happens to be one of the contesting parties, the reconciliation that is effected involves the annihilation of his opponent. But also, equally unsatisfactory has been the reconciliation when the third, or benevolent neutral party, has stepped in. He has generally cancelled all the outstanding differences between them, and left the two theories standing "harmoniously" side by side in the night of thought in which all cows are gray. Obviously the idealist may accept no terms of peace which would deprive reasoning of its universal character. Nor may the empiricist abandon his own central contention that all reasoning is from particular to particular. The empiricist begins with the sense-presented particular, and proceeds thence in quest of the universal. Failing, however, to reach this goal by the way of the accumulation of particulars—the only pathway he recognizes—he boldly declares that the universal (even if it could be reached) would not be needed. All reasoning is from particular to particular, the universal is a convenience not a necessity.

The relation between the particulars and the universal may be read off in three ways. We may read it (1) from particular to universal, (2) from universal to particular, or (3) from particular to particular. It would seem therefore that there must be as many different kinds of thinking as there are possible relations here. Now Aristotle did clearly recognize this threefold relationship and on the basis of these distinctions declare that there were three kinds of thinking. Reasoning from particular to particular he called *παράδειγμα*, reasoning from particular to universal *ἐπαγωνή*, and finally reasoning from universal to particular, *συλλογισμός*. But Aristotle was not willing to give to each of these types an independent or coördinate function in knowledge. Although he recognized the importance of analogy and induction, he was firmly convinced that these

were merely operations subsidiary to real thinking which in the last analysis was always syllogistic. Professor Adamson and others have accepted Aristotle's threefold relationship but have set up three independent types of inference: namely, (1) from particular to particular, analogical inference; (2) from particular to universal, inductive inference; (3) from universal to particular, deductive or syllogistic inference. But I shall insist that each of these types of reasoning expresses only in a partial and one-directional way the reciprocating thought process that is at the basis of all three.

Adamson[18] has maintained that all inference is mediate. But in setting up these three types of reasoning he has apparently denied the necessity of mediation. In his account, each form of thinking deals with two terms only. But on closer examination we find that each of these binary relations, from particular to universal, from universal to particular, from particular to particular, has in reality a suppressed third term. When this third term is properly supplied in each instance we discover that the three forms of reasoning are really at bottom the same. No reasoning is merely from particular to universal, nor from universal to particular, nor from particular to particular. But in any complete act of reasoning we are always passing from particular to particular via the universal.[19] This pervading identity is to be sure not always nor often overtly operative; therefore by the popular mind and in some systems of philosophy it is declared to be totally absent. Wherever there appears to be inference from particular to particular it is because we do not take the trouble to state the ground, either because, on the one

[18] "We may proceed either directly from particular to particular by analogical inference, or indirectly from particular through universal to particular by an inductive-deductive inference which might be called 'perduction.' On the whole, then, analogical, inductive and deductive inferences are not the same but three similar and closely connected processes." *Ency. Brit.*, XVI, 880.

[19] Cf. Bosanquet, *Logic*, II, 30. "The conception of inference from particulars to particulars is thus an illusion arising from the activity in inference of presupposed, superficial, or unanalysed universals."

hand, it is so manifest or for the opposite reason, because it is not immediately in view.

Consciousness is at first neither of a particular seen as a particular, nor of a universal seen as a universal. It is rather an indistinct blending of the two. Succeeding pulsations of consciousness are required to differentiate this confused primitive perception into one or the other. Our earliest sense experiences are definitely situated in space and in time. Every perception is present here and now, and furthermore has its causal explanation. This would seem to bestow on it individuality, but neither space nor time are real principles of individualism. If spatial and temporal relations were the only distinguishing characteristics, we should never be able to declare that the object of a present perception had not been seen elsewhere or at another time. The perception of the individual or the universal as such is impossible. They are differentiated aspects of a dual act of consciousness. This two-edged act of consciousness is on one side the discovery of certain attributes as uniquely characteristic of one object and other attributes as common to many objects. The particulars with which the empiricist deals are not really particulars, they are the differences in which the universal has exhibited itself.

Thought, then, always operates by means of a universal. Furthermore, we do not *think* unless in knowing the part we do also in a sense know the whole. All of our previous and subsequent discussion turns upon this principle. Reasoning is never from particular to particular. There is no thoroughfare from one fact to another fact, except by the way of the universal. It is true that in the psychological analysis of the process we cannot discern the ascent to the universal nor the descent from the universal. We see only an apparent transition directly from particular to particular. But the logical analysis always discovers the necessity of the universal. Reasoning can not possibly take place unless there is a universal *within* which the particulars,

between which thought takes place, are embraced. If each so-called particular were locked up within the narrow limits of its own specific constitution, it would be idle to talk about passing from one such particular to another. Yet this is the assumption from which every form of associational theory of thought sets out. Each idea reproduces in the content of another idea, not only itself, but in some mysterious way produces also the connecting link between itself and that other idea.

Furthermore, it can be shown that the empiricist is deluded in his belief that he can make an assertion that is absolutely particular. No judgment has ever for its subject-matter just bare concrete fact. A particular judgment would be no judgment, because as Bradley has said, the subject would be "completely shut up and confined in the predicate." Such a judgment might almost be said to be a stage prior to bare tautology, it would tell us nothing else about the subject or predicate than that each is just what it is.

We may, therefore, deny Mill's contention that "the child who having burnt his fingers, avoids thrusting them again into the fire, has reasoned or inferred, though he never thought of the general maxim, fire burns." When the child avoids thrusting his fingers into the second fire, what warns it away is not the sight of the second fire, as a bare isolated particular. If there were no more to this second fire than just its bare identical self, the child would, of course, put its fingers into the flame and be burned again. But the second fire is something more than just a particular, it has something over and above its *thisness*. That from which the child withdraws its fingers is in reality the first fire, which it sees, by memory, in the second fire. If it should put its finger into the second fire and be burned, we should chide it with "You didn't think," which for the purpose of the defense of the universal, I concede is equivalent to "You didn't remember." We avoid the issue when we describe reasoning as a passage from particular to particular, and blink at the universal

which stares at us from behind the would-be particular. The object of knowledge is never a pure *this*, it always has a fringe of *thatness*.

Mill and the later-day associationists have said that "what justifies the transition from one particular to another is the resemblance between the two particulars." We reason by means of the qualities which the two have in common. But this recognition, in the second particular, of the attributes which had previously been found in the first, is the tacit admission of the universal for which we are contending. In the actual thought of the moment we may not consciously distinguish the universal from the concrete instance in which it is manifested. Nevertheless, subsequent reflection discovers that the general idea is always there and constitutes the only bridge by means of which we can reason from particular to particular.[20]

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[20] Cf. Bradley, *Principles of Logic*, p. 36. "It is not true that particular images are ever associated. It is not true that among lower animals universal ideas are never used. What is never used is a particular idea, and, as for association, nothing ever is associated without in the process being shorn of particularity."

CHAPTER VI

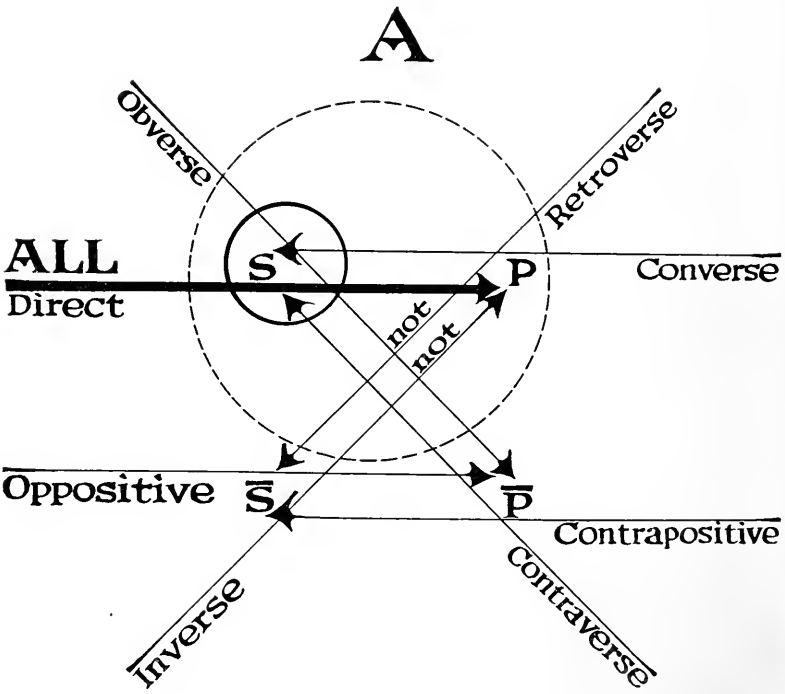
IMMEDIATE INFERENCE

I

Before considering the question of the validity of immediate inference, I wish to offer a revision of the names for the entire system of the so-called immediate inferences. Assuming that objects corresponding, to S and P do exist, and furthermore that these classes do not exhaust the entire universe, then the various relations in the universal affirmative proposition "All S is P," may be illustrated by the following diagram. The objections to "Euler's circles" have now been presented over-many times. No one who has ever taught elementary logic is unmindful that the circle notation is incompetent to express properly the relation between species and genus. The genus is not a class that is divided up into sections called species. Euler's diagrams we all know apply only to the static relations of inclusion and exclusion. They are of service only in the calculus of classes and their utility is entirely illustrative. They give no truths which could not have been secured without their assistance. But they are of the highest service to students in elementary logic for the proper understanding of the relations within the sphere where they are applicable.

These relations between two classes and their negatives have long been recognized and several different ways of naming them have been suggested. In presenting this subject to elementary students it is certainly conducive to clarity to have one name stand for one only of these relations, and to have each of the relations designated by a single term. In the majority of the systems of the names so far offered, this has not always been

observed. The most of the names which I have proposed have already been employed by different writers, but I am not aware that any one has offered just this arrangement. If all of these relations had now for the first time been discovered simultaneously, and a committee of philologists and logicians were set the



task of naming them, doubtless words derived from *verto* would be used throughout, and probably some attempt would be made to employ in each instance a word more or less suggestive of the relations involved. I know of only one attempt to construct such a simple and uniform terminology—that of Miss Jones.[1]

A most radical departure was proposed by Miss Jones, in substituting *reverse* for *converse*. If as I have said, these rela-

[1] *Elements of Logic*, p. 143.

tions were named *de novo*, probably Miss Jones' suggestions would be adopted. Reverse does suggest better than converse the process of reading a proposition off from its predicate end. But the two names *converse* and *contrapositive* have been sanctioned now by so many generations of usage that it would be well-nigh impossible to make such a change. No one, so far as I am aware, has adopted Miss Jones' suggestion. For these two fundamental relations I have therefore accepted the names of established usage. Each of the other names which I have assigned to the various relations I have found employed by some writer, with the exception of *oppositive*. In Keynes[2] admirable classification and naming of the immediate inferences, which has been followed by Creighton and others, some of the relations have compound designations, as *obverted converse*, *partial contrapositive, etc.* Other writers have employed long and awkward expressions for some of the relations, for example, "immediate inference by privative conception"—the name given to the obverse by Jevons.

It would be interesting to ask which of these immediate inferences the mind passes to first. The ordinary view is that, from the original we step first either to the converse or the obverse and proceed thence by successive obversions and conversions to the others. But if these other relations are all immediate inferences we should be able to pass directly to them from the original. If, however, there are two or more pulsations of thought in passing out to the more remote inferences they ought not to be called immediate. In discussing the nature of judgment I have already contended that all thought is in a sense mediate, that every judgment is in the end an enthymeme. If the original proposition is an abbreviated syllogism, and if each of the inferences is likewise an enthymeme, then the true explanation of the entire system of immediate inferences will be found in the fundamental conception of the syllogism which I shall propose later, namely,

[2] Formal Logic, p. 140.

thought manifesting itself through the threefold relation of genus, species, and particular. The immediacy of the so-called immediate inferences is psychological not logical.

Objections have been raised to all such extensions of Euler's diagrams. These criticisms are for the most part based on the existential import in the original proposition. It has been maintained by Venn[3] and other symbolic logicians that the two assumptions that we have made concerning the original proposition are unwarranted. The proposition from which we start it is said, tells us neither (1) that *S* and *P* exist, nor (2) that *non-S* and *non-P* exist. But I think this is not a serious objection. Any explanation of immediate or mediate inferences is confronted always with the fact of a multiple hypothesis concerning existence, quantity and quality. We simply contend that the operation of inference here involved is unconcerned with these hypotheses. The process can carry along several hypotheses as well as one; it accepts what is given it and passes it along, unchanged, into the conclusion. This process of carrying along a multiple hypothesis we shall find best illustrated in the case of inversion—the most criticized of all the immediate inferences. Venn has objected to the hypotheses of the Eulerian notation because they are very remote from the popular view. Formal Logic, however, should not concern itself with the popular view, but with the actual facts. All teachers of the subject bear testimony to the fact that elementary students accept easily the assumption of the existence of *S* and *P* and their negatives; it is the assertion that one or more of these classes may be non-existent that comes as a surprise.

[3] Cf. Venn, *Symbolic Logic*, (ed. 2, London, Macmillan, 1894), p. 154. "From 'All X is Y' we are commonly allowed to derive 'All not-Y is Not-X.' But this being a universal affirmative must indicate that there are instances of not-Y and not-X, as well as of Y and X. This is certainly very remote from the popular view, which never thinks of insisting that X and Y must not only exist but must also abstain from comprising all existence."

II

In a previous chapter we saw that the several definitions of inference which were examined seemed all to be circular; nor was our own definition free from the suspicion of a return to itself. In fact we accepted the circle in defining as by no means a calamity. There are no ultimately simple units, or points, for thought. It begins with circles, but circles whose radii are zero, so to speak—whose elements are concomitants, not sequents. We shall find the same difficulty confronting us when now we come to look more closely into the nature of the so-called immediate inferences.

Every proposition has a meaning, often several; and these meanings have meanings. I have already spoken of these direct and indirect meanings as first and second intensions of propositions. I employ these expressions, first and second intensions, in quite the same sense as the scholastic usage. In the scholastic terminology, the first intension is a judgment about a thing, and the second intension a judgment about a judgment. Now the debated question whether the immediate inferences of ordinary logic are real inferences or just *interpretations*, *transformations*, or to use another suggestive expression, *alternate readings*, depends on whether we can establish any real distinction between the first and second intensions, the direct and the indirect meanings of propositions. The defense of Formal Logic depends upon the validity of this distinction. If the second intensions are wholly dependent upon the first intensions—if they have no domain within which they may vary independently of the first intension—then the distinction between formal reasoning and material reasoning breaks down. However, if such a distinction can be made out, we shall be able to say that any movement of thought in which we pass merely from one direct meaning to another direct meaning, is only an alternate reading; whereas if thought passed from a direct to an indirect meaning we should have a true inference. Perhaps this distinction has already been in

the minds of those authors of elementary textbooks who have distinguished between *implied* and *inferred* judgments. But I believe the distinction in kind, upon which I am here insisting, can be described with a higher degree of accuracy by the terms direct and indirect than by *implied* and *inferred*, or *actual* and *virtual*. I have already tried to point out the failure of all those definitions of inference which rely upon the pseudo-distinction between the *old* and the *new*, or that attempt to describe inference as *progress* of *thought*, without pointing out the necessity of both identity and difference, action and reaction, in short, genuine reciprocity. As an illustration of such a definition I quote from Davis:[4]

> An implied judgment is one that actually exists together with the given judgment, either merely in thought or involved covertly in the expression. An inferred judgment is one that only virtually or potentially exists in the given judgment, and is derived from it. The statement of the one is nothing new; there is no advance, no progress of thought, but only its full expression; that of the other contains something new, there is a step forward, a progress of thought. In the inferred judgment there is always either a different subject, or a different predicate, from that of the premise, and perhaps both.

It seems unwise to use the terms *implied* and *inferred* to describe the different moments in thought, since so many writers on Symbolic Logic use *implication* and *inference* as synonyms, or nearly so. And do not all such expressions as "step forward" or "covertly involved" themselves covertly involve the whole problem that we are attempting to solve? I am of course fully aware that the terms, first and second intensions, or direct and indirect meanings, are by no means free from the objection I have raised against the other terminology.

It is quite impossible, I think, to distinguish between immediate and mediate inference on the ground of a numerical difference in the elements involved in the process. This is the most ancient of all the distinctions. But when we assert that in an immediate inference the conclusion is derived from *one* premise

[4] *Theory of Thought* (New York, Harper, 1878), p. 103.

alone, we have substituted one difficulty for another. The vital point at issue is just the question as to what constitutes *one* proposition. If the *oneness* of the *judgment* in the mind is always to be found in the *oneness* of the spoken or printed *proposition* then Logic is truly just another name for Grammar. And this is, in fact, what some philologists claim. Logic, they say, being compelled to wait upon language, is entirely at the mercy of the accidents of speech. This obviously revives the old question so prominent in the writings of Hamilton, Mill, Mansel and Whately, whether Logic deals with language, thought or things. Here, as I have remarked in an earlier chapter, is where the doctrine of the quantification of the predicate has its strong hold, for that doctrine is precisely such a scheme for filling out the shortcomings of language. Were it not for the inertia of our human nature, which in language, as elsewhere, follows the line of least resistance, the expression of thought would be adequate to thought itself, and there would probably be no such thing as inference. When one goes into an East Side restaurant and hears the waiter call out an order, "Hot cakes and"—or, "Ham and," one has an illustration of the economy of language. In the mind of the cook in the adjoining kitchen one would find the inference. However, the risk is taken, we economize effort and *say* less than we *think*. But we pay the penalty for the indolence of language in the perpetual necessity of making good the omissions by the process that we call inference. All efforts to reduce Logic to Grammar have their origin in the failure to observe this distinction, which I have already urged, between the *interpretation* of a *proposition* and the deduction of *inferences* from a *judgment*.

To use a mathematical metaphor, which I admit is somewhat riskful, we may say that there is both a one-dimensional and two dimensional thought. One dimensional thought is represented by the Aristotelian system of propositions with unquantified predicates. Two-dimensional thought is represented in the Hamiltonian system of propositions with quantified predicates.

For example, in the universal affirmative proposition "All S is P" in the one-dimensional system of thought we are told of one relation which the predicate has. In this system when the predicate attaches itself to the subject it reserves the privilege of other attachments with which S is not concerned. Situations might arise in which S would be justified in knowing P's other attachments, and with such situations only the system of propositions with quantified predicates would be competent to deal. If we regard the subject in extension and the predicate in intension, "All S is P" means that the objects in the class S all have the attribute P; but the proposition does not tell us, and we have no right nor need to know whether P is an attribute of any other object. P could be faithful to every requirement of a qualifier of S and qualify other objects also. The question as to what else, if anything, P does qualify is a perfectly proper question, but this lies in a second dimension of thought. The query arises "where or what is S?" and the answer is "All S is P." Then a second query arises "where or what is P?" This is answered by the Hamiltonian A or U. But now it should be noted that the second question does not arise simultaneously with the first; it is suggested by the answer to the first. The fact that language has rarely provided the Hamiltonian forms, shows clearly that the one-dimensional Aristotelian forms are entirely adequate to the first questions. Now I believe this distinction between first and second questions has an important bearing on the question of the validity of immediate inference. An immediate inference always involves the transition from the one-dimensional system to the two-dimensional system. The only genuine inference, therefore, is one in which thought passes from a categorical to a problematic proposition.[5]

[5] Bradley, *Principles of Logic*, p. 390. "The truth is that, if you keep to categorical affirmatives, your conversion or opposition is not rational, but is simply grammatical. The one conversion which is real inference is a modal conversion, and that presupposes a hypothetical character in the original judgment."

III

As we have already had frequent occasion to remark, most definitions say that an inference is immediate, not because it is obvious or direct, or is grasped in a single beat of consciousness; it is immediate no matter how many so-called steps are required to reach it, provided no other information is used than what was given in the one original proposition. The immediate inferences have been so denominated because thought seems to pass from one judgment to another without the assistance of a middle term. But this conventional distinction between mediate and immediate inference is sadly defective in fundamental insight. A common ground is required quite as much in immediate as in mediate inference, as a means of bridging the gap between the two judgments. We pass from one particular judgment to another particular judgment only because both are embedded in a universal. All thought is from particular to particular via the universal; and moreover the certainty and value of the conclusion in any form of reasoning—immediate or mediate—depends upon the grip we have upon the universal.

The logician therefore has to contend with this embarrassing fact that propositions, as men use them, are not always univocal. It is this ancient question of the precise determination of what is implied in a proposition, and what is extraneous matter, that is the cause of the difficulty which so many recent writers find in these transformations of propositions which have now so long been called immediate inferences. It is evident that, when one of these ambiguous propositions is given to the logician to operate upon, he must insist that you shall announce beforehand in which one of the several meanings he is to take the proposition. However, this task of determining the precise meanings of propositions belongs to the person who announces it—to the rhetorician or grammarian. If he does not fix the meaning, the logician must not be blamed for drawing his inference from the

proposition in the form of hypothetical alternatives corresponding to the alternatives implied in the original proposition. It sometimes happens, however, that even where the proposition from which we start seems unambiguous and categorical we can not infer a truth equally unambiguous and categorical. This is said to be the case with the relation which has commonly been called *inversion*. The inverse may be defined as "a proposition having the negative of the original proposition for its subject and the original predicate for its predicate."[6] The inverse of "All *S* is *P*" is "Some *non-S* is not *P*." The *inverse* has also been confused with the *contrapositive*, and I need only refer to the many other special uses of the word in algebra, geometry, mechanics, music, etc.

The opponents of immediate inference have attacked inversion as, in their opinion, the weakest place in the system of immediate inferences. But I submit that no logician of repute has ever claimed universal categorical validity for the process of inversion. Keynes, who was the first to give a thorough treatment of this subject, most carefully pointed out the limits of inversion. He says: "It is indeed quite impossible to justify the process of inversion in any case without having some regard to the existential interpretation of the propositions concerned."[7] Again, Welton says: "An inverse from a true proposition is not necessarily true when stated categorically. . . . It is thus seen that these mediate inferences are of extremely small importance; we give them chiefly for the sake of completeness."[8]

[6] The word *inverse* is employed by mathematicians and logicians in several senses. Professor Royce defines the inverse as follows: "Whenever the proposition (a R b) is true, there is always also a relation, often symbolized by R, in which *b* stands to *a*. This may be called the inverse relation of the relation R. Thus if: "*a* is father of *b*," "*b* is child of *a*"; and if one hereby means "child of a father" the relation *child of* is, in so far, the inverse of the relation *father of*." *Ency. Philos. Sci.*, I. 97.

[7] Keynes, Studies and exercises in Formal Logic (ed. 4, London, Macmillan, 1906), p. 217.

[8] *Manual of Logic*, p. 305.

But granted that inversion is a process that often yields a hypothetical conclusion—sometimes even doubly conditional—this does not destroy the practical value of these inferences. It is not true that a partial truth is no truth. The hypothetical conclusion is distinctly "better than nothing." All languages are full of "ifs," and "if" they did not correspond to something practical and also something theoretically defensible they would have been eliminated long ago. In the business of narrowing down the complexities of alternatives which we meet everywhere in the world of experience, we do not wait until we have achieved certainty. In our search for truth it is greatly worth while to be warned away from error by the destruction of hypotheses one at a time. This we saw is the function of the infinite judgment which some logicians have characterized as meaningless and worthless.

There is a prevalent delusion among the enemies of tradition that Formal Logic is a collection of rules which furnish guidance of a positive character in the search for truth. But not even its most ardent defenders have held that it is a direct organon of knowledge. It is primarily by warning men away from error, that Formal Logic helps them in their efforts to reach truth. In deducing the inverse the logician does not, as has been asserted,[9] attempt the absurdity of proving *foxes do not bark* from *all dogs bark*. Now in the first place, before attempting to draw any of the immediate inferences from *All dogs bark*, we must remember that this proposition is ambiguous, or to be more accurate, it is brimful of suggestions, meanings and implications of meanings. It is in short a portmanteau proposition. The logician calls upon the grammarian to *fix its meaning*, for not until then can he determine with accuracy the implications or inferences from the meaning. We ask this proposition, among others, these questions. *Do dogs exist; Is there anything that barks; Are there beings other than dogs; Is there anything*

[9] Cf. L. E. Hicks, in an article on "Euler's circles and adjacent space," *Mind*, n. s. XXI (1912), 413.

that does not bark? Also we may inquire (note now the double query), *If there are beings other than dogs; are there any of these beings that do not bark;* also, *If there are beings that bark and if some of these are not dogs, are there beings that are not dogs that do not bark, and how many.* It is evident that some of these are questions concerning the *meanings* of the propositions and some are questions concerning the *implications* of the meanings. Some are first intensions and some second intensions. Among the former there is obviously the question of the existential import of the proposition. The logician can not, indeed, peremptorily demand that these meanings be fixed, but he can say categorically that if they are not so fixed any doubt that remains will not affect the *process* of inference but only the *conclusion*. The inferential process, he insists, is unerring; it carries along unchanged any uncertainty that is handed to it. Now to the latter question, which it will be observed is the inverse, the logician replies, *Yes, there are* (on these conditions) *some beings that are not dogs that do not bark.* We see, then that the logician merely says he can warn you away from error in your quest for an animal that does not bark. You have been told that *all dogs bark* and you begin your search for an animal that does not bark, whereupon the logician tells you *categorically* that you must not look for the animal that does not bark among dogs, but *if* you are to find it at all *it will be somewhere in the region of beings that are not dogs.* The inversionist is prepared to treat a universal negative proposition in a like manner, although there is greater uncertainty about the meanings of the original proposition. As I have remarked, he is not disturbed by the existential import of the proposition. It is a matter of common observation that the predicate in the *E* proposition need not exist in the same universe as the subject. But this does not affect the process of inversion, or any other of the immediate inferences. Such restrictions as are imposed by the existential import of the proposition are passed on intact

into the conclusion. We are challenged to find the inverse of *No mathematician can square the circle* and we are told that to do so we must perpetrate the absurdity of inferring from *No mathematician can square the circle* that *Some one who is not a mathematician can square the circle*. If this is all that the process accomplishes it would, indeed, be "inversion silliness." But here again, the real function of inversion is to warn you away from error. You set out in search of some one to square the circle. Having discovered that no mathematician can perform the feat, you announce this to the inversionist, who thereupon replies, "if that is so and you still persist in your search, I can tell you most positively that if you are to find anybody who can square the circle, *it must be someone among those who are not mathematicians.*" No inhabitants of Thessaly ever saw a centaur. The *categorical* inverse of this proposition, derived from a *thrice-conditioned* premise, would read. *If* no inhabitant of Thessaly ever saw a centaur *and* if anybody ever did, it *must* have been *someone* who was not an inhabitant of Thessaly, *if* there are any such. Dr. Mercier disposes of the inverse in his customary cavalier fashion. He says the inverse

> . . . is arrived at by a method so complicated that I will not trust myself to attempt it, but will take, from a standard textbook, the following example: "Every truthful man is trusted"—Inverse, "Some untruthful men are not trusted." Some logicians doubt the legitimacy of this form of Inference; and I must confess to misgivings about it; for, if it is valid, I see no reason why it is not equally valid to infer from "Every truthful man is mortal" to "Some untruthful men are not mortal." This puts on inveracity a premium, which is scarcely to be expected from the justice of Providence; and, what is more to the purpose, does not seem to me to be implied in the postulate.[10]

But a valid non-contradictory inference of the hypothetical sort that I have described can be drawn by inversion from Dr. Mercier's example, *Every truthful man is mortal*, as follows: *If* every truthful man is mortal then *if* there are any beings that are not mortal they will be some of those beings that are not

[10] *New Logic*, p. 290.

truthful men. And this is an inference that a just Providence, to whom Dr. Mercier appeals, may safely accept.

It is evident that the process of inversion is adequate to any of the several possible situations which the existential import of judgment imposes. Both subject and predicate and their negatives are existent in the same universe of discourse. This is assumed to be the case where no information to the contrary is furnished the logician when he begins his task of inferring. If any other meaning is intended by the original proposition the logician expects to be informed, for example (1) that neither subject nor predicate exists, (2) that one exists but not the other, (3) that either subject or predicate may be practically and perhaps theoretically without a contradictory.

Now it should be remarked that we are not here concerned with the question whether this conclusion is a "new" truth; that is a question which concerns the whole class of so-called immediate inferences. Nor should we object seriously if some one should maintain that this process of inversion is neither an immediate nor a mediate inference as those operations are commonly defined. There is a striking resemblance between inversion, when it is expanded into a form that exhibits all of its parts, and that one of Russell's "ten axioms" of Symbolic Logic which he has called the Principle of Importation. "The principle states that if p implies that q implies r, then r follows from the joint assertion of p and q. For example: "If I call on so-and-so, then if she is at home I shall be admitted" implies "If I call on so-and-so and she is at home, I shall be admitted."[11]

IV

The criticisms of inversion which I have attempted to answer all rest back upon an alleged failure to regard the existential import of propositions. Another objection has been raised.

[11] Principles of Mathematics, p. 16.

namely, that the process involves an illicit distribution. In "All *S* is *P*," *P* is undistributed while in the inverse "Some *non-S* is not *P*," *P* has become distributed. I think there is here a serious misunderstanding as to the meaning of distribution. The medieval law concerning distribution stated that no term must be distributed in the *converse* if it was not distributed in the *convertend*. But now it should be observed that this law was intended only to apply to conversion, where the prior requirement had been imposed, namely, that the quality of the proposition must not be changed. However, in the obverse, retroverse, contraverse, inverse, the quality of the proposition has suffered a change in passing to the inference; and here a different interpretation of distribution is required. The distribution of terms in negative propositions does not mean the same thing as the distribution in the affirmative proposition. The failure to recognize this fact, has brought confusion into discussions concerning the validity of inversion, as we shall see presently. A term is said to be distributed when we know something about every member of the class designated by the term. In the proposition "All *S* is *P*," *S* is distributed because we know something about every member of the class *S*, namely, that it is a *P*.

But in the *E* proposition, "No *S* is *P*," while we may say again that *S* is distributed because we know something about every member of the class, this knowledge is of a different kind from what we had in the case of the *A* proposition. In "No *S* is *P*," I know something about every *S*, namely that it is not a *P*, and this I know indirectly. This indirect process, when made explicit is as follows: first and most fundamentally I know that "*S* is not *non-S*" and then because *P* happens to be somewhere in the region of *non-S* (though I am quite ignorant of just where it is) I know that "*S* is not *P*." We met this difficulty in the chapter on the infinite judgment. We saw that negation is always a degree more remote from reality than affirmation. Every significant negation, when fully expanded

reads: Since P is in the region of *non-S*, and since S excludes *non-S* it excludes that which is included in *non-S*, namely P.

But now, referring to the diagram for the universal affirmative proposition on page —— it would seem that if P is undistributed, *non-P* should likewise be undistributed. This non-distribution of P we have represented in the diagram by the dotted lines, indicating that the class P is undefined. So far as S is concerned, P might widen its sphere of application as far as it pleased, even to the extent of pushing *non-P* off the map of existence. However, if this dotted line marks the boundary between the two classes P and *non-P*, it would seem that *non-P* should have the same indefinite range as P. But we have not told the whole truth about the circle P when we have said that its *expansion outward* is *unlimited*, we must observe that its *contraction inward* is *definitely limited*. It is this lower limit which the very nature of the universal affirmative proposition permits us to disregard, that in turn becomes an upper limit for the expanding class *non-P*. *Non-P* may expand only to the limit to which P may contract. This anomalous fact is exhibited also in the process of obversion. In "All S is P," P is undistributed, but in its equivalent "No S is *non-P*," the *non-P* is distributed.

But this apparent contradiction in the medieval law of distribution when it was applied beyond conversion, did not attract the attention of logicians until the process of inversion was reached. Now although the difficulty has become more acute in the case of inversion, it is nevertheless in my opinion, precisely the same difficulty that has just been pointed out. Keynes noticed this difficulty in the apparent violation of the Law of Distribution and gave an explanation of it that has been followed by Creighton and others.

It will be remembered that we are at present working on the assumption that each class represented by a simple term exists in the universe of discourse, while at the same time it does not exhaust that universe;

in other words, we assume that *S*, *not-S*, *not-P*, all represent existing classes. This assumption is perhaps specially important in the case of inversion, and it is connected with certain difficulties that may have already occurred to the reader. In passing from *All S is P* to its inverse *Some not-S is not P* there is an apparent illicit process, which it is not quite easy either to account for or explain away. For the term *P*, which is undistributed in the premiss, is distributed in the conclusion, and yet if the universal validity of obversion and conversion is granted, it is impossible to detect any flaw in the argument by which the conclusion is reached. It is in the assumption of the existence of the contradictory of the original predicate that an explanation of the apparent anomaly may be found. That assumption may be expressed in the form *Some things are not P*. The conclusion *Some not-S is not P* may accordingly be regarded as based on this premiss combined with the explicit premiss, All S is P, and it will be observed that, in the additional premise *P* is distributed.[12]

But now this is merely an elucidation of the difficulty not an explanation of it. The true explanation is to be found in the double meaning of distribution. Each term in a proposition, as we have just stated, has an upper and a lower limit to its extension. Our attention need be directed towards only one of these limits, the other is ignored. For practical purposes we may say that we do have some genuine knowledge even if our class is bounded merely on one side. But for the purposes of exact thinking both the upper and lower limits must be observed, and this is what the doctrine of the quantification of the predicate attempted to accomplish. The inverse of the affirmative proposition "All *S* is *P*" is as Keynes has said, "Some *non-S*, is not *P*." It is indeed one and the same class *P* that is considered first with *S* and then with *non-S* as subject. But in the one case we see *P* on its bounded or limited side and in the other the unlimited side. There is no contradiction, according to our point of view, in asserting that *P* is both distributed and undistributed. The quantification of the predicate is a device for looking at *P* from both sides at once.

[12] *Formal Logic*, p. 139.

V

The theory of inference which I have proposed in these pages, namely, that every true inference must mark a transition from a categorical to a modal proposition, removes some of the difficulties about the particular proposition. It is evident that, since the true particular is always a modal assertion the passage to such a particular is always a true inference. The particular judgment is always a problematic judgment in disguise. "Some S is P" is equivalent to "S may be P." Venn, and other symbolic logicians after him, have defined *some* as *not none*. This is quite in agreement with one side of the popular meaning of the word. This definition provides an unambiguous relation of *some* to its lower limit *none*, but there is still an ambiguity in its relation to the upper limit, *all*. It may include or exclude *all*. This latter ambiguity, the popular mind also aims to avoid and so prefers the interpretation of *some* as *not all*, as well as *not none*.

Some is a variable moving toward a limit in two directions, but in different senses. In the downward direction toward *none* it can not reach its limit, while in the upward direction toward *all* it may reach the limit. The particular proposition of ordinary logic on this view, is semi-indefinite, being defined by its exclusion of *none* and yet undefined by its inclusion of *all*. There are thus seen to be, theoretically at least, four possible relations between *some* and its limiting classes: (1) *Some* includes *none* and *all*, or (2) it excludes them both, or (3) it includes the *all* and excludes *none*, or (4) it includes *none* and excludes *all*. *Some* has been identified with the indeterminate class of Symbolic Logic. This is, I think a mischievous error. The some of Traditional Logic has never, even its most liberal interpretation included more than two of the four possible relations between the indeterminate class and its limiting classes, *none* and *all*.

Every such discussion of the meaning of *some* that intends to

define it in terms of either its limits, *all* and *none*, presupposes that these limits themselves have already been defined. But now we should find it difficult to define *none* in any other way than by reference to *some*, and if *none* implies *some*, we move in a vicious circle in defining *some* as *not none*. We have here another illustration of what has so often been pointed out in the recent discussions, especially those inquiries into the nature of the fundamental concepts of mathematics, that when we deal with ultimate concepts it is impossible to avoid the circle in defining.

It has been alleged that the particular proposition has for its collateral aim—if not its distinctive purpose—to assert that objects referred to by the subject do exist. When, for example, I say, "Some California Poppies are scarlet," my primary purpose is to assert the existence of such flowers and secondarily only am I concerned to give the information that their color is scarlet. It is evident that the primary function of the particular proposition is in reality what appears to be merely its secondary or indirect function. The particular affirmative proposition, "Some *S* is *P*," taken at its face value, means to affirm, but in practice its intentions is to deny the universal negative. Likewise, the particular negative is employed to deny the universal affirmative. This latter fact is disclosed by the form which the particular negative so often takes in all languages, "All *S* is not *P*," "Not All *S* is *P*." These forms, which perplex the student of elementary logic, are only rightly understood when the purpose to overthrow the universal is considered.

CHAPTER VII

THE CASE AGAINST THE SYLLOGISM

I

The syllogism has always been attacked on two scores. It is alleged, in the first place, that it is structurally defective—it begs the question. Secondly, it is held that it is not universally applicable. Mill criticized the syllogism on the former count and Bradley on the latter. In view of the various attacks, both upon the validity and the universality of the syllogism since Mill, and more particularly in view of the recent developments of Symbolic Logic the Aristotelian account of the subject demands a new interpretation. Aristotle defined syllogism as "discourse in which certain things being posited, something else than what is posited necessarily follows merely from them." This definition contains five words each of which to say the least, is moderately ambiguous. Before the exact scope of this definition can be understood we must know (1) the nature of the "things posited"; (2) what we mean by "positing" or "laying down"; (3) in what the difference of the "something other" consists; (4) and what is meant by "following," especially (5) "necessarily following"?

We may ask two questions concerning Aristotle's own account of the syllogism. First, what precisely did he himself mean by the definition, as shown by the context. Secondly, granted that Aristotle's own discussion of the syllogism left certain forms of thought outstanding, is it possible to give a wider interpretation to the several words of his definition than he himself gave, so that the so-called asyllogistic types of reasoning may be encompassed by it? If we give to each of these five elements of the definition

its most liberal interpretation, I believe it can be shown that the case against the syllogism is not so damaging as the New Logic believes.

The ordinary account of the syllogism as mediate inference is unsatisfactory because it is too vague. The difficulty of distinguishing between the immediate and the mediate in thought, I have dwelt upon elsewhere. So, too, the description of the syllogistic process as a comparison of concepts lacks in explicitness. Again, Sidgwick, who differs from the other opponents of Formal Logic in his belief that the syllogism is the universal form of thought, proposes a definition which has a number of ill-defined terms. "A syllogism may thus be regarded as consisting of three parts: the rule ("major premiss"); the identification of a case as coming under it ("minor premiss"); and the conclusion inferred as a result of applying the rule to the case."[1] If we interpret each of the words in the Aristotelian definition liberally, I think it can be shown that the syllogism is the universal form of thought. In its widest possible meaning it will be found always to consist in *the correlation of genus, species, particular;* or *universal, particular, singular.* I believe that every thought, be it true or false, will conform to this conception of syllogism. It is impossible to think otherwise than in this form. It is hardly necessary to say that this interpretation of the syllogism is meaningless, or at least is plainly open to the two criticisms of lack of universality and begging the question, if the relation between particular and species, and species and genus is taken in pure extension. These relations are *sui generis:* they are not to be confused with numerical or quantitative relations as ordinarily understood. The relation of particular to species is not the indifferent relation of the one to the many, nor is the relation of species to genus the merely associative relation of part to whole. The relation is vital and reciprocal. This relation might be expressed as universal, par-

[1] *Elementary Logic*, p. 227.

ticular, individual; but we should avoid this designation, because the term *individual* is highly ambiguous in philosophy. In the nomenclature of Logic *singular* is preferable to *individual*. We should notice also that the term particular is ambiguous. For in the threefold designation, genius, species, particular, and universal, particular, singular, the word *particular* in the latter series corresponds to species in the former. But this ambiguity in the use of particular is in our common speech as well. We say, "Give me the particulars of this affair"; and again, "What particular sort of flower do you mean?" However, this ambiguity is not so important as in the case of *individual*. The latter is a difference in kind, the former simply a difference in degree. Individual usually means a single case. When I ask "What particular individual occupies that seat?" I mean to identify or to designate some particular one. But the word is likewise used in an entirely different sense, as when one says, "I like individuality." By this we mean the singular plus the evidences of self-activity. In this sense *individual* stands for spontaneity, life, growth. An individual is a fountain of ever-increasing newness and originality. This latter use of *individual* is not pertinent to Formal Logic, where a stick or stone is as good an individual as a soul. Thinking is always viewing in the light of genus, species, particular, or considering the relation of universal, particular, singular. "I think," means that I see this particular in the light of that species, and the species in the light of the genus, or else that I am carrying on the reverse process, seeing the whole or genus, and taking under it the species, and seeing the particular as under the species. Both the *rigid* syllogism of deduction and the *un-rigid* syllogism of induction are consistencies, and must be explained in terms of the threefold relation, genus, species, particular.[2] Syllogizing, or

[2] This view of pan-syllogism I owe to the lectures of Professor Howison. An interpretation very like this has been given by Mr. Joseph, although he denies its universality. He says: "The central idea of syllogism is that it works through concepts, or universals. The major

thinking together, therefore, always involves classification. We can think inwardly from the whole, through the members, to the minutest members; or outwardly from the minutest member, to the larger member, then to the class, and to the largest class. I am not unmindful of what I am committed to in the assertion that all thinking is syllogistic and that this always implies classification. Symbolic Logic has shown that the definition of a class is the most important and difficult of all the problems of Logic. We may condemn the class view of predication, but we cannot escape from the fundamental fact of comparison that lies somewhere at the heart of all judgment and all judgment about judgment. It may be, as Russell and McColl have asserted, that propositions are more fundamental than classes; this would not, however, affect the theory of pan-syllogism. Thought is a "relating activity"; from this there seems no escape. But an analysis of any act of comparison or the definition of relation reveals a number of difficulties. We cannot compare on the one hand total identities nor on the other hand complete disparates. Sameness without difference or difference without sameness makes comparison, judgment, or classification impossible.

This syllogistic process is distinct from that of just perceiving with the senses. The perceptive judgment is different from the cognitive judgment—the former is not a stage on the way to the latter. We do not classify when we see, or hear, or smell, that is to say we do not correlate, or see in a higher unity. In sense as such we do not have unity, only separateness. We may have a pseudo-unity in the association of sensations. Thought is the process of unification in which we harmonize so as not to obliterate the items. We retain their distinctness and discover the harmony between them. Or again, thought is a unifying process, by which we retain the clearness of each part in obtaining the whole. Moreover, the two processes of unification and

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premiss asserts, not the presence of A in every B (and therefore in C, among them), but the connection of A as such with B as such: hence wherever we find B, we must find A." *Introduction to Logic*, p. 284.

separation vary inversely, paradoxical as it may seem. The more firmly the integrating power clutches the items the more clearly does the separating actively differentiate them. All this is appropriately expressed in the name syllogism and without doing violence to its etymology or to Aristotle's own conception of its scope.

I have already referred to the other aspects of this syllogistic fact which we need to notice before we can obtain a complete view. We still find the statement in textbooks that besides this one form, there are two others; that the syllogism is only one of *three* forms of thought, namely: (1) conceptions or notions, (2) judgments, (3) the syllogism. The impression is still too often left with the student that we first have conceptions, and that we then pass on to the combination of these in judgment, and finally to the higher form in which three judgments are connected in a syllogism. Any such mechanical or corpuscular theory of thought is faulty. Thought is not a mere aggregation of symbols of thought. *The nature of thought is to produce its own elements; it creates both itself, and its members.* Thought is a whole, so whole that it furnishes to itself its own members and also combines them. The reciprocal process of determining the whole into its elements and the elements into the whole, constitutes the fundamental distinction of deduction and induction—the rigid and the un-rigid syllogism.

But hereupon it may justly be asked where do we get the distinction between the relation, conception, judgment and reason, and the relation genus, species and individual? To this query we can only reply that both relations are fundamental, unanalyzable and indefinable. We just think our thoughts, and cannot but think them. Every conscious experience that we call thought must stand the light of a syllogism, else it is not a real experience. If we cannot think, that is, syllogize our experience, we do not have any. As to the series, concept, judgment, syllogism, we cannot get along without these names, but the

syllogism is not the last result or product from the union of judgments, that were themselves the products of concepts. The concept is not the ultimate element of thought; on the contrary the thought unit is the syllogism itself.

The syllogism is the omnipresent, all-embracing form, defined as the thought that casts itself in the correlated distinction of particular, species, genus, or universal, particular, singular. These three distinctions each depend for their meaning on the correlation of the three. A significant, "just this" always provokes the query "just this what?" Hence it is necessary to tell the species. Someone says to me, "I want you to see this"; I immediately ask, "this what?" Now if I really do see it, it is this or that or the other object that I see. It has correlation (shape, size, color, etc.), and through this correlation it is connected with the species. In looking for the *this*, we see the color or the shape, and so we connect it directly with species. If we did not take in the others of the species we would not see the *this*. The singular means nothing except in the light of the particular, and the particular means nothing except in the light of the universal. All perception, all intelligence, is knowing in the light of the whole. Conversely, the whole means nothing without the final *this*. Without the descending steps in the correlated things, it is not a whole, it is nothing. The universal without the species and the genus, is an abstraction, is nothing. The abstract singular and the abstract universal are alike nothing. Hence a thing that does not contain its own differentia does not exist.

The syllogism cannot proceed without having parts and a whole upon which to operate. Parts that are just parts—that have no relation to any whole, have no meaning. They are parts of nothing and so are themselves nothings about which nothing can be asserted. Furthermore no judgment is ever just the sum of units that existed prior to the whole which they constitute. The quantitative whole which seems to be composed of units

qualitatively alike is no exception. This is reached by a process of abstraction in which the parts, having become qualitatively indifferent to each other, have also sacrificed their unique relations to the whole. The whole is thus lost to sight when it is no longer required as the synthesis of the different and differing facts. But no whole, not even the abstract quantitative whole, may disappear entirely. Quantity is just the latent device for holding asunder parts which are qualitatively alike. This thought I shall develop further presently.

The singular is not made up out of the universal, nor the universal out of the singular, nor the particular out of either. Neither can we start with the *all* (which is an empty name when taken alone) and from it arrive at the particular, and so pass on to the singular. For this is equivalent to starting with nothing, and trying to make of it a lower class, and of this in turn still a lower class, the final result will still be nothing. We cannot think these things apart; without the particular and the singular, the whole is nothing, they are all intrinsically correlated, and are not to be taken apart. The syllogism is not a composite, nor an analysis of a composite, but an individual whole furnishing intrinsically its own elements. Thus it is clear that no one of the three forms of thought sets out with one unanalyzable element. We do not begin, as the empirical theory of association would have us begin, with thought atoms, then proceed with combinations of these. The syllogism is a harmonic unity, a unity of correlated elements existing intrinsically in correlation. The syllogism in this sense, we repeat with insistent emphasis, is the cardinal fact wherever there is a thought; it is the universal type of thought.

II

It is however, insufficient to say that the syllogism is the universal form of thought, differentiating itself into the syllogism as concept, the syllogism as judgment, and the syllogism as argu-

ment, or that it is the universal, omnipresent form of thought, the indivisible, correlated unity embracing universal, particular and singular. We must show how and why this correlation appears in three different ways. There is need in short of distinguishing between the implicit and the explicit presence of the syllogism. In the concept, the syllogism is only implicitly present. To bring the implication out in the clearest way, it is necessary to show, as we have in part already shown, that judgment is implied in the concept. It is so implied, since the concept means nothing unless it is a whole, ensphering a great many *marks*, or implicit judgments. And it has therefore rightly been said that in judgment, we explicate the corresponding concept, which is the subject of the judgment. In the judgment we say that the concept is so and so. If I assert that I have a conception, and I am asked what my conception is, I answer by making a series of judgments. For example, I am asked, "What is a salamander?" I reply, "It is a reptile, it is scaly, it can stay in the fire without being burnt, etc." Here I am explicating the concept, salamander, by making a number of judgments bringing out the various characteristics of the salamander, in each of which judgments I employ a predicate and connect it with the concept by a copula. The concept (as a thought) is therefore an implicit bundle of judgments. So, also it may be shown that every judgment is an implicit syllogism. Suppose that I assert "*X* is *Y*." You ask, "What is it to be *Y*?" I answer "*Y* is *Z*." Then of course "*X* is *Z*." The filling out of the required meaning of the judgment makes us go on and complete the syllogism. We can continue in this way indefinitely, until we come to a predicate beyond which we cannot go. This implied process in thought is seeking the real whole, from which each part takes its significance.

Every thought implies two elements and their union in a third. All reasoning is from particular to particular via the universal. This uniting act Formal Logic has always preferred

to call the copula. The word is appropriate, yet in one sense quite inappropriate, for copula really means a link or yoke, and suggests an artificial union; we are apt to think of it as uniting two distinct things. But the elements united in thought are not two distinct things. The truth is, the syllogism is an indivisible, complex, unitary act, and the copula furnishes the principle which both joins and separates the parts of the whole. It is the function of the copula to "couple apart." Bosanquet writes: "In analysing the judgment as an act of thought we may begin by dismissing the separate coupla."[3] To this we may yield a hearty assent, but there is no good reason why the word itself should not be retained to designate the real act involved in the synthesis of subject and predicate. The copula is the inner activity that permeates each of the two parts and grips them into a whole. Two pieces of magnetized iron that cohere are a better illustration of the function of the copula than the link between two cars. In the case of the two pieces of iron, every molecule in each piece takes part in the enwholing grip. In terms of this act of joining through the copula, we can determine the distinction between the concept, the judgment, and the syllogism. The difference between these three is a difference in the degree of explication of the copula. In the concept, the copula is not explicit at all, but implicit. In the judgment, the copula is explicit, but appears simple, as though on the surface, having no complexity. In the syllogism, the complexity of the copula comes entirely into light.

It is not only convenient, but necessary for the purposes of exposition and communication of thought, to adhere to the distinction between dynamic and static relations and to say that the syllogism is competent to deal only with the latter. This is, however, a distinction that has to do with "thought expressed"; it does not concern "thought in reality." Such a distinction blinks at the real difficulty. The dynamic relations themselves

[3] *Essentials of Logic*, p. 99.

cannot exist, or at least cannot be thought, without a universal within which the apparently intransitive relations are enclosed. Now there are in reality no purely intransitive relations. Even in the temporal series the present harks back to the past—the effect in a sense causes the cause. Yet the dynamic order and the static order have something in common, and it is the task of Logic to discover this pervading element. It is, of course true that any reasoning which explains phenomena through causes is not syllogistic in the narrower interpretation. But when we take the larger view of syllogism as thought exhibiting itself in the threefold relation of singular, particular and universal: or particular, species and genus, we find that reasoning through causal determination is no exception to its scope.

Common sense reads class relationships in one direction only. It supposes that in any series of more and more inclusive groups the stability of the smaller group must give way if it interferes with the stability of the larger. The part is subordinate to the whole. This seems an elemental truth. But the discernment of this truth as an axiomatic principle is a far simpler matter than its practical application. In what does the stability of any group consist, and what constitutes interference with the stability of a larger group, and what precisely constitutes a larger and a smaller group? Merely a cursory examination of group relations reveals the hidden truth that some aspects may always be found in which the smaller includes the larger. In extension the species is included in the genus, but in intension the genus is included in the species. The principle of total one-way inclusion seems a chimera. There appear to be no groups such that the one is in every way included within the other. Real groups involve only transitive and symmetrical relations. The relation between a so-called small group and its including larger group must ever exhibit the fundamental relation between part and whole, in which, as we have seen, the parts and the whole are equally real; each includes and is included by the other. Neither presupposes

the other, nor is either more real than the other. Neither has a stability to which the other owes, in every way, unquestioned allegiance. Such a view of class relations will, I believe, go far toward vindicating the universality of the syllogism.

The most difficult and, I believe, the most important of all the problems of Logic is the relation of extension to intension. Upon this distinction depend the vital questions of the meaning of class, the import of judgment, the fundamental metaphysical question of the relation of quantity to quality, and above all the question of the validity and universality of the syllogism. The elementary textbooks find little difficulty with this subject for there is a superficial definition of these words that makes this relation simple and comprehensible enough. Some writers have been aware of the difficulty of defining each of these words in a way that would make their relation in one object intelligible. Jevons, for example, says "I believe that the reader who once acquires a thorough apprehension of the difference of these meanings, and learns to bear it always in mind, will experience but little further difficulty in the study of Logic."[4] However, Jevons' own treatment of the subject is most naïve and ignores entirely the real issue, namely, the essential incommensurability of the extensive and the intensive series. Aristotle taught that the extensive and the intensive modes of predication were, at bottom, equivalent and the question of priority meaningless. He declares most explicitly that there is no difference between saying that one thing is entirely included in another and saying that the other thing is always a predicate of the one.[5] Mathematics, until very recent times, has always glorified quantity, and the older symbolic logicians taught that the point of view of extension was so fundamental in all our thinking that intension might be entirely disregarded. The philosophers, on the other hand, insisted on the primacy of quality, and declared that the relation

[4] *Elementary Lessons in Logic* (New York, Macmillan, 1914), p. 37.

[5] C.f. Prior Analytics, I.

between subject and predicate was distorted from truth in the extensive interpretation of judgment. Mill and many writers since have insisted that the intension of terms must be taken as both psychologically and logically primary, and extension as secondary. Mill, to be sure, held that some terms have no connotation, but only denotation, and that such terms always denoted the subject directly and connoted its attributes indirectly. But this was the interpretation of the relation for the purpose of communication. Mill himself plainly implied that *in thought* connotation is primary; but since we rarely have the qualities in a sufficiently definite and tangible grasp, we resort to the denotation in defining or describing the object. A familiar illustration of this is found in ordinary intercourse where we often find it more convenient to describe an object by telling *where* it is than *what* it is. But in all these debates concerning the meaning of extension and intension and the nature of their relation, the contestants never suspected that there might be intermediate positions between extension and intension; or, that since a good case could be made out for the priority of each, perhaps neither was fundamental but that both were correlated aspects of a more fundamental point of view.

The first difficulty that the naïve treatment of the relation of connotation to denotation met was the obvious fact that the law of inverse variation was not universally applicable. It is not strictly accurate to say that as the extension increases the intension decreases and vice versa. In the calculus of classes where the distinction between subject and predicate is effaced and the content of proposition represented diagrammatically as by Euler and Venn, this may be partly true. However, it is not a faithful account of the psychological process involved. The power of thought to widen its field of attention is not incompatible with a simultaneous deepening of its intensive insight. It is a common practical occurrence and one that has a deep-seated theoretical justification, that, in extending its synthetic grasp over new

instances, thought is continually discovering attributes hitherto latent. In considering the subject of analysis and synthesis in judgment, and the correlated question of novelty and sameness, I attempted to point out how essential it was to any right understanding of the import of judgment to see that the synthetic and the analytic functions of thought may both operate each in its own opposite direction. No antinomy is involved in describing certain systems as exhibiting simultaneously integration and differentiation.

The relation of extension to intension, of quantity to quality is of such vital importance that I wish to pursue this matter still farther even at the risk of indulging in subtleties that may appear to the reader quite out of place in the present discussion of the nature and validity of the syllogism. No idea, which is in the least extended—that is, no quantitative idea can be brought into consciousness by one indivisible act. Any single pulsation of consciousness does yield size, that is *Gestalt-Qualität* or form, just as it does quality; but such a simple act of consciousness cannot give us the notion of extension regarded as a system of interrelated parts. The notion of true quantity never comes to us in a single beat of consciousness. It is a continuous manifold, and yet a manifold which, though never grasped by one indivisible act of mind, is on the other hand equally incapable of being produced by a mere repetition of units, or ultimate, simple elements. We have here, again, the perennial problem of the relation of the part to the whole, of individual to species, of a term to the class of which it is a member. This problem is so closely connected with the question of the relation of quantity to quality, that we may partially solve the difficulty, I think, if we examine it where it appears in another form, namely, in the relation of the arithmetical to the geometrical continuum.

Modern mathematics has discovered that the arithmetical and the geometrical continuum are different facts, both for description and explanation. We never pass directly from one

to the other either in practice or in theory. The geometrical continuum resists any attempt numerically to exhaust its meaning; and the arithmetical continuum can never be regarded as the first step in the logical process of the development of the geometrical continuum. All such attempts to derive one continuum from the other are vicious circles. When we respond to the demand for an absolutely single and simple element, we find that the spatial continuum, which is quantity or extension *par excellence*, presents insuperable difficulties to conceptual analysis. The mathematician responds to this challenge to find ultimate elements by declaring, "There are points." But, when required to define these points, he finds that they are just the self-contradictory outcome of this search for the ultimate elements. This definition is self-contradictory for the reason that when the mathematician reverses the process, he discovers that he cannot get back from his points to the continuum from which he started. No repetition of the point, as such, can give rise to the line, that is, not the continuous or quantitative aspect of the line. We have here the familiar paradox concerning the discrete and the continuous aspects of quantity. Because of its incapacity to penetrate things to the bottom of their real natures an imperfect mind must resort to a quantification of them. Let me illustrate: O and O' are two objects which are qualitatively alike differing only in quantity, that is, they are members of a lowest species. Thought first contemplates the object O by itself. It discovers that it is unable to penetrate the object to the core of its meaning. A certain opacity prevents the finite mind from ever reaching the essential, individual nature of O. But O is not yet a quantity, for quantity is never the content of such a single pulsation of consciousness. Baffled in its attempt to discover the true nature of O by internal searching, thought seeks for that desired information from an external source. It betakes itself to the other of O, or O', which is, however, in itself just as impenetrable for thought as O was. O and O' are conceptually

alike, and yet the mind perceives a difference between them. Every attempt to explain this difference lands us in an inevitable contradiction.

But now in this second pulsation of consciousness the quantitative aspect of *O* and *O'* has suddenly appeared. Quantity is that mysterious somewhat that can not be found in either *O* or *O'* when contemplated alone but does somehow seem to exist in each when both are viewed together. Quantification might then be described as the result of our finite efforts to discover externally the inaccessible internal meanings of things. Or I might say it is the search for a mediator between objects where the complete understanding of each is by the very nature of things impossible.

Herein lies also the solution of the apparent contradictions in the discreteness and the continuity of quantity. The discreteness arises from the necessary duality of the thought process that produces the quantitative way of viewing things. The continuity is simply the compulsion under which thought lies of holding the two objects *O* and *O'* in a unitary grasp of consciousness in order to explain the unfathomable mystery of each. From the absolute point of view *O* and *O'* of our illustration, instead of being covered by one concept, are provided each with a concept of its own which is adequate to its essential nature. A perfect mind has no need to view things under the category of quantity. For finite thought quantity is simply the ever present reminder of the irrationality of sense. Finite thought is, once for all, inadequate to sense. Every *this* that it contemplates is a *this* only in appearance. To our limited minds the *this* reveals only its *thisness*. But, as I have already pointed out, the *thisness* of the *this* contains as a part of its meaning a reference to a *that*. And now comes the crucial point. Finite thought feels itself irresistibly impelled to search for the *that* to which the *this* points, which in reality it must mean to be a *this*. The mind at once discovers that it has entered upon a hopeless, an unending

task; for, no sooner do we discover the *that*, which we had hoped would solve the inexplicable mystery that enshrouds the *this*, than it turns out to be not a *that* at all, but the identical *this* from which our thought started. Thought has in a fashion, to be sure, solved the puzzle; but in the solution it has likewise reinstated its original question. Here we find an explanation not only for the discreteness of extension and its continuity, but also for its infinitude. The process described is evidently of the recurrent type, but I think it differs in one essential feature from the *Kette* that Professor Royce has so often described. In the present *Kette*, the process is in the end a tautological one. Each new member of the *Kette* has novelty only so long as it is contemplated as a fact still external to the series, that is, as the goal toward which each individual pulsation of thought strives for the moment. But as soon as the goal is reached—when once that new link has been welded into connection with the rest—the novelty it formerly possessed vanishes into an inevitable sameness with the whole. The novelty is only a transitory aspect of the essential tautology in the process. The novelty is accountable for the discreteness of extension, the tautology for its continuity.

III

If the syllogism is merely an expression of the relation of classes, where each class is taken in extension only, that is, where the thought is uni-directional, it will truly not compass all the forms in which we may reason. Such class reasoning always conforms to the following type: (1) the major premise is an enumerative, universal proposition in which we affirm that each *M* is seen (by actual observation) to be in the class *P*; and (2) the minor premise states that *S* is observed to be one of these *M*'s; then (3) the conclusion, *S* will be in class *P*. This view of the syllogism has rightly been condemned, firstly, because of its evident tautology and secondly, because it is not universally applicable. The first of these criticisms, namely, that it is a

petitio appeared long before Mill's classic assault. It was advanced frequently by Aristotle's own students. The second of the criticisms is very prevalent in recent discussions. As has now so often been pointed out by Bradley, and others, there are many forms of inference, for example, those that are concerned with dynamic relations, in which there are no class relationships, or in which we are not conscious of any such relations. I think, however, that all such relations can be compassed by the class relations when they are given the interpretation I have offered.

It is an unwarranted limitation of the scope of the syllogism to restrict its application to the old class view of judgment. There is no mention of classes, that is, classes in extension, in Aristotle's definition of the syllogism: "Syllogism is discourse in which from certain things laid down other, different things follow." The things "laid down" in the major premise are not "laid down" according to any principle of inclusion or exclusion. Aristotle was obliged to distinguish (as every logician must) between thought and language. In the actual thought process the relation of an individual to a class was for Aristotle always a relation in intension. But when this intensive relation was translated by him into a form available for exposition and communication it took the inevitable form of a relation in extension. The charge of a *petitio* can not be brought against the present pan-syllogism. It employs the true universal which is an assertion about things before they have been experienced, and which is in a sense, therefore, always hypothetical. Now since the major premise is hypothetical, and the conclusion is categorical, it is impossible that the latter could have been contained in the former. Moreover, when it is said that the conclusion contains "new" knowledge, it is not knowledge that is totally disconnected from the premises; for no process of inference, mediate or immediate can ever deliver such new knowledge. It is new knowledge in the sense that it is then for the first time *observed*.

There is abundant evidence everywhere in Aristotle's treatment of the subject that he was fully aware of the two kinds of universal propositions—the abstract or pseudo-universal which is a collection of actually observed particulars, and the true or concrete universal, which (by asserting a connection of attributes) refers not to any definite group of individuals, but to an entirely indefinite group. The pseudo-universal, "All S is P," means, "Each S (and I have examined and counted them) is a P." The true universal "All S is P," means "S as such is P, or if S then P. The question whether the syllogism in its application of the *dictum de omni et nullo* involves a *petitio* as I have said hinges on the sense in which we take the major premise. If this is construed as an historical or enumerative judgment, then manifestly the conclusion is just one of the particulars which has gone into the aggregate, bound together by the *all* in the major premise. The so-called universal, that is, the enumerative or historical universal is itself merely an aggregate of particular truths and has no greater validity than the particulars which constitute it—it is itself another particular. Aristotle pointed out, and it was an insight that always seemed irrefutably clear to him, that the universal nature of an object could never be reached by examining and counting particular instances.

But even in a syllogism, where the major premise is a pseudo-universal, just an aggregate of observed individuals, there is often a movement in thought, in which there is novelty in the conclusion. The major premise although strictly an enumerative universal, does not contain the conclusion nor even predict it. The two premises have come to us by different routes and it is only in the combination of the two that the conclusion is reached. For example, if a man should learn from the telegraphic reports that the entire Second Regiment were taken prisoners in the battle of the Marne, and then on consulting the lists in the War Office should find that his son was enlisted in this Second Regiment, the conclusion that his son was captured is something over and above the agony of suspense that came from the unsupported

major premise. To the authorities in the War Office, who have before them at one time, both the telegraphic report and the record of enlistments, there is not the novelty in the conclusion that there is for the anxious parent.

In the perfect mind premises and conclusions are *concomitants* not *sequents*, and hence all reasoning in such a mind would involve an essential tautology. But for the purpose of communicating its intuitive knowledge to minds on lower levels of insight the perfect mind would employ the syllogism and the accusation of tautology would be unjustified. On this view, then, the syllogism is the instrument of communication between minds having different degrees of insight into the relations among things. The perfect mind would not syllogize, nor would imperfect minds, if they all had simultaneously the same degree of knowledge of facts.

Bradley has condemned the syllogism at times with vitriolic vocabulary. The mildest of the epithets that he has applied to it is "a chimera." And yet he often comes quite near to conceding all that its defenders have thought worth contending for. He says: "If it were admitted, on one side, that the syllogism supplies no general type of the reasoning act, it might be allowed, on the other side, that it is a mode of stating the principle which is used in that act. It is universal as a form for showing the explicit and conscious exercise of a function.[5] This is an admission both of a *form* and of its *universality*. The formalists have never claimed for any of the forms of thought an existence prior to and separated from its concrete setting. They have granted freely that there are no anteeedent types or schemes for thought. The form of thought as we have shown in an earlier chapter is a vital constructive principle within the so-called object matter of thought itself. There is some thing in every concrete act of thought that always detaches itself from the thought, something, as Bradley himself has said, that is "more abstract than the argument itself."

[6] *Principles of Logic*, p. 482.

IV

It may not be evident to the reader how much the foregoing discussion owes to Kant's well-known defense of the syllogism. The logical doctrine of *marks* taught by Kant has had contempt heaped upon it, particularly by Hegel, who holds it responsible for much of the confusion in the discussion of the nature of immediate and mediate inference. Hegel said: "There is no more striking mark of the formalism and decay of logic than the favorite category of the 'mark.'" Kant's account of the doctrine has, I venture to think, been much misunderstood and maligned. It will be remembered that he defined *judgment* as the comparison of a thing with some *mark*, and *ratiocination* as a judgment by means of a mediate attribute. And, the supreme rule of all ratiocination he stated thus: "A mark of a mark is a mark of a thing itself." *Nota notae est nota rei ipsius.*

The criticism that Kant did not prove his dictum deserves only passing attention. It would not be the highest or final rule if it were capable of proof. Any attempt to prove the supreme formula of all ratiocination would be to reason in a circle. Proof would be possible only by means of one or more inferences. This principle claims to be the final anchorage of all certainty in reasoning and can no more be challenged than the indemonstrable propositions of Symbolic Logic. The two criticisms which Joseph[7] has urged against Kant's principle are more pertinent. However, neither of his objections appears to me a serious indictment. The first is that the rule assumes the minor term is always a concrete thing. Kant would have admitted, I think, that this was precisely his intention and would not have differed widely from Bradley's view that the subject in every judgment is reality or some definite and therefore concrete portion of reality. The *ipsa res* of Kant's formula is just this presented reality to which the ideal content is referred.

[7] *Introduction to Logic*, ed. 2, p. 307.

However much we may differ from Bradley's theory of judgment, it seems to me that his central contention that the subject is a concrete datum is unescapable. I do not see therefore that Kant's supreme rule differs essentially from Bradley's definition of inference as the indirect reference of a content to reality. The ideal content, meaning, or attribute is attached to reality, not directly but indirectly by being joined to a meaning already attached.

The second objection to the formula is that it makes one attribute qualify another. This, too, seems an immaterial criticism. In the first place we may contend that there is nothing contradictory in the statement that there may be an attribute of an attribute, as Joseph seems to imply. Wherever an object admits rank or psychological priority among its attributes, a later attribute, being an attribute of an object already qualified, is in reality an attribute of an attribute. Also the varying degrees in intensity of the quale of sensations are in a sense qualities of qualities. But admitting that there may be an inherent difficulty with the conception of an attribute of an attribute (construing the expression literally) I think this is not precisely the meaning that Kant intended by the expression *nota notae*. *Mark of a mark*, is the better rendering of *nota notae* than *attribute of an attribute*.[8] The working of Kant's formula may be illustrated in the syllogism, *Savages are cunning. Indians are savages, therefore Indians are cunning.* Cunning is the mark of savagery, and savagery is the mark of the Indian, therefore cunning is the mark of the Indian. Of the three terms in the syllogism two are always taken in connotation, namely, the major and the middle. The minor must always be taken in denotation. In the major premise, both subject and predicate are taken in connota-

[8] It must be observed that the word *mark* has two meanings. It points both forward and backward; it is the sign or evidence of something that has been, as well as the prophecy of something yet to come. The glacial scorings are the marks of the ice-age, while a red sunset is the mark of an impending storm.

tion; it affirms that the attribute of cunning accompanies the attribute of savagery. But in the minor premise only the predicate is taken in connotation.

Kant maintained that the *dictum de omni* was subordinate to his formula, "Whatever is a mark of a mark of a thing is a mark of the thing itself." The former declares that whatever is true of the concept is true of everything contained under it. This, according to Kant represents a stage in the process of abstraction one step removed from the formula. The concept itself was derived in the first instance by abstraction from the things which came under it. Thus whatever belongs to this concept will in truth be an attribute of an attribute and therefore an attribute of the things from which it has been abstracted.

Kant drew a distinction between pure and hybrid mediate inferences, that we have lost sight of in our later discussions about the universality of the syllogism. The pure inferences are those which require but three propositions. We have a hybrid inference when between two of the main propositions there must be interposed a fourth proposition which is itself an immediate inference from one of the others. Kant made this distinction the starting point of his essay on "The Mistaken Subtlety of the Four Figures." He regarded the first figure only as pure ratiocination, since it involved never more than three propositions.

It is not my purpose to enter into a long discussion of the relation of the later figures to the first. Without detailed proof I shall say that I believe Kant's position to be fundamentally correct. I am sure, also, that Kant would have explained all of the modern asyllogistic types of reasoning as "hybrid inferences." In his exposition of the fundamentals of Symbolic Logic, Russell has postulated ten indemonstrable axioms, the sixth of which is the syllogism as it is commonly understood. But on our wider interpretation of the syllogism, I believe, all of the other axioms can be explained as either abbreviated or expanded forms of

the fundamental syllogistic fact—thought exhibiting itself in the triadic relationship of universal particular and singular. Let me explain by quoting Russell's seventh axiom: "If q implies q and r implies r, and if p implies that q implies r, then pq implies r. This is the principle of *importation*. In the hypothesis we have a product of three propositions; but this can of course be defined by means of the product of two. The principle states that if p implies that q implies r, then r follows from the joint assertion of p and q. For example: 'If I call on so-and-so, then if she is at home, I shall be admitted.'"[9] I fail to see why this can not be explained as a triadic relation. In fact, Russell seems to resort to such an explanation himself when he says that the hypothesis, although it has *three* propositions, can be defined by *two*. Every thought contains three and only three terms, that is, there are only three fundamental nodes or beats. This needs further elucidation. All reasoning is (as we have often had occasion to remark) a movement from particular to particular via the universal. It follows that every inference must have three terms, and that no inference can have less nor more. Inferences have often to do with more than three *facts*. But it is important to distinguish between *terms of inference*, that is the significant nodes in the movement of thought and the *data of inference*, that is, any accidental halting-places. Each of the three terms may be viewed as a system and when its secondary data are combined with the secondary data of each of the others, we get hybrid inferences with apparently more than three terms. To use a railway figure of speech, the main trunk line of thought has three stations where the "train of thought" *must* stop. There may, be any number of intermediate stations, however, where it *may* stop.

There have been many attempts to give a syllogistic demonstration of the so-called axiomatic truths and many refutations of these attempts. Bradley has said, "To prove syllogistically

[9] *Principles of Mathematics*, p. 16.

that, because *A* and *C* are both equal to *B*, they are equal to one another, is quite impossible." Also, "I may suggest to the mathematical logician that, so long as he fails to treat (for example) such simple arguments as "*A* before *B*, and *B* with *C*, therefore *A* before *C*," he has no strict right to demand a hearing."[10] Euclid's first axiom, "Things equal to the same thing are equal to each other," has been written in syllogistic form thus:

> Things equal to the same thing are equal to each other.
> *A* and *C* are things equal to the same thing.
> And ∴ *A C* are equal to each other.

But in this syllogism both the major and the minor premises are defective. The major premise in the syllogism is the axiom itself, and hence not a major premise in the required sense of the word. It would be circular reasoning, vicious in the first degree to use the identical proposition, which is to be proved. The major premise ought properly to read, *Things equal to B are equal to each other*. But a more serious fault we find in the minor term, *A* and *C*. In the concrete instance of the axiom $A = B$, $B = C$ ∴ $A = C$. *A* and *C* function separately each as a distinct subject. But in the minor premise of the syllogism, by means of which we attempt to validate the axiom, we take unwarranted liberties with *A* and *C* by attempting to make them function conjointly as a single subject. *A* and *B* are, is not the same as *A* is and *B* is. It is not the intention of the axiom to assert a predicate of *A* and *B* as one, but to declare a relation between them. The distinction between the collective and the distributive use of the terms is here in question and it is a form of the familiar fallacy of composition of elementary logic that is committed.

The argument *a fortiori*, "*A* is greater than *B*," "*B* is greater than *C*," therefore, "*A* is greater than *C*," has been offered as an

[10] *Principles of Logic*, pp. 349, 360.

illustration of asyllogistic reasoning. This, however, may be expressed in the following valid syllogism. *Major premise.* All cases where, of three things, the first is greater than the second and the second greater than the third, *are* cases where the first is greater than the third. *Minor premise.* *A, B, C, is* a case where, of three things, the first is greater than the second and the second greater than the third. *Conclusion.* *A, B, C,* is a case where the first is greater than the third.

Here again a criticism has been raised similar to that which we have just examined in the case of the *axiom of equals.* It is true that these so-called asyllogistic forms of reasoning are not, when reduced to the syllogism, strictly formal. But neither are they strictly material. From the two propositions "*A* is the son of *C*," and "*C* is the son of *D*," we may infer that "*D* is the grandfather of *A*." This is semiformal. It is a valid inference only to one who also knows the "system of relationships." But granted this prior knowledge, the inference within this "system" is evidently formal and capable of reduction to the syllogism. The same is true of the other *a fortiori* arguments.

CHAPTER VIII

NOVELTY AND IDENTITY IN INFERENCE

I

I find deplorable disorder and obscurity in current discussion concerning novelty and sameness, difference and identity, objectivity and subjectivity, independence and dependence in judgment. Some of these difficulties we met in the previous essay. I wish now to call attention to some further related problems.

The New Logic asserts that the uniqueness of any mental fact is always of vital importance for some specific purpose; that in truth, its uniqueness or individuality is driven in upon it from out of that external purpose. We have, here, a new and revolutionary definition of *essence*. The essence of the fact depends for its essential essence (if one may be permitted such reduplication) upon the varying purpose to which it may be put. In other words there is no essence in the traditional sense, since the fact has no individuality, no character of its own. This doctrine, when applied without reserve, leads inevitably to the conclusion that there is no stability within the states of consciousness—that there are no laws of thought. And this issue the pragmatist accepts not reluctantly, but even more joyfully than the ancient sceptics. In so far as we must take a risk in judgment, each situation is a law unto itself. The old idealists uphold the law that there shall be law. The new theory recognizes only one law, namely, the law that there shall be no law. However, as we saw when discussing the nature of judgment, no idealistic theory of predication denies the novelty that comes with the predicate. Some risk we do take, and must take.

But something over and above risk there must be in every judgment. That which enables the risk to know itself to be a risk is a stable principle of values.

There are three possible views that we may take upon the question of the relation of stability to risk: Either there is all stability and no risk, as an absolute idealist might aver; or there is no stability and all risk as the pragmatist in my opinion is compelled to say; or there is some stability and some risk as the dynamic idealist holds. If practical consequences are the sole test of truth—if the object-matter of judgment is brute force—then thinking is indeed pure adventure. But I submit that it is one thing to say that judgment is practical and hence riskful, and quite a different thing to say that there is nothing else to judgment but its utility and risk.[1] As Professor Hocking has said with such picturesque vigor: "Only he who has tried (or tried to imagine) a pure adventure knows that there is *no such thing as a pure adventure;* for when you have cancelled path, peak, sky, star, all distinguishable points in space, the adventure itself is abolished."[1a]

We have sufficiently insisted that no relation can dispense with either of the two aspects the *within* or the *between*. A relation that attempts to exhibit identity without difference, or difference without identity is no genuine relation, since it omits one or the other of these two aspects. For this reason, as Bosanquet has pointed out, no single judgment can exhibit a complete comparison; a disjunctive judgment either implied or expressed is required. Every act of relating is an act of comparison, and comparison always affirms the interdependence of identity and difference—it is redintegration. When we assert

[1] Cf. Bradley, *Principles of Logic*, pp. 18, 499. "The assertion we are to examine is *not* that practical influence induces us to judge, or results from a judgment: What is asserted *is* that judgment is nothing else whatever. . . . We do not mean to ask what sound performances of reasoning are practicable, but what types of argument are flawless in themselves, without regard to the question if any one, or no one, can use them in his work."

[1a] *Meaning of God in Human Experience*, p. xii.

that every judgment affirms or denies an identity in the midst of difference, and difference in the midst of identity, this must be taken to mean that we cannot begin with one alone and superimpose the other upon it as an after-effect. Both are present in one indivisible moment of consciousness. Although the difference and the identity are concomitants in every judgment, the dominant emphasis may be shifted from one component to the other. Both may be quite indistinct in the first suggestion and the judgment may be aimed primarily to develop this inchoate distinction. Again one aspect in the presented correlation may be faint and the other vivid; here the judgment will aim to reëstablish the balance by emphasizing the weaker aspect.[2]

In his criticism of the three fundamental laws of thought of Traditional Logic, Hegel proved that the Law of Identity literally interpreted, cannot possibly be an expression of the activity in any phase of a living judgment. If *A* is *A*, states a sheer tautology, it is no judgment. It proposes to say something, but ends by saying nothing. It is worse than idle breath, for it has not even asserted identity. The real Law of Identity "*A* is *A*" means that, whatever is true of *A* in one reference is true in another.[3]

The difficulty about the conception of identity and difference would be less puzzling if instead of the conjunction *and*, we used some other word to describe the relation involved, for example, identity *in* or *with*, or *because* of difference. *And* is a highly ambiguous word. In Symbolic Logic it has been found very necessary to distinguish among its several meanings. For the present discussion the obvious warning is that *and* must not

[2] Bosanquet, *Logic*, I, 30. "As regards the affinity between Distinction and Identification, they are obviously two sides of the same process and it is idle to ask which came first. So far as we can see, Consciousness, or at least Intelligence, must begin with both."

[3] Symbolic Logic which is rendering a most important service to exact thinking offers a definition of identity that is quite free from the perplexing ambiguities that have beclouded it in the past. Cf. Russell, *Principles of Mathematics*, p. 20. "X is identical with Y if Y belongs to every class to which X belongs."

be taken to indicate mere juxtaposition. If that were all the *and* signified, then the whole, within which the identity and difference are aspects, would be no genuine whole: for either aspect might be removed and the other would suffer no change in meaning. The limiting conceptions for *identity in difference* are at the lower limit, pure tautology, at the upper limit, entire difference. But obviously these limits can never actually be reached by the judgment without sacrificing its essential character. The judgment indeed, aims both at mere tautology, and mere difference, but if it found its goal it would lose its life—the reverse of the scriptural experience of losing life to find it.

In this modern indictment of the old Logic a most serious arraignment on all sides is made against the traditional laws of thought. But every argument against any one of these three laws always presupposes one or all of them. Every argument against identity assumes a principle of identity. The opponent of the Law of Identity must be standing upon a platform supported by stable values when he assaults identity, otherwise his aim will be uncertain and he will miss the mark as widely as a howitzer anchored upon a drifting cloud. These attacks upon the law of identity are most surprising instances of oversight. Reason cannot commit suicide. A law of thought is reinstated in each attempt to remove it. The Aristotlian logic is the foundation of all logic even of those which attempt to overthrow it.[4]

No judgment affirms mere identity. If any collection of words should aim to assert identity they would not constitute a judgment, for as Hegel said, they would sin against the essential

[4] Sidgwick, *Elementary Logic:* "It is indisputable, e.g., that every *A* is *A*, but this leaves it quite uncertain whether *any* actual case of 'A' that we meet with is the genuine thing or not. Such a 'law' therefore has no application except on the assumption that we no longer need the information that it is supposed to give. This kind of indisputability is common enough, and we can all manufacture as much of it as may content us." (p. 120.) "*A* is *prima facie A*, and not *non-A*, and clearly distinct from *B*. But if *A* can be *A* for one purpose and *non-A* for another the supposed authority of these rules *in application* crumbles away to nothing." (p. 157.)

characteristic of judgment. But, on the other hand, without the tacit assumption of identity, no affirmation or denial could ever be made. Sameness and difference are so inter-related that they are in reality different sides of the self-same content. Any two facts that fall within the same whole are *alike* and yet *different*. Nevertheless, although likeness is a fact and difference is a fact, we never mean to assert just the fact of likeness or the fact of difference. This is the puzzle which Professor Dewey has made the basis of his criticism of all conceptual logic. He says, in criticism of all such logics, "The rock against which every such logic splits is either that reality already has the statement which thought is endeavoring to give it or else it has not. In the former case thought is futilely reiterative; in the latter it is falsificatory." I shall attempt to show in detail, later that these two alternatives do not exhaust the possible points of view. We may answer both charges of futility and falsity by saying that the predicate is something which the subject already *is* or *has*, but which it was not known *to be* or *to have* prior to the predication.

In his defense of independence the realist assumes a mind which is to know a totally independent and hitherto unknown object. He then gradually brings that object, so to say, toward the mind until the mind observing it, seizes it, and knows it. He admits that in any such act of normal thinking, when the object is known, that knowing of it causes it to enter into a new relation. But he emphatically declares that certain other relations the object retains, and that these are in no wise influenced by the new relation of the knowledge it has permitted to be set up. But now is it not an unwarranted abstraction by means of which the realist transcends the unity of knowing and being, and imagines, or conceives, or thinks an object independent of all knowing? When we separate being from knowing, reality from thought, what is left is not just an independent unknowable something, but real non-being. Whoever declares that the objects of sense perception—or the objects of thought—are not in themselves as

they appear to us is making an assertion for which there is no logical defense whatever. In order to pronounce the things in themselves other than, or independent of, the appearances, we must previously have compared the things as they are with the things as they appear. If this can be done then the independence has been disproved before we begin, and we are guilty of a *negative petitio*.

The realist in every age has put the burden of proof or disproof, upon the idealist.[5] He says that entities are independent, unless they are proved dependent. This is analogous to the familiar legal procedure of regarding a man innocent until he is proved guilty. That there is an important element of truth in this principle in legal practice I am not concerned to deny. In the law with which we are dealing, approximations to certainty merely, and the principle of the presumption of innocence is all we have. But in logical problems where rigorous demonstration is sought, it is a confession of weakness to give external evidence where internal proof should be forthcoming.

The realist's definition of independence as equivalent to non-dependence is open to serious objections. In this definition he has failed to distinguish between the absence of dependence and the opposite of dependence. The realist admits that he cannot prove independence until the idealist has failed to prove dependence. Let us accept his challenge and attempt to prove that there is ineffaceable dependence between idea and object. The realist asks us to go to experience for the confirmation of his doctrine. Objects in the world of matter he says are independent of one another; so too are ideas in the world of mind. Up in Lake Superior, and quite on the bottom, he tells us, is a drop of water, and here are pages in a book. They are totally independent, are they not? The turning of the pages in no wise disturbs the essential being of that drop of water. And there is

[5] E.g., R. B. Perry, "Realistic theory of independence," *New Realism* (New York, Macmillan, 1912), p. 99.

Halley's Comet, winging its way through space preparatory to coming back to us again in seventy years. That, too, the realist says is independent of this page. But now when we enter the realm of possibilities, are these facts of our illustration so independent as they seem at first sight? The drop of water at the bottom of Lake Superior may come to the surface, evaporate, enter the atmosphere, be carried to this spot and fall upon this page and blur the ink—that is a possibility. Therefore, in criticism of New Realism the idealist insists that this possibility which is at the heart of the drop of water is already a part of its being, as it lies there at the bottom of the lake. The very possibility of its entering into harmful relations with my paper, prevents it from being regarded as an absolutely independent existence. It is an uncombatted possibility and therefore an actuality. Hence the idealist refuses to admit that even in our concrete human experience, we can ever find two physical objects which are so utterly independent of each other that no conceivable change in one of them can effect the other in any wise.

But we need not rely alone upon this argument from the *possibilities* that lie inherent in the drop of water. That drop of water has, at this very moment, a relation to this paper—a relation that differs only in degree and not in kind from the relation which it would have to the paper if it were actually lying here now and blurring the words as they are being read. The realist would hardly venture to claim that space is more than a principle of differentiation. As I have already said, the realist declares that whenever we know any object (not ourselves) this object is existentially absolutely independent of our knowledge of the object. So that the ideas that constitute our knowledge may come and go, they may be true or false, and yet the object will remain forever what it was. In knowing the rest of the universe other than ourselves, we know something that is different from that knowledge, and because different is independent of that knowledge. And here is the novelty, the risk, the objectivity in judgment that can never be effaced.

For further proof of this metaphysical doctrine of independence, the new realist refers us to the mathematical theory of probabilities, where events are said to be mutually independent. In the throwing of dice, for example, each throw is independent of the others. But again we should insist that when we look closely at all such illustrations of independence, we find that, in the last analysis, the objects so defined are always relative. This is pseudo-independence; we are looking merely at special aspects of our objects. To use a crude but pertinent illustration—our fingers may be said to be separate and independent when we view them at their tips, and do not follow them back to their physiological connection at the palm. The two throws of the dice which the realist uses to support him in his metaphysical gamble in the search for independence, are connected in the general causal arrangement of our universe; they are really not wholly independent. We merely do not happen to know what the causal connection is. When we speak of pure chance we overlook these causal features and fail to observe that any two physical events occur in the same space, and in the same time. The parts of space and the moments of time, are perceptually, genuinely interdependent. Space and time are not principles of individuation, and nothing short of the individual can be regarded as genuinely independent. However far apart two objects are placed, they are still clutched in the enwholing grasp of space and cannot be totally indifferent to each other. Space is a principle by means of which things are "coupled apart." In the theory of probabilities, we do, to be sure, call two events that happen in the same space and in the same time independent events. What we mean is, not that these two events are absolutely independent, but that there is an aspect in which we may treat them as independent. For certain purposes, we may ignore their interdependence or at any rate treat it as insignificant, and thus secure an apparent independence.

It is precisely this pseudo-independence which the new realist

has seized upon and magnified into a genuine independence. The realist's explanation of the process of knowing, as Bradley would say, is a "makeshift, a device, a mere practical compromise," which cannot be logically defended. From one point of view we have to take reality as many, and from another, as one—an ontological dualism and an epistemological monism. We insist on dividing reality for the purposes of existence, or to take it, if we wish, as indivisible for the purpose of knowledge.

The idealist says that the alleged *objects* independent of consciousness are objective and independent only in the sense that they are the externalization of an internal constraint. They are what we must think, if thought is to be self-consistent. Our apparent success is won by a perpetual shifting of the ground, so as to turn our backs upon the aspect we desire to ignore. But when these inconsistencies are brought together, as in rigid Logic they must be, the result is an incurable discrepancy. The independent beings of which the realist speaks are beings that have no common features, no ties, no relations, or at any rate only that mysterious kind of relation which he calls mere dependence. They are separated one from the other by an absolutely impassable chasm. But such beings, we insistently repeat, cannot be in the same space or the same time, or be members of the same conceptual realm. They are false existences, and vanish at the touch of thought into the realm of non-being. They are not one, nor many, but just impossible nothings—just the drapery folded around the empty outline of ghosts of beings.

The realist insists that real beings must be essentially and absolutely independent. In order to get such independent beings, he first declares that certain gaps or barriers are absolute. But he forthwith proceeds to make thought transcend these very barriers. He accomplishes this feat by an actual union of those parts of being, which in the first instance he attempted to put forever asunder. Realism attempts to divide the *what* of an object from its *that*—the *meaning* from its *existence*—a vivi-

section that must always prove fatal. It is true that a psychological dualism is implied in the very conception of consciousness. But as we have seen earlier this postulated objectivity does not imply the ontological pluralism which the New Realism seems to demand.

In the new realist's philosophy, quite closely related to the doctrine of independence and the problem of error, there is a third problem which is also one of the crucial test problems of the realistic metaphysics—the ancient problem of the one and the many, the whole and the part. One phase of this problem I have already discussed in considering the doctrine of independence. The realist's explanation of the relation between the one and the many seems to me to be a complicated linkage of circular reasoning, in which the inquirer is continually deluded by an apparent approach to valid conclusions, and is yet all the while led back to the point from which he set out. The realist fails to reach any satisfactory solution of the problem of the one and the many, I venture to think, because he is applying an inadequate and imperfect conception of the relation of whole to part, and of the function of analysis and synthesis in judgment. In the world in which the pragmatist and the new realist first find themselves and beyond which they hold they can not go—the empirical, quantitative world—the parts of every whole, the elements of every multiplicity, stand in purely external relations to each other. This is one of the vital axioms of every form of realism. Every other principle or category that it employs, must conform to, or be a genuine expression of the fundamental characteristic of this phenomenal world, the mutual exclusiveness, the utter isolation of its elements.

But in the world of thought, in the qualitative order, a fundamentally different axiom is discovered. Consciousness is not a mere collection or aggregate of states, existing *seriatim*, each self-sufficient; but it is an organic whole, a genuine system, every part of which has meaning only in so far as it is related to the

rest. The new realist's problem of independence presents no difficulty if we accept Aristotle's definition of a true whole, that is, a whole such that if any part is modified or removed the total is entirely altered; for that of which the presence or absence makes no difference is no true part of the whole. In the deeper life of self-active mind, there is both multiplicity or diversity; but it is the multiplicity or diversity that is not of parts, opposed to each other and constituting a whole by juxtaposition. In the organic whole of thought no part has an intelligible existence by itself in separation from the rest. Objects in the material order are by their very definition mutually exclusive. Each object in space lies outside of every other, and can be only externally related to them. But the independence of the elements in the thought system is the independence of that which although always limited is limited only by what is of the same essence with itself. The element in the scientific order is an element which declares its independence of all that lies without it. The element of thought, however, is an element which is ever discovering itself in that which apparently limits, or lies beyond it.

II

All vocabulary, and particularly English vocabulary, is defective in words to designate the highest type of *synthesis*, that is, the synthesis which does not entirely efface the parts in the achievement of the whole. Also, we have no good single word to embrace the two aspects of the highest type of *analysis*, which, in winning its part is not totally disruptive of the whole. We greatly need in this discussion of the essential import of judgment what Philosophy in every language through all the ages has felt the lack, namely a single word to denote *analysis in synthesis*, or *synthesis in analysis*— the process in which an identity is preserved in the midst of difference.

In the dialectic process, *thesis*, *antithesis*, and *synthesis*, namely, the positing of an object, the placing over against it its

negative, and then the reconciling of the two, vocabulary follows thought with an abundance of adequate words up to the second stage. Language is rich in words that distinguish the first two stages, *thesis* and *antithesis;* affirmation and denial, inclusion and exclusion, and their many synonyms and antonyms cover satisfactorily all of the various shades of meaning of the first two steps in thought's movement of increasing complexity. But, when we pass to the third stage of *synthesis* and think in terms of a genuine reconciliation of a concept with its negative, language refuses to follow, or at any rate fails to provide a new and unambiguous word to denote the essential characteristic of the complex thought process of this third stage—the stage of higher synthesis. The word which seems most nearly to express the double-acting character, the analytic-synthetic or synthetic-analytic process, in all judgments, or is *construction*. As Bosanquet says: "The process of construction is always that of exhibiting a whole in its parts, an identity in its differences; that is to say, it is always both analytic and synthetic."

On the higher level of synthesis, when we attempt to exhibit the results of reflective insight, we express ourselves imperfectly by circumlocution. If we are pressed for a single term to describe the third stage, we invariably employ the same words to designate the synthesis, or reconciliation of the thesis with its antithesis, that we have already employed to designate the thesis. This has given rise to endless confusion and misunderstanding in philosophical discussions. In the time-series, for instance, we posit as thesis *is*, then over against the *is*, we place its antithesis, *was*. But now, when we are called upon to reconcile the two, when we comply with the inevitable demand of thought to discover what *thesis* and *antithesis* here have in common, we find not a third new word, but one of the two already employed, namely, *is*. In like manner, necessity and contingency are synthesized by necessity; the one and the many by the one. We generally mark the distinction, by capitalizing the one word in the position of

synthesis. Or by way of explanation, we say that necessity is a higher necessity which is the reconciliation of itself with the contingent; or that unity is a higher unity which is reconciliation of itself with the many. The distinction between these two meanings of *is*, we find illustrated in the sentence, "Before Abraham was, I am."

Of all our English synonyms of analysis and synthesis, the words *differentiation* and *construction*, best bring out the reversible and transitive character of the process. Any process of genuine construction always exhibits the final whole in and through its parts. It sets forth an identity in the midst of its difference. That is to say, as Bradley, Bosanquet and other recent writers have pointed out, it is always both analytic and synthetic. In any discussion of the interrelationship between analysis and synthesis it is important to distinguish between perceptual synthesis of parts into a whole in space and time, and conceptual synthesis of parts and whole in a non-temporal order. The result of the former process is always a mechanical, purely quantitative aggregate. The mathematician has ever had a clear conception of this interdependence of analysis and synthesis. His terms, integration and differentiation, are always employed in full view of the vital correlation of parts and whole. It is manifestly impossible in the non-metrical reaches of geometry to think of this relation as one subsisting between parts and whole without confusion, because of the quantitative connotation of the terms *part* and *whole* as we ordinarily employ them. The mathematician has therefore wisely come to prefer the terms *element* and *system*. Moreover, in describing the process of integration, he is careful to point out that in the complex entirety into which the elements have been combined, the elements are never impotent and indistinguishable. And conversely, in the process of differentiation into elements the system is never dismembered or multilated.

The doctrine that a proposition is analytic when the predicate

is a *genus* or *differentia* of the subject, and synthetic when the predicate is a *proprium*, or *accidens*, is maintained by Welton.[6] This view obviously defines in a circle. It presupposes that we can distinguish between the accidental and the essential attributes of the subject, without invoking the assistance of the very conception of analysis and synthesis which this distinction is called upon to define. If the so-called accidental attribute is accidental in the literal sense of the word—if it has drifted in upon the subject like a snowflake out of an unknown sky—then it is not even a synthetic judgment, it is not a judgment at all. It is worse than sheer falsehood, it is empty breath. However, if instead of the terms accidental and essential attributes, we use the terms *external* and *internal meanings*, we may discover a sense in which we can properly speak of analytic judgment as the explication, or determination of internal meanings, and synthetic judgment as the implication or determination of external meanings. But then, we should be obliged to return to the view for which we are here contending, that analysis and synthesis are inseparable, correlated aspects of every act of judgment. But it should be pointed out again that on this view the so-called accidental attributes or external meanings are not so accidental and external as at first sight they appear to be.

The problem of the true import of judgment rests back finally upon this distinction between external and internal meaning. If we are to rescue judgment from the fatal paradox of being either false or idle, we must show that it is possible for the subject to have an internal meaning consistent with an external meaning brought to it by the predicate. Let us take any diyadic relation in a pluralistic universe. Let us assume, for example, that A and B are two minds or souls (Kantian ends), in such a pluralistic universe. A has its internal meanings, namely, a, b, c, d, etc., and likewise its external meaning m, n, o, p. But on closer analysis it is discovered that these external relations m, n, o, p

[6] *Manual of Logic*, p. 104.

are only the demands that are made upon *A* by *B* and these demands of *B* are *B*'s own internal meanings, which are precisely the aforesaid *m*, *n*, *o*, *p*. And in the same way *B*'s external meanings will be a demand made upon *B* by *A* through its internal meaning *a*, *b*, *c*, *d*. In short, *A*'s external meanings are *B*'s internal meanings; and vice versa, *B*'s external meanings are *A*'s internal meanings. This logical doctrine, thus expressed symbolically is analogous to the definition of a true person in explanatory ethics. There too, the true insight is reached by a reciprocal determination of internal and external meanings. A person is being endowed with rights (internal meanings) that are inalienable, and duties (external meanings) that are absolutely binding.

It must be observed that we deal with the same reality whether we approach it analytically or synthetically. This true insight into the real nature of analysis and synthesis in judgment settles finally, in my opinion, the much debated question whether the analytic judgment is really a judgment, that is to say, whether it is not in the last analysis *idle*; and the correlated question, whether the synthetic judgment, which is supposed to bring novelty in the predicate is not *false*. The subject is indeed given to us by one act of analytic attention, and the predicate by another. But to know the parts and to know the whole separately is not the same as to know the parts in the whole, or the whole containing the parts.[7]

Now it must be confessed that it is difficult to tell, in the analytic judgment precisely where its latent synthetic aspects begin to operate, and, in the synthetic judgment, it is difficult to tell at precisely what point the analysis begins. But I believe that careful psychological study of the thinking process would

[7] Cf. Bradley, *Principles of Logic*, p. 447. "Unawares then we strive to realize a completion, single and self-contained, where difference and identity are two aspects of one process in a self-same substance, and where construction is self-diremption and analysis self-synthesis. This idea of system is the goal of our thoughts."

show that we often reverse the process several times in a single judgment. We find an analogy in the physical world in the solution of the familiar Japanese puzzles. We often take out several sticks and then restore them to their respective positions in order to make sure that we may in the end bring the pieces all together again. So too, in pursuing an unknown path through the woods, we glance back often over our shoulders in order that the path may be familiar on the return journey.

As I have already remarked, of all our English synonyms for analysis and synthesis, differentiation and construction, or integration seem best to bring out the reversible and transitive character involved. Any process of genuine construction, always exhibits the final whole in and through its parts, as many generations of idealists from Plato to Hegel have taught. It is both analytic and synthetic, therefore not just idle nor yet false.

Among the various attempts to preserve for analysis and synthesis separate and entirely independent functions, that which rests upon the distinction between *ground* and *consequence* has had many defenders.[8] It is maintained that whenever thought follows out a premise to a conclusion, or passes from cause to effect, the process is synthetic. But when the movement is in the reverse direction, namely, from consequence to ground, or effect to cause, the process is analytic. But obviously this view presupposes a transformation of the judgment in which its essential non-temporal character is disregarded. The relation of cause to effect, of ground to consequence, is a transitive and reversible relation. This reciprocal relationship is the vital characteristic of inference and judgment, and even of conception. In the relation of cause and effect, the cause is quite as much conditioned by the effect as the effect by the cause. This basal truth is continually overlooked in the instrumental theories of judgment. And the fallacy when carried on into the discussions of mediate inference causes endless confusion.

[8] Cf. Mellone, *Introductory Text-Book of Logic* (ed. 2; London, Blackswood, 1895), p. 99.

Subject and predicate, premises and conclusion, are *together* in the mind; on the printed page they are necessarily spread out *seriatim*. The proposition and the syllogism are in time, but the judgment and the inference, of which they are the outward expressions, are not in time. The judgment is not transition from subject to predicate, nor is the inference a transition from premise to conclusion. The parts of the judgment do not follow each other like the parts of the proposition. The relation is not merely *between* two mental states, but is *within* a single enwholing mental state. This single idea within which the elements of the judgment are held, not only permits but compels a transitive, reversible relationship between those parts.[9]

The presented facts which constitute the subject in the judgment contain two groups of elements, those which are explicit in the primary apprehension or perception and those which are implicit.[10] Now the analytic judgment, is on the one hand, overtly the explication of these implications, and, on the other side, tacitly the synthesis of these same elements. The word analytic with its usual connotations as I have pointed out, is incompetent to exhibit this redintegration in the so-called analytic judgment—*overt* introspection (inward looking) with tacit retrospection (outward looking). We likewise discover in the synthetic judgment the same essential dual process. The only difference here is, that the group of presented facts, which again takes its place as the subject in the judgment, is now seen to be a constituent element of the whole which in the primary apprehension was implied. This larger whole now becomes implicit; it is discovered that the subject which in the primary apprehension

[9] This is the now familiar doctrine, so long and so ably defended by Bosanquet. The essential concomitancy of the parts of judgment had of course, been pointed out many times before, in the history of Logic, but no one had ever insisted upon the principle with such repeated emphasis.

[10] It must be admitted, of course, that there is some difficulty in speaking of these elements as being implied in the original datum. The enormously complicated question of the meaning of *implies* is here involved.

seemed single and isolated is in reality correlated with at least one other group of elements into a larger concept, or idea. Thought is continually bringing together at one moment the result of the abstraction of a previous moment. Thought begins with a whole —with reality in some sense grasped as an entirety. It then proceeds to disperse this whole by analysis (not a complete dispersion however) and then gathers the dispersed elements into a whole.[11] We first "grasp the sorry scheme of things entire," then "shatter it to bits" and finally "remold it nearer to the heart's desire."

A vital question now arises which Professor Dewey asks as follows:[12] "Why and how should perfect, absolute, complete, finished thought find it necessary to submit to alien, disturbing, and corrupting conditions in order, in the end, to recover through reflective thought in a partial, piecemeal, wholly inadequate way what it possessed at the outset in a much more satisfactory way?" But no serious idealist has ever been willing to admit that thought is as Dewey says, perfect, absolute, complete, and finished, before it has submitted to these apparently alien, disturbing conditions of judgment. It is not truly itself until it has discovered itself by passing, in a piecemeal fashion, through these seeming foreign conditions. This reflective process through which thought passes is not partial and inadequate; it is the highest type of adequacy, namely, self-completing adequacy. You may try to condemn thought by calling it finite, relative, conditioned, imperfect, fragmentary, since it is obliged to reconstruct reality by the device of judgment. In fact thought will join you in such a condemnation of itself; but forthwith it produces from within the principle of its own self-perfection, by means of which it escapes from all of these self-imposed limitations.

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[11] Bradley has expressed this thought with his usual clarity and vigor: "Analysis is the inward synthesis of a *datum*, in which its unseen internal elements become explicit. Synthesis is the analysis of a latent whole beyond the *datum*, in which the *datum* becomes explicit as a constituent element, bound by interrelation to one or more elements likewise constituent." *Principles of Logic*, p. 432.

[12] *Logical Theory*, p. 45.

In this discussion of the essential identity or at least the inseparable correlativity between analysis and synthesis, it is important to point out that the thought process exhibited in the relationship is one that always involves a *triadic* relation. I have already spoken of the *duality* of the relation but there are really three centers of separate attention. Analysis not only distinguishes each element from the other, but also distinguishes each element from the whole. Also, when we read off the content in the reverse direction, we find that synthesis so combines parts into wholes that the relations of the whole to each of the several parts, as well as of the parts to each other is never obliterated. Both analysis and synthesis establishes and maintains relations, but the relations here involved, I repeat, are essentially triadic, because every such relation involves both a *between* and a *within*. If the relations between two terms A and B, be expressed by R, then W would express the whole within which this relation is embedded, and R, the relation between A and M and also between B and M. The triadic relationship would run thus: A–R–B, A–R–M, B–R–M. While it is true that every judgment is both analytic and synthetic, we may yet assert (without yielding any essential part of the position we are advancing), that judgments of sense are synthetic and judgments of reason are analytic. The former do transcend the sense-presented content; they are more than simple apprehension. The latter always start with a whole or system, in which differences, already existing are further developed.

Some writers have attempted to overcome the apparently vitiating tautology of the analytic proposition by making two classes of so-called verbal proposition—analytic and synonomous.[13] In the one class the predicate aims at an exposition, or analysis of the intension of the subject, for example, *Bodies are extended*, *An equilateral triangle is a triangle having three equal sides*. These are regarded as the true type of what should

[13] Cf. Keynes, *Formal Logic*, p. 50.

be called analytic propositions. They are never tautologies or bare identities and therefore may never be condemned as trivial. Even where the exposition of the intension of the subject is complete and the proposition becomes a definition, such propositions are still to be distinguished from the other group which Keynes calls "synonymous." In this class the predicate is not an exposition of the intension of the subject; it gives information only in regard to the external reference of the subject or is its dictionary synonym, for instance, *Tully is Cicero*, or *A story is a tale*. This is a distinction that for practical purposes may be useful, but it is hardly defensible theoretically. The class of synonomous propositions that is here interpolated, is provided with no precise line of logical demarcation from the analytic and the synthetic class. A third class is not strictly needed. Even in those propositions where subject and predicate are both singular terms we may, and in truth, must regard the judgment, which the proposition expresses as an equating of synonyms, as conforming to the fundamental principle of all judgment, namely, the assertion of an identity in difference. Neither in judgment nor in inference can thought pass from particular to particular; for example the proposition *this* is *that* corresponds to no actual judgment any more than *this* is *this*. We do violence to the real judgment whenever we attempt to interpret it in any other way than that of a universal, exhibiting itself in and through its differences. The challenge to describe these synonomous propositions as either analytic or synthetic can not be met, indeed, if it means that they are to be either one to the exclusion of the other. But they can all be described as analytic-synthetic. Even *Tully is Cicero* or *A story is a tale* are assertions of identity in the midst of a difference; we pass out beyond the judgment at the one link into bare tautology and at the other into falsity.

The results on which we would insist may now be briefly summarized. The relation of judgment to conception is reciprocal. The judgment expands the conception and in expanding

enriches its meaning. It does this by adding new relations to the group of references that it already has. Every judgment asserts both identity and difference. An assertion that is merely identical is no judgment. So, too, if a judgment is merely synthetic, and no bond is perceived between the subject and predicate, that is, if the two are not seen to be embedded within a whole there is no real judgment, but only association. Every judgment purports to be both a unity and a multiplicity. If it did not fulfil its purpose to exhibit an identity, it would cease to exist. But this external unity at which it aims is not inconsistent with endless multiplicity within. The content of judgment, though a single definite idea in any external reference, is when viewed interiorly, capable of manifesting itself in an endless variety of meanings. Judgment is a self-enclosing expansion, a unifying of the many and a multiplying of the one. The reality with which judgment is concerned is a whole, completely revealing itself in each of its parts. Judgment is a unity breaking itself up into a multiplicity and then reasserting itself as a unity. It is the highest type of redintegration. It is both true and false and neither.

III

The first of all the prerequisites for judgment is a world of reality different from, or at least distinguishable from the world of ideas. A judgment always claims to be true. It is idle to talk about judgment until we have distinguished between idea or psychical fact and the reference of idea to objective fact or reality. One of the purposes of these studies is to show how and why this distinction is made. This *claims to be true*, which is one of the several correlated factors in all judgment, might also be described as judgment's intrinsic *necessity*. It would also be equally accurate to speak of it as the *objectivity* in judgment. *Objectivity* in judgment is nothing else than its *necessity*. What we are obliged to think, through this self-compulsion of thought,

constitutes its objectivity. These are truths that the history of Logic has repeatedly been compelled to recognize. No one can understand thought as an instrument of conviction until he has studied it in its relation to its subject matter. There is an interstructural correspondence between thought and facts.[14] Every judgment therefore has objectivity even if it has no object. And such a view of objectivity allows us to say that the conditions of actual and possible thought do correspond with the conditions of actual and possible being, and that, therefore, what we think exists and what we can not think does not exist.

Since judgment always refers to something other than itself, it has been maintained that Logic is the science of thought when engaged upon an object other than Logic. This is a doctrine which I think is entirely defensible although the common understanding of it leads to all manner of contradictions. The living judgment, perhaps, can not become its own object and still live. The Hegelians have always held that immediate consciousness is self-contradictory. For them there is no such thing as the vivisection of a thought. But, continuing this metaphor, may we not say that there can be a postmortem examination of departed thinking by its own resurrected self?

The attempt to make a distinction between the judgment of perception and cognitive judgment breaks down with any careful analysis of psychical facts. There is no difference in kind, on our theory, between perceiving and perceiving that I perceive, or between thinking and thinking that that is one of my thoughts. Idealism of every form declares that objects of thought, just because they are thought, have a different kind of existence from what belongs to them when they are not thought—if that may ever be. Mind is, in other words, in some sense creative. The realist says that the validity of thought depends quite as finally upon the object thought about, as upon the

[14] On this point we are in cordial agreement with the instrumental pragmatist; we differ, as I have tried to point out in an earlier chapter, on the way in which the relation is read off.

thought itself. He contends for a fundamental distinction between idea and object. He grants the idealist's main contention that certain objects of thought do not exist outside of the mind, but he denies that therefore the mind creates these objects. When reduced to its lowest terms and stripped of all unnecessary verbiage, there is, one fundamental difference between the old and new Logic. Every form of idealism has asserted that experience does create its object, that the self does beget the not-self.

Professor Dewey[15] has stated in a very concise form what he takes to be "the point of contact and hence of conflict" between idealism and instrumentalism. The significant sentence reads: "The idealistic logic started from the distinction between immediate plural data unifying, rationalizing meanings as a distinction ready made in experience, and it set up as the goal of knowledge (and hence as the definition of true reality) a complete, exhaustive, comprehensive, and eternal system in which plural and immediate data are forever woven into a fabric and pattern of self-luminous meaning." A liberal idealist could accept this statement by changing the one word "self-luminous" to "self illuminating." This would make the difference between static and dynamic idealism. Thought is not perfect but self-perfecting. Thought strives for something: it needs something apparently beyond itself; it is permeated with wonder, with curiosity, which points to a fundamental defect in its nature. But in this never-ending aim to be a whole, to be self-complete, thought is incessantly discovering that there is nothing genuinely outside of itself. If in this striving for self-completeness, it should actually reach its goal, thought as such would obviously be destroyed. Thought's aim is to get hold of an object as a whole, the separate elements of which it already has. Now it is precisely this self-completion of thought beyond itself, which constitutes the object, the independent thing in every type of realism. In the subject-object relation, then, *the expected self-*

[15] Experimental Logic, p. 22.

transcendency of the subject constitutes the object. Thought moves by means of relations toward a goal which lies beyond relations. The attainment of its goal by transcending relations would be the annihilation of thought.

What Idealistic Logic discovers when it reaches final reality is a whole in which distinctions can be made and are made, but in which the genuine diversity—the bona fide independence—demanded by the New Realism does not exist. The position of modern realism on this central question of Logic can be stated briefly, but with rough justice thus: The perception of relations, which is the fundamental characteristic of the judging consciousness, is a self-contradictory but necessary blending of the one and the many, unity and variety. This relation is unique, logically indefensible and undefinable. Consciousness, it is asserted, has the undeniable feature of immediacy. The idea has hold of its object. This establishes continuity. But equally undeniable is the characteristic of self-dependence, or independence. The terms which consciousness unites in the relating activity of judgment are, in truth, given to it, and not actually made by it. This given reality with which it deals is therefore essentially pluralistic.

But I submit that at this point the modern realist has allowed his dialectic to halt. He has stated only half of the whole truth. The other half is the indisputable fact that this cognition which binds together the many, represents at its center an original underived whole. It is a synthesis, a unity, which is not made by the original differences in the presented facts, but is placed upon them. The whole is not just composed of its parts, it constitutes them and is legislatively sovereign over them. Now it is this characteristic and apparently paradoxical feature of thought that neither the Instrumental Logic nor the analytic realism seems able to surmount. Thought does aim to retain these two features, unity and plurality, and at the same time weld them into a higher harmony. It strives to reach an all-embracing whole

which shall not in any way conflict with the immediate elements. It therefore bestows upon its elements a kind of independence. But at the same time it seeks for elements that shall be subordinated to the entirely independent (i.e., superior) whole.

There is, then, this paradoxical fact about thought and its object; they are two and yet can never be studied in isolation. Thinking, is always thinking about something, and thought can never be divorced from this postulated objectivity and treated as pure subjectivity. This point, which has now so often been insisted upon, seems invariably to be ignored by realists and pragmatists in their criticism of idealism. Thought can never be investigated in abstraction from its objective reference. Such a view as I am here stating, concerning the relation of subject to object, may when taken at its face value, appear to be a concession to the central thesis of pragmatic logic, namely, that the form of thought must wait upon its matter. On this view, it will be asked, how can Logic be regarded as the study of the forms of thought? If the form and the matter are thus inseparable, inter-related in each concrete instance of thought, how can there be any form in general? I cannot think the answer to these questions and the justification of Formal Logic is far to find. Just as we can inquire into the laws of gravitation without examining all the objects that have ever fallen, so we may study the laws of thought without studying all the objects that may conceivably be discovered at the other end of the subject-object relation.

IV

There now arises a question of singular gravity, the central question of speculative Logic through all the centuries. That portion of thought's content which constitutes its meaning or external reference as distinguished from its existence, we have insisted, is a systematic totality. This is what we mean when we speak of the world of all possible objects of thought. How

far into this realm of objective reference must thought go before it can claim finality for its deliverance? One school of philosophy has held that perfect validity of thought would require perfect insight into the objective system. Bosanquet has said, "Ultimately nothing can be rightly known without knowing all else rightly." Others insist that we have some knowledge that is incomplete and yet perfect, and that we can pronounce judgments that are not subject to future revision. The agnostics, from the ancient sophists to the new realists have declared that never in the growth of knowledge do we reach a stage at which we may say, "The evidence is now all in, and the judgment of finality can be pronounced. We do not have perfect control over the object; if we did it would cease to be an object. It is just this alien character that constitutes its objectivity.

The Idealists have always given a decisive affirmative answer to this fundamental question; we do have perfect knowledge in part. Professor Hocking has defended this cardinal tenet of traditional idealism with impressive clarity of illustration. He pointedly tells us that unfinishedness is not itself a blemish, and says: "There are tolerable and intolerable kinds of unfinishedness. A thing is properly unfinished when it is finishable; and it has an identity that finishing will not change. Let an artist sketch a face with all conceivable haste and roughness. The unfinishedness is justified if only it is a thing, if only it has a character and a significance that all later finishing does but develop without displacement or substitution."[16]

The truth about our fragmentary thought, as it comes to us by the pathway of experience, is not that it is imperfect or inconsistent, but that it is incomplete. It is indeed not adequate to the whole of reality, but what it does deliver is genuine. From its one shore, thought bridges the gulf between it and reality by pushing out cumulative cantilever arches, each firmly and unchangeably anchored. It is not a pontoon bridge whose units

[16] The Meaning of God in Human Experience (New Haven, Yale University Press, 1912), p. x.

are swayed by the dashing tide, and whose mooring to the shore may require to be changed as its length increases.

Actuality, which is just one aspect of objectivity, is the *necessitated possible*. This is Bradley's well-known view. The most fundamental law of thought is the law by which we assume that every isolated, unique possibility is also real. In other words, the *uncombatted possible* is the *actual*. This law, cannot be exhibited as the operation of either analysis or synthesis or both correlated, and yet it is a normal, universal way of thought's functioning. Every time reality presents itself as a subject for a possible judgment, and reaches out among the possible predicates, that one of these possible predicates which finally stands alone, either because there are no other possible predicates, or because other competing possibilities have been rejected, is appropriated by the subject. This appropriation elevates the predicate from possibility to actuality. We may not be cognizant of the operation of this law, and may indeed when our attention is directed to its operation, be inclined to disclaim it, but we nevertheless do finally and always owe allegiance to it. Instead of saying that the mind selects one of the several alternatives and so depresses the others, it would be more accurate to say that the several impossible possibilities having been destroyed the single uncombatted possibility stands self-affirmed. The actual, the real, the object, is that which resists the subject. A thing has objectivity if it exhibits, in its own name, any force or necessity.

This doctrine again must not be confused with the teaching of pragmatic Logic, which at first sight it resembles. The Logic of Pragmatism tries out the various possibilities and tests truth by acting *as if*. When the question arises whether the new possibilities which are applying for acceptance are true, or real we must test them, one by one, by acting *as if* they were true, and accept in each instance those that work in with the old. But this pragmatic test of truth, as I have shown elsewhere, assumes

the rationality of the old, and asserts that the new which works in with this, is true. Of course, if we start with an original matrix of truth, then whatever this accepts as true, will be true, and whatever it rejects because it does not work, will be false. But the Pragmatic Logic is incapable of endowing this original mass with the essential truth necessary to make the principle *as if* operate. Bradley's doctrine does on the surface seem identical with the pragmatic test—wherever a suggestion is not rejected by the facts with which we start, or again by some other suggested quality, and we are left not with disparate possibilities, but with one *uncombatted maybe*, that suggestion must always be taken as fact. The facts with which the pragmatist starts are not possessed of universality; with Bradley they are. He says: "The striving for perfection, the desire of the mind for an infinite totality is indeed the impulse which moves our intellect to appropriate everything from which it is not forced off." Possibility is a kind of necessity, and consequently there is no difference in kind between the problematic and the apodeictic judgment. A thing is possible when at least one of its conditions is present, and actual when none of its conditions is absent.

V

As a typical illustration of the sceptical attitude of the new movement toward reality, objectivity, or necessity, we may quote two Protagorean passages from Professor Sidgwick: "Absolute truth is never attained but that further improvement is always possible." "There is no need to make any pretence of securing infallibility of judgment, even in a single instance. If Absolute Truth means Truth as it would appear to a superhuman mind, how can we presume to have reached it? Or, if by any chance we did reach it, what means would we have of distinguishing between it and the truth that merely suffices for human purposes?"[17] The modern idealist always replies to this agnosticism

[17] Elementary Logic, pp. 123, 170.

in the spirit of Socrates' reply to the ancient sceptics. Knowledge has this peculiar paradox about it: We have a criterion of truth—we know what valid knowledge ought to be; and yet we can never in our practical experience reach any such knowledge as is guaranteed by this criticism of validity.

Professor Sidgwick's own statement that "absolute truth is never attained but that further improvement is always possible" is itself an illustration of this "self-perfecting" criterion of knowledge. When we assert that further improvement is possible, we imply a criterion of stable values, or else the word improvement does not mean what it purports. Improvement and progress are indeed dignified words but no one has any right to use them, either in Logic or Ethics, who does not admit something absolute, some definable standards of value. The modern enemy of Traditional Logic and Ethics declares that knowledge is limited to a world of comparatives, whose superlatives are never in sight. We do not know the beautiful, the true, the right, and never can know them, for there are no esthetic, logical, or ethical standards. We simply have knowledge of the first two degrees, namely, the good and the better; and from these as a base we must triangulate our journey. But in full view of all the many indictments the idealist still asserts, with renewed emphasis, that any genuine improvement implies direction, a goal. If we are in the least degree uncertain about the goal, we must in the same degree be uncertain about the improvement. Improvement is not measured in terms of mere movement. We can be much "on the go" without making any improvement—witness many aspects of our present civilization. In other words, briefly, improvement is estimated not by the distance one has gone, but by the distance one has yet to go.

"There are probably few people at the present day," says Sidgwick, "who would confess to holding that the general rules by which our thoughts and our lives are mostly guided deserve to be applied through thick and thin."[18] One may agree with

[18] *Elementary Logic*, pp. 160, 161.

this statement so far as the word "mostly" is concerned, and admit that humanity does depend for its practical faiths very largely upon insights that are transitory, partial and for the most part subconscious. We act most often before the arrival of certainty and under the guidance of shifting standards. But surely Professor Sidgwick must believe in some things that abide. Can the solemn agreements among men never be final? Is there no pact that deserves to be applied through thick and thin? If not, then the most pragmatically consistent of the nations in the great world-war is Germany. A treaty is indeed merely a scrap of paper to be respected only so long as it is convenient to respect it.

Another illustration of how the pragmatist fails, it seems to me, to grasp the idealistic notion of a self-perfecting control of the object, I may quote from Mr. H. O. Knox: "We simply deprecate as futile the assuming of a transcendent and absolute reality as the standard to which our actual judgments are to correspond. For (*a*) if an absolute standard were available for actual comparison the comparison itself would be purely superfluous. We should already be *de facto* in possession of absolute and infallible certitude. And (*b*) to say, that reality is transcendent is simply to say that it is not available as a standard at all"[19] This is clearly a restatement of the ancient paradox of the apparent futility or idleness in judgment which I have attempted to answer in the chapter on "The Import of Judgment."

All necessity is in the end conditional, since every *must be* rests back upon a *because*. All objectivity is in the end subjectivity since reality is continuous and since the thinking self (*apud Cartesianism*) is the initial indefeasible reality. If the object lay genuinely outside the system of thought it could never be reached by thought. The knowing process does not involve a transition from subject to object; it consists in a progressive

[19] *Mind*, n. s., XVIII (1909), 602.

analysis and development of the objective aspect of the total continuous reality. This view will seem to resemble Professor Dewey's account of the *subject-object* relation. He writes: "The distinction between subjectivity and objectivity is not one between meaning as such and datum as such. It is a specification that emerges, correspondently, in both datum and ideatum, as affairs of the direction of logical movement."[20] There is, however, an essential difference between this position and that which I have now urged from several points of view in these pages. A cross-section of the stream of consciousness in Professor Dewey's doctrine, it seems to me, does not raise the vital question of the correspondence or coherence in the longitudinal section of the thinking process. No matter how completely we may seem to explain the subject-object in any situation as the meeting point of converging forces, we still need the help of a principle outside of the pragmatic movement to explain the identity that persists in the spatial or temporal series. Spatial judgments are far from being as particular or factual as on the surface they appear to be. Every *here* contains a *there* and hence it is never a particular. Spatial references in judgment are always universal. There is never given to thought a genuine *this* or *that*, but always *thisness* and *thatness*. We may say the same of our temporal judgments. It has justly been maintained that every present includes a past, and therefore no temporal judgment can be strictly particular.

[20] *Experimental Logic*, p. 55.