UNIVERSITY OF CHICAGO CONTRIBUTIONS TO PHILOSOPHY

No. II.

[FROM THE SEMINAR IN LOGIC]

THE NECESSARY AND THE CONTINGENT IN THE ARISTOTELIAN SYSTEM

BY

WILLIAM ARTHUR HEIDEL, PH.D.,

(DOCENT IN PHILOSOPHY IN THE UNIVERSITY OF CHICAGO)

CHICAGO

The University of Chicago Press

1896

UNIVERSITY OF CHICAGO CONTRIBUTIONS TO PHILOSOPHY

No. II.

[FROM THE SEMINAR IN LOGIC]

THE NECESSARY AND THE CONTINGENT IN THE ARISTOTELIAN SYSTEM

BY

WILLIAM ARTHUR HEIDEL, PH.D.,

(DOCENT IN PHILOSOPHY IN THE UNIVERSITY OF CHICAGO)

CHICAGO
The University of Chicago Press
1896

THE NECESSARY AND THE CONTINGENT IN THE ARISTOTELIAN SYSTEM.[1]

The distinctions taken between the necessary and the contingent, in philosophical discussion no less than in common life, are ordinarily supposed to be so definitive and are permitted so deeply to influence our conceptions that it seems well worth one's while to examine them in their origin. And the Aristotelian system[2] will best serve our purpose as a *corpus vile* for very obvious reasons. In the first place, Aristotle is the earliest systematic philosopher who essayed to treat consistently of all the greater problems of life and thought, and whose works remain to be studied. His method, too, was such that, standing as he did just on the verge of formalism, the definitions which he attempted still bear definite traces of the purely functional meaning of those terms, while his formulation of their significance has led naturally to their solidification as objective facts in the world. For Aristotle was wont to preface his own conclusions by inquiring, rather superficially to be sure, into the psychology of the conceptions in question; yet, while the inadequacy of his psychology is now admitted on all hands, the inferences as to fact which he deduced therefrom are even now in part accepted as conclusive. When one reflects upon it this state of the question strikes one as absurd. For this reason there appears to be the greater justification for an analysis of the presuppositions on which these conceptions rest. If one grants their validity, the conclusions and the resultant contradictions of the system must be accepted as ultimate. But I am convinced that Aristotle's presuppositions and his real problems were wholly unreconcilable with each other, and

[1] Professor Dewey's article on "The Superstition of Necessity" in *The Monist*, III, 362–379, has given a very acute analysis of Necessity, which I take as my point of departure.

[2] I say "*the Aristotelian system*" rather than "*Aristotle*," because I do not wish here to discuss the genuineness of some of the works which I shall have to cite. This is the more justifiable because, even if spurious, they merely develop Aristotle's position.

so his contradictions serve all the better to point out the direction in which their solution lay.

Plato made the acute observation that surprise is the beginning of philosophy, and Aristotle appropriated and further applied the thought.[1] The full sweep of the truth contained in these words is vastly greater, however, than they knew. The feeling of wonder is indeed the point of departure for philosophy; but what precisely does it mean? It indicates first of all that an old habit has been broken up. Old conceptions, like the proverbial old bottles, have become so surcharged with the new wine of meaning that they have burst. But to say this is to describe the phenomenon merely as a brute fact without according it any symbolic value. This state of surprise must acquire an ideal worth, an indicative function, if it is really to become the parent of philosophy. Briefly, then, we may say: *surprise indicates the need of reconstructing our supposed facts.* And this statement is to be taken at its full value, with all its implications, if philosophy is to be achieved.

First, then, as to what is implied in this demand for a reconstruction of fact. Most assuredly, what is required is not the mere multiplication of *facts*. Multiplication of facts will serve to diversify the world, but not to unify it; and unification of meaning is the goal of philosophy. What we need, therefore, is not so much more facts as a richer fact. Truth, I suppose, and reality are synonymous, and Truth is not many, but one. Truth and reality are present, if anywhere, in concrete experience; and through the functional (not abstract) definition of this concrete experience a richer, but still unitary and concrete reality is attained in experience. The falsity, the abstraction, results from the multiplying of words,—a darkening of counsel with words without knowledge. Why, then, this multiplicity, if multiplicity is false? The true multiplicity is that of division, not that of multiplication. It comes about naturally and legitimately in the definition of experience, just as, and for the same purpose as, in scientific experimentation. In order that we may get control of the fact, in order that we may make it symbolical or serviceable, it needs to be made out in detail as to its value. We have, therefore, to single out this phase and that,—these

[1] *Vide* Plato, *Theaetetus*, 155 D, and Zeller, II, A, 610, n. 3; Aristotle, *Metaph.*, 982 *b* 12: διὰ γὰρ τὸ θαυμάζειν οἱ ἄνθρωποι καὶ νῦν καὶ τὸ πρῶτον ἤρξαντο φιλοσοφεῖν.

phases to be understood as the construction of selecting mind under the direction of interest,—and to apply to each certain definite tests, according to the end which for the time we have in view. When we have finished our survey of the fact thus analyzed and have definitely noted it as answering to such and such particular ends, we hasten to recompound it in the completer definition. To each of these phases or aspects, thus abstracted from the concrete whole for practical purposes in the definition of fact in terms of means and end, we apply a name; and after we have *practically* restored the unity in our enriched experience of fact, our functionally erected abstractions remain, as fossilized in the words, to haunt us as so many "things" or as "qualities" which merely "inhere" in them. The mind's economy is such that when it has once found an "open sesame" with which to unlock one of life's multitudinous doors, it tends to hold it fast and to use it on all occasions rather than trust to finding it again on occasion.

But we must insist that this multiplication of words and so of "things" is purely a practical device for practical—not theoretical—ends, and is, therefore, justified only of its children; justified, that is, only in the service it actually performs in the enrichment of experience. Yet this practical enrichment results in theoretical embarrassment, if it merely erects new facts instead of reconstructing the *one fact*.[1] From this point of view we may judge the folly of that inane practice which endeavors to cashier every new experience by merely naming it. My sophisticated friend, for example, who dashed my youthful rapture at the sight of an extraordinary meteorological phenomenon by calmly labeling it "sun-dogs" rendered me thereby, if possible, somewhat less a philosopher without making me a better scientist. If he could have shown me *how* those four seeming suns were one, and *how* the presence of ice-crystals in the atmosphere was just the meaning of that gorgeous pageantry of rival parhelia and broken solar halos, he might have accomplished something more worthy of his vaunted knowledge.

[1] Something like to this is indicated in Royce's *The Spirit of Modern Philosophy*. See particularly the example drawn from the experience of St. Paul on Malta, *ibid.*, p. 402. The case well admits of further analysis. If Paul's companions had solved the question suggested by the natives calling him a god, they would have stated fully the relation of man to God in the universe and thus have solved the problem of religion by realizing it.

If, then, surprise is thus the beginning of philosophy, its goal must be the elimination of surprise: for this feeling, as we have seen, indicates the need of reconstructing the fact. And this is probably just what Aristotle intended by saying that this state must revert into its opposite in such wise that wonder would be excited *if* such were not the fact, that is, if a further reconstruction were required.[1] He states this problem in terms of possibility: if this hypotenuse were *commensurable* with the sides of the triangle, if a common unit *could* be found for them in terms of which it *could* be directly measured. Even here then the implication is that we have attained a *necessary* truth, which *could not be otherwise.*[2] It is, however, sufficiently clear at the outset that nothing is gained by denominating it a necessary truth over and above what is meant by stating it to be *the truth.* When we have attained the complete definition of the truth, it is clear that everything inconsistent with it is false: and then we say with perfect assurance that nothing else *can be* truth, since this is precisely *the truth.* Every stage short of this of completed description reveals its functional value in the elasticity or ambiguity of its reference; it characterizes itself as opinion relatively well or ill founded. When knowledge is achieved, when the fact is fully made out in all its details, it merely *is* the truth; before its attainment this or that definition or statement regarding it *may* or *may not* be true: as certainty grows upon our minds, while as yet we have not quite adjusted all the elements which go to make up the whole, we say it *must be* so. Hence "contingent" and "necessary" truths relate not to objective fact at all, but merely register the degrees of adjustment in our judgments of fact previous to their settling down into a simple categorical assertion. To say, therefore, that opinion or empirical experience attains the "that," while scientific knowledge gives the "why," is to utter a partial truth as viewed from the subjective side, but is

[1] Aristotle, *Metaph.*, 983 *a* 12 ff., esp. 17: *δεῖ δ'εἰς τοὐναντίον . . . ἀποτελευτῆσαι, καθάπερ καὶ ἐν τούτοις ὅταν μάθωσιν· οὐδὲν γὰρ ἂν θαυμάσειεν οὕτως ἀνὴρ γεωμετρικὸς ὡς εἰ γένοιτο ἡ διάμετρος μετρητή.*

[2] Aristotle calls such truths *ἀίδια, μὴ ἐνδεχόμενα ἄλλως ἔχειν.* More of this anon. Knowledge is thus made coextensive with the necessary: *cf. Anal. post.*, ch. 4: *ἐπεὶ δ'ἀδύνατον ἄλλως ἔχειν οὗ ἐστὶν ἐπιστήμῃ ἁπλῶς, ἀναγκαῖον ἂν εἴη τὸ ἐπιστητὸν τὸ κατὰ τὴν ἐπιδεικτικὴν ἐπιστήμην . . . ἐξ ἀναγκαίων ἄρα συλλογισμὸς ἐστιν ἡ ἀπόδειξις.*

wholly false when the distinction is objectified. That is to say, the "that" and the "why" are more truly applicable to the degrees of deliberate assent than to characteristics of outward things. Opinion does indeed apprehend a fact, but only an incomplete and hypothetical one; knowledge merely goes on to state it as a fact more fully defined and assured. Aristotle draws the same distinction between sensation and intellection,[1] but this, too, holds good only with the same limitations, namely, as expressing the truth that the percept, as well as the concept, has meaning only in so far forth as it is symbolical, that is to say, when it becomes a means to an end. In its implication that the sensation is not itself a construct, and as such possessed of *a* meaning or reference, it is radically false. To be sure Aristotle inclines to view even the concepts, especially the more generic, as mere facts there once for all, which the mind has no power to transcend because it merely intuits them; and so he comes to regard them, despite his opposition to realism, as opposed to concrete fact.

To return to our starting point after this apparent digression: I have said above that Aristotle's presuppositions were fundamentally in contradiction with his real problems. In order to make clear the meaning of this assertion, as well as to prepare the way for a somewhat detailed examination of the Aristotelian system, it will perhaps be well to sketch in as few words as possible the preceding course of Greek thought which defined and conditioned the direction of the further advance.

Greek philosophy began with speculation rather than with experiment. It may facilitate the taking a comprehensive view if we state the progress in logical terms and employ the scheme of the judgment. In this form the subject will be the world or "things"; the predicate will be represented by the ἀρχή, or principle; and the copula will be the method of mediation by which you pass from subject to predicate or from predicate to subject. It is clear that in logical terms the former movement is that of induction, and the latter that of deduction. In the practical sphere, or rather in its true inner meaning, induction is only the process of setting up an end by a provisional survey of the means, in such wise that the quality abstracted and expressed in the predi-

[1] See *Anal. Post.*, I, 31.

cate is precisely that mark which you are interested to realize in the fact, or the subject. Deduction, then in turn, is the reversal of the process, in that you begin with the end as accomplished or conceived as accomplished, and define the means in terms of it; see, in other words, whether this particular is a means to that generic end. Thus viewed, it is at once apparent that the movement pursued by the Milesians, the Pythagoreans, and the Eleatics, is that of a hasty induction. Very little effort is made to elaborate the copula or the problem of the cosmic process.[1] It is even quite possible that Anaximenes was the first to assert that this process was that of condensation and rarefaction, and even here we are dismissed when we attain what were later called the "elements." Anaximander, indeed, seems to mark the dawning consciousness of a deeper problem for philosophy; that, namely, of attaining a predicate from which it is possible to explain or *derive* the subject. His ἄπειρον, therefore, and the process of ἐκκρίνεσθαι are rightly to be considered as among the first truly significant problems of philosophy; for they point out the need of a fruitful method of deduction. It is at least interesting, and perhaps not wholly wanting in deeper suggestiveness, that the first consciousness of this demand should have been accompanied by the original though extremely meager sketch of organic evolution, which applies just this method of deduction.[2] As for the Pythagoreans, it is needless to insist that they made no serious effort to explain or derive "things," and the Eleatics employed dialectic, their copula, only as a means to explain away or annihilate the subject, which was too infinitely rich to be accounted for by the blank conception of immovable space-filling matter.

Empedocles, Anaxagoras, and the Atomists occupy much the same logical position as Anaximander. They address themselves

[1] Windelband, pp. 47 ff., Engl. Transl., has brought together the conceptions which relate to the copula in section 5, under the caption "Conceptions of Cosmic Processes."

[2] If Anaximander really was the first to employ ἀρχή as a philosophical term (*cf.* Zeller, I⁵, p. 217, n. 2) this fact would fall in very well with his logical position. At all events it is clear that Thales was far more interested in the question "What *is* the world?" than in the problem "*How* is the world *water?*" This very fact marks the abrupt breaking away from the merely temporal ἀρχή as it was set forth in the cosmogonies.

equally to the working out of the predicate and to the derivation from it of the subject. But as they allow only for quantitative change they cannot account fully for things as they appear in perception, and consequently they are driven to denounce sense as fallacious. Thus they come in the end to agree with the Eleatics; the inductive movement is assured, but the deductive lags. Heraclitus, however, holds a place apart; for in his system the copula, the cosmic process, has absorbed all that is real. Subject and predicate, taken as permanent entities, both completely disappear, and in their room stands the eternal law of change. This, his only reality, he calls εἱμαρμένη, Fate, or Logos.[1] Amid all the endless flux of things there runs an adamantine thread of rationality, and when he calls this Fate, it is sufficiently clear that necessity stands with him only for the insistent "*Is*" which defies the vanity of nothingness. And when the Atomists assert that the tumultuous motion of the atoms in the void is regulated by ἀνάγκη, this expression means precisely what has been said above: it marks the growing assurance of definiteness with a residue of the unexplained. This residuum is indeed taken account of in the same breath, in the confession of something "tumultuous" or "irregular" in their motion. Anaxagoras is doubtless to be regarded as the originator of conscious teleology[2] in Greek thought, and to him we must look as the source of that most fruitful conception which met with great favor on the part of the dramatic poets, chiefly of Euripides, and through Socrates passed over into the systems of Plato and Aristotle only to become the plaything of the Stoics.

The Sophists then appeared, "men of no system but surveying all," only to find a multitude of ineffectual predicates applied to the world. By the rivalry between the schools and the publication of hand-books of dialectics like those of Zeno and Melissus, the weaknesses of the several philosophies became known to the general educated public, and the appearance of the τέχναι ῥητορικαί, which form a complete parallel to this dialectic, disseminated still more the art of logic-chopping which served only practical purposes and defeated theoretical ends. Then came the application of the

[1] See Heinze, *Die Lehre vom Logos*, pp. 1–57.

[2] Dümmler in his *Akademika* has treated of this subject, but his work is unfortunately not trustworthy.

Heraclitic doctrine to the subject after the predicate had been summarily dismissed. Protagoras, indeed, still regarded some feelings[1] as valid, but he proceeded quite evidently on *the supposition that a state must exist;* that is, he accorded to these data of experience, as he thought, an absolute reality, but still he could not vindicate it for them except as they were accepted as means toward an end. And herein he laid bare the only satisfactory criterion of truth and reality. But his successors disclaimed this or any end as valid, and so reduced *νόμῳ* and *φύσει*, particular and universal, to one, namely, the unmeaning brute impulse of the moment. Thus there is neither predicate nor copula: only a would-be subject remains to which is denied all valid ulterior reference, and so in a true sense not even a subject is left.

It was just here that Socrates took his stand. For he accepted the challenge of the Sophists to fight the battle on their own ground, conscious that in order even to defend their position they must have a real subject and *eo ipso* a real predicate. In other words, Socrates had seized upon the logic of Protagoras' demand for the validity of certain data of consciousness, and, being an intensely practical man as well as a philosopher, he saw that in order to right action knowledge is necessary, and a real predicate in order to knowledge. "Granted," we may conceive him saying, "granted that we have only the subject, the percept, our problem is then to find the predicate, the concept." Socrates, that is to say, represents purely and simply the attitude of the mind in surveying the means at its disposal with a view to finding the end.[2] This is precisely the

[1] These, according to Plato's *Protagoras*, 320 C ff., were *αἰδώς* and *δίκη*.

[2] All of the characteristic expressions and aims of Socrates fall definitely into line with this position. His self-examination (*αὐτὸν ἐξετάζειν*), his intellectual midwifery (*μαιευτική*), his irony, his confession of ignorance, clearly indicate his being occupied with the subject. So, too, his favorite injunction *γνῶθι σαυτόν* and its correlate *σωφροσύνη* characterize the need of keeping close to the means in order to find out just what they *are* or stand for. We readily see why it was that Socrates did not hypostatize the concept, as Aristotle tells us; for he had not fairly attained it: he was just *seeking* it. Even his definitions were only tentative, like those in the minor Platonic dialogues. Socrates' conviction that virtue is knowledge likewise represents just this stage in the development of judgment. Intellection is not coextensive with right action, but is only a moment in it. It comes in at the point when the self is defining itself as means to ascertain its legitimate end and defining the means, in turn, in terms of the end. It can, therefore, be made synonymous

meaning of his *search* for definitions, and Aristotle was certainly right in singling out induction and definition as the specific contribution of Socrates to the history of thought.

Necessary and helpful as Socrates' procedure was, it was undeniably fraught with serious consequences for all subsequent thought. In order to prove that certain conceptions were valid, he thought it necessary to discover them in the minds of all: but this inevitably led to seeking out these notions by eliminating as *non-essential* every mark which was not everywhere present.[1] The result was the abstract and relatively contentless concept.[2] This view completely dominated ancient thought, and even now it is not wholly a thing of the past. Socrates, however, did not hypostatize the concepts, but this, as we have said, was chiefly due to his not having fairly attained them. In like manner, he regarded the Good as purely functional and relative, giving it no precise definition;[3] for his position, as we have seen, was on the side of the means, or subject. But his followers did hypostatize both the Good and the Ideas, the Megarians calling Virtue or the Good the only real. Hence it is clear that the standpoint of his successors was for the most part on the outcome of his search, on the predicate, and their problem will be seen to be just the reverse of his. Aristippus and Antisthenes are the only real exceptions, and Aristotle fitly classed the former as a Sophist.

It is quite common to suppose that there was a period in Plato's philosophizing when he had not reached the standpoint of his

with right action, which it assures, only if the concrete act is broken up and this one phase is set off as the whole. This appears to me the truth that underlies the rather complicated criticism of Socrates' views of the ἀκούσιον in the third book of the *Nicomachean Ethics*.

[1] This is the natural consequence of admitting, as Socrates virtually did, the correctness of the Heraclitic views of sensation. *Cf. Sext. Empir.*, VII, 131 ff.

[2] Hence Aristotle must unite the καθ' αὐτό and the κατὰ παντός or ἐπὶ πᾶσι in every true καθόλου. See Prantl, *Gesch. der Logik*, I, p. 167. The confusion thence arising regarding general or universal notions is rather pathetically illustrated in Locke's polemic. Occasionally Aristotle employs the word καθόλου in the sense of "*indefinite*" (*cf.* Zeller, II, B, p. 199, n.) and it is a pity that he did not see that that is its precise meaning. Had he recognized this point, we should probably not have been afflicted with a "formal" logic.

[3] See *Xen. Mem.*, III, 8.

theory of Ideas.[1] This *may* be true so far as concerns his hypostatizing the Ideas, but it must be plain that from the outset he assumed, in common with other Socratics, the result of Socrates' enquiry, to wit, the concept as something real and of all things most important. This position once attained, the further consequence was a mere matter of detail;[2] and after the bearings of the new standpoint were canvassed and brought fully to consciousness,[3] there was but a single choice to make. Either Plato had to deny utterly the reality of all individual things, as did the Megarians, or else his life problem must be the mediation of the Ideas back to the world of sense. The mere fact that he refused to assent to the Megarian Good or the undifferentiated unity of abstract Being, and insisted on postulating a multiplicity of Ideas only teleologically, not logically, subordinated to the Idea of the Good, shows unmistakably which alternative he accepted. Henceforth the direction of his philosophy was clearly determined. He did not indeed succeed in bridging the chasm created by the dialectic of Socrates, but he spared no effort in his desire to do so. Thus in the *Sophist* he endeavors to annul the blank negation of the concrete and to charge the Ideas with causality in order to make them serviceable for explanation. To be sure this abstract logical effort failed; for indeed it was predestined to failure from the moment that Plato accepted the Socratic concept for his Idea. But in the practical sphere, where futile abstractions do not acquire so firm a footing, Plato, like other philosophers, came nearer to a solution of his problem. In the *Republic* and the *Laws* he made a very considerable advance toward mediating the Idea of the Good to the concrete world of fact,[4] and in the

[1] This supposition appears to me to be very doubtful. It could only apply to the minor dialogues, in any case; and in calling them "Socratic" we already exhibit their real character as dialogues of search in which, in imitation of Socrates, Plato stated no definite conclusions. Yet, even here, it must be owned that he always *suggests* a doctrine which he does not elaborate.

[2] Altogether the hypostatizing of the Ideas was not Plato's absorbing interest, as some take it to be. It was really only the consequence of his accepted standpoint, and where other enquiries are prominent the Ideas are treated merely as general notions. *Cf.* Shorey, *De Platonis Idearum Doctrina*, etc., Munich, 1884.

[3] It appears to me that this is precisely the position in Plato's philosophizing which the *Parmenides* represents. The attacks directed against its genuineness are all based upon a failure, I think, to comprehend just what Plato had to do.

[4] See Heinze, *Lehre vom Logos*, p. 65 f.: "Wie in der Republik die Gestaltung

Philebus he essayed with equal success, in the sphere of ethics, to mediate between pleasure and knowledge.

It is only too evident, therefore, that the logic of Plato's position rendered his problem incapable of solution, just as that of Protagoras excluded a valid end or ideal. As hedonism, even, was an advance on the standpoint which abstracted the means, *i. e.*, the percept and the pleasure-pains, and declared them means to no self-justiying end, so the partial capitulation to hedonism in the *Philebus* betokened the abandonment of the extreme intellectualism which was the logical outcome of the theory of Ideas. Aristotle merely continued to work at Plato's problem with very indifferent success. His criticism of the Platonic doctrine of Ideas amounts in the end only to this: that it renders mediation, which he desires no more and no less than Plato himself, utterly impossible,[1] while it contributes nothing toward a knowledge of concrete things.[2] Precisely, then, as Plato had assumed

des guten im Staate dargestellt wird, so soll im Timaeus nachgewiesen werden, auf welche Weise die Idee des guten im Weltall zur Verwirklichung kommt." In the Timaeus this effort at mediation is confessed to be a theoretical failure, for it is designated as a witty guess. The World-Soul is the chief means of mediation in the world of things. In the *Laws* the Ideas are not mentioned as such at all, but in substance the Idea of the Good is there. If Plato ever did resort to mathematics to any considerable extent, and if he then placed the μαθηματικά between the Ideas and things of sense, this would only be another illustration of the deep consciousness of his problem. It would seem that he did not perhaps employ mathematics in an altogether serious vein, but merely, as in the analogous physical disquisitions of the Timaeus, to show that there was *a* way of mediation left open if one resorted to the abstract speculations of the Pythagoreans. It was but natural that the Old Academy took up this half-serious endeavor in full earnest.

[1] See Zeller, II, B, 296, ns. 2–4, and 297, n. 1. When Aristotle complains that the Ideas are not an efficient cause his criticism strikes his own prime mover or God equally, and hence his objection that the Ideas are not even the final cause is wholly unjustified. Plato's Ideas are Ideals also, and as such they serve for his teleology quite as effectively as Aristotle's God. It is only too evident that Plato was far more conscious of the weak points of his system than Aristotle was of his own. If critics would come to recognize this there would be less finding of mare's-nests. Almost all of the arguments alleged against the genuineness of the greater Platonic dialogues are born of this misunderstanding. Once it is fairly considered that Plato was far more interested in mediating his Ideas back to the world than in hypostatizing them, it must be apparent that he could not do otherwise than develop the difficulties inherent in his doctrine. The difficulties he thus started, like the now famous τρίτος ἄνθρωπος, his critics quite naturally harped upon to the evident entertainment of their modern successors.

[2] See the passages cited by Zeller, *ibid.*, p. 297, ns. 2 and 3.

as given or assured the standpoint toward which the Socratic search pointed, *viz.*, *that the concepts were valid and the only objects of knowledge*,[1] so Aristotle laid hold on the conclusion which plainly lay immanent in Plato's persistent efforts at mediation, namely *that the concrete was real.* There can be no question as to which of the two was the more consistent. In fact, Aristotle's thorough-going dualism and the fundamental contradiction of his system lie just in this, that he accepted the outcome of both these movements as final, accepted, that is to say, a fixed given concept and an equally fixed given percept, and utterly failed in his endeavor, if such it may be called, to attain a higher principle to which both were only relative. If, on the other hand, his theory of induction marks little or no advance upon that of Socrates, while he elaborated the deductive process or syllogistic reasoning to an all but definitive form, this circumstance finds its explanation in the direction of his interest. As merely continuing the movement from the universal to the particular which was inaugurated by Plato, his attention was centered on the concrete which he regarded as the only real; and the syllogism is only the abstract formulation of the process of deducing the particular from, or subordinating it to, the general.

This fact, taken in conjunction with the other that Aristotle is particularly interested in empirical investigation,[2] will serve to define his standpoint still more clearly. Knowledge, he is convinced in common with Plato, is to be had only on the basis of a discovery of ideas, but these are to be found, he believes, not outside, not by a

[1] Aristotle is fond of asserting that demonstrative knowledge deals only with the eternal, ἀΐδια, but at the same time he rallies Plato for making the Ideas only "immortal sensibles," because the Idea of a man has only the same content as "man in general"! *Cf.* Zeller, *ibid.*, p. 293, n. 4. This is a good example of his psychological crudities. He calls "man in general" a φθαρτόν, and yet knowledge, which deals in universals, has to do only with τὰ ἀΐδια; and one really sees "man in general," just as we find him asserting that the entire minor premise — a judgment — is given in perception, particularly in the practical syllogism. *Cf.* Zeller, p. 238, n. 2, and p. 584 for examples. With such wholesale acquisition of highly complex elements by perception and an equal immediateness in the intuition of the highest concepts, a special need for fertility in the intellectual process is satisfactorily set aside.

[2] It is perhaps worth noting here in evidence of Plato's movement toward the concrete that most of his followers, not Aristotle alone, displayed a great interest in scientific research.

movement away from, but within, by a movement toward, the concrete. The concept, in other words, is to be gained by *defining* the particular. But just here we discover the bad influence of the Socratic induction, proceeding as it did by the elimination of the non-essential, without being fully conscious of the meaning of this exclusion. For Socrates, indeed, because he had yet to *find* his concept, the particular still possessed a positive value. It was the *nature* of the particular, in fact, which constituted the concept. But Plato was, as it were, a traveler going over the ground for a second time. The concrete things of sense had for him only a negative worth, as affording the *occasion* or the suggestion for remembrance of the end attained or enjoyed before.[1] Aristotle's induction also is of this essentially negative and barren character, so far as he is conscious of it in theory; for by means of it he reaches only the foregone conclusion of his highest intuitive principles. And it is clear that this result was due not to his logical position, but to his psychological bias or preconceptions. Given a psychology that considers the concrete object as presented intact by sense-perception and the highest genera as merely envisaged or intuited by the reason, instead of recognizing both as mental constructs, and the conclusions of the Aristotelian system, incongruous as they are, follow by a logical necessity.

Viewed from a practical standpoint the exclusion of the non-essential from the concept is not only justified, but it even indicates a truth which ought to lead to the destruction of the theoretical category of "things" and so of the "given." When we are engaged in realizing an end which we have set up after a preliminary review or examination of our means, we find in our experience as presented in memory certain clusters of qualities which we commonly denote as things. These clusters are the net results, so to speak, of innumerable previous experiences, in which these "things" did service as ends in themselves or as means toward further ends. We cannot too gratefully acknowledge the serviceableness of this our minds' economy, by which our experience and, therefore, our whole fund of materials or means for future action is definitely organized so as to obviate the fatality of depending on more or less chance

[1] This I take to be the logical significance of Plato's doctrine of ἀνάμνησις and συναγωγή.

suggestions. The essential point, on the theoretical side, is to recognize that what "man makes he breaks," or that he may and in fact does readjust these clusters of qualities, according as this or that content is peculiarly desirable for a particular end, though he need not, and, if wise, will not, utterly destroy the whole outcome of his former experience for the sake of an immediate purpose. It is precisely this regrouping of qualities by discarding those that are for the nonce indifferent or "non-essential," which is effected in the subordination of a particular to a universal through the intervention of an intermediate act. Spun out and cast into the form of judgments this process is what we call syllogistic reasoning, in which a particular conclusion is deduced from the major premise through the mediation[1] of the minor. When our immediate end is accomplished we look back over our work and put the materials at our disposal in readiness for future action. Then we reconstitute our world of "things" much as it was before, except that it has become enriched by the added mark of being good for such and such purposes; and forthwith we are confronted by a problem wholly of our own making. The previously discarded qualities, now again seen in the "things," are classed as "accidents" as opposed to the "essence." This once done, the arena is prepared for all the fruitless battles that have been fought over substance and attribute and inherence. When we say that something is "given" we mean only that it is at our service; but to infer that because it is here it has always been what it is and must always remain such, is not only to forget the way by which we came, but also to cut off all hope of advance in the future.[2]

Now this, I take it, is precisely what Aristotle has done. The concept, as we have seen, was received as a legacy of mere fact from

[1] It is interesting to note what an importance Aristotle attaches to the *μέσον* in research. See, *e. g.*, *Anal. Post.*, 90 *a* 5 ff.: *συμβαίνει ἄρα ἐν ἁπάσαις ταῖς ζητήσεσι ζητεῖν ἢ εἰ ἔστι μέσον ἢ τί ἐστι τὸ μέσον. τὸ μὲν γὰρ αἴτιον τὸ μέσον, ἐν ἅπασι δὲ τοῦτο ζητεῖται.* See also *ibid.*, 94 *a*, 20 ff. This mediation on the practical side *is* precisely, as Aristotle half suggests, the getting of the essential, *i. e.*, indispensable means not already in our control; and when the fact is analyzed after the attainment of the result this means is denominated the "cause," while the other less important means take rank as "conditions." The "conditions" are the "accidental" or "non-essential."

[2] I shall hope to show later on that this psychological fallacy is at the base of the distinction between the necessary and the contingent.

the Socratic movement, and the percept became fixed in like manner by the Platonic. Aristotle then assumes both these limits of the intellectual process as finally set up and immovable, leaving as a sphere of alleged free movement only the interval between them.

But it must be evident at first glance that a process which is supposed to be vitally connected with, and bound to, these stable points can accomplish a progress that is such in name only. And this status is seen to present itself in manifold forms in every sphere of Aristotle's system, and marks, as it were, in one word, the hopeless dualism into which he had fallen. Induction and deduction, as functional aspects of real intellectual advancement, cannot be harmonized on this basis, and hence it was left for modern epistemology, after centuries of fruitless toil within the old barriers, to prepare a way in a truer psychology for their ultimate reconciliation.

Let us stay for a moment to enquire just what this juxtaposition of two fixed limits,—the concept and the percept,—stands for in the practical activity of life, of which logic is only an abstract cross-section. An illustration may best serve our purposes. I have agreed to prepare this paper for the press by a given date. Suppose then that I intend to complete it within the specified time. This purpose is seen at once to fix one of the limits of my activity; but it really determines both. For, immediately the question arises, What date is this, and just how much have I already accomplished? Everything will dèpend on that. In other words, my present end and the means at my disposal for its attainment, are just what they are, neither more nor less; and, *if* I persist in my present intention, but only *if* I persist, they *must* be thus determined or specified. Both the "if" and the "must" are relative to the deliberately defined activity. But the end I set up is merely my *conception* of the meaning of what I am now doing, and my momentary status, when abstracted from the whole continuous process, appears as the means available towards its accomplishment. In psychological terms, therefore, the immediate situation is then said to be "given" in perception, although the percept is clearly a mental construct formed under the influence of discriminative (abstracting) attention; and the meaning which the mind attaches to the percept is predicated of it as a concept, which seems in turn to be "given," though it too is determined only by the same movement of interest that selected

this particular phase of the general situation from which to organize the percept. If, then, a single act of mind, the purposive direction of discriminative attention, produces both the percept and the concept, which, though not distinct, may be regarded from two points of view, namely as *existence* or as *meaning;* then the problem of predication should present no insuperable difficulties. But if the "existence" of the presentation is divorced from its meaning or quality, not only is the validity of synthetic judgments thereby called in question, but "substance" and "inherence" forthwith stare one in the face.

It is well known that the relation of the particular and the general was one of Aristotle's most trying problems. All knowledge is of the general, and all reality is in the particular. To be sure Aristotle cannot consistently maintain such a doubtful position.[1] It is his opinion that the universal exists, but only potentially (δυνάμει) in the concrete. There is surely no need to point out that potentiality can convey no meaning unless it is understood as a capacity of the mind to produce the concept, but if understood in this sense it must be extended also to the power to construct percepts, and so this ultimate difference between the two breaks down.[2] The fixing of the two limits of the process, to which we have just referred leads to a number of false positions in Aristotle's logic. In the first place he claims to have found, in the concrete, that which is always subject and never predicate. Again, since neither of these can really pass over into the other, there must be separate faculties by which they are apprehended, sense and reason, fully as unreconcilable as their objects, and they must achieve their content by a wholly unmediated act of intuition.[3] It is really un-

[1] According as Aristotle is following the one or the other of the two opposite movements by which his system is rent in sunder, he calls now the concept, now the percept, a πρώτη οὐσία. Naturally, as continuing the deductive movement initiated by Plato, the general is less often so called than the particular.

[2] Interpreted by a more advanced psychology Aristotle's own statement would answer: *De Anima*, III, 8: ἡ ψυχὴ τὰ ὄντα πώς ἐστι πάντα. ἢ γὰρ αἰσθητὰ τὰ ὄντα ἢ νοητά, ἔστι δ' ἡ ἐπιστήμη μὲν τὰ ἐπιστητά πως, ἡ δ' αἴσθησις τὰ αἰσθητά.

[3] See on intellectual intuition Zeller's note 4 on page 190 f. It is quite natural that the concepts thus attained, the προτάσεις ἄμεσοι, when analyzed become purely analytic judgments *a priori*, and as such are conceived to be always true, although one cannot see what real advantage they could offer.

fortunate that the entire process of knowing should not likewise be immediate, for one sees no escape for it from the purely formal shuttlecock movement between these solid battledores.[1] Quite in the spirit of this despair is the statement that both induction and deduction are incapable of being carried on *ad infinitum*,[2] and that the highest principles of the several sciences are fixed and separate.[3] On such a basis there seems to be no possibility of reconciling metaphysics with the pursuits in definite fields of scientific enquiry.[4] Now there is, to be sure, a *practical* justification of Aristotle's views, and it lies along the lines above suggested ; but when these distinctions are introduced as final in the theoretical sphere they become baneful. The limits of a science are indeed fixed and not to be transcended ; but this is only because the scientist desires to work out just this definite problem, and must not, if he would succeed in his task, keep the boundary lines of his field of study shifting. Scientific research, in a word, is a process of experimentation, and experiment is nothing if not a conscious abstraction of certain aspects of fact in the effort to ascertain a particular thing. To objectify this abstraction is only to reinstate the fiction of natural genera and species which science is now learning to discard.

We have already remarked that Aristotle asked the question that in one form or another has occupied the thought of all philosophers from the Sophists to our own time, namely, Is the concept or the percept the real? The very statement of the problem contains a duplicity which may indicate its solution. The real is opposed not only to the potential but also to the ideal, and accordingly it is regarded at different times from various points of view. This is, as I conceive, precisely the ambiguity which underlies the Eleatic quib-

[1] It is quite true that Aristotle did not *intend* to render logic a science of "formal" thought, (see, *e. g.*, *Anal. Post.*, 71 *b* 18 ff.); but it is undeniable that his categories are purely formal (see Zeller, p. 262. n. 1), and both his inductive process, by which he analogically inferred the highest principles of the various sciences, and the deductive as well, tended to end in mere barren analysis and recomposition.

[2] See Zeller, p. 251 f. This supposition, very natural from Aristotle's standpoint, amounts to a denial of the reciprocal coöperation of induction and deduction, both of which, on his principles, must be unproductive.

[3] *Cf. Anal Post*, I, 28, etc.

[4] See the passage cited by Zeller, p. 274.

bles on εἶναι. Briefly, the two opposed senses of "being" or "reality" may be stated as "existence" and "meaning." Something has already been said on the fallacy of dissociating these in thought, and we have only to add that the distinction is wholly untenable if we concede, as apparently we must, that all judgments are ultimately existential judgments, and that "existential" signifies only that a percept has value or meaning within a definite or indicated sphere. The only fallacy then of those Eleatic sophistries is due to their juggling with the two senses of εἶναι, as above explained, without a discernment of the teleological significance of "meaning." Psychologically this may be referred to the fact that every idea tends also to be an ideal or stands for an act, and when thus formulated it helps one to realize how the Megarians could identify the *Good* with *Being* and why there has been in the history of thought so marked a tendency to associate God with the highest or the ultimate conception of a system. In Plato and Aristotle God is thus virtually one with the Good, or the inner meaning of the world-wide teleological process. The "real" then, when opposed to the ideal, is just that which has meaning as *means* toward an end; as contradistinguished from the potential, it indicates merely the validity or functional significance of the end itself.

However apparent Aristotle's contradictions in the logical sphere, they represent his fundamental difficulty only in an abstract way; but just for that reason his conceptions, though vehemently and in part acutely controverted as regards their consequences, were accepted as in themselves sound. We may observe, moreover, in the case of Aristotle the phenomenon which recurs constantly in history that the philosopher's views on more concrete matters approach somewhat nearer to consistency than in logical theory. Indeed in this instance there are peculiar circumstances which favored this result. In the first place, as we have seen, Aristotle's syllogism is only a formulation of the Platonic movement, expressing the urgent demand for scientific demonstration.[1] But, secondly, the Logic appears to have been his earliest serious piece of work, and hence it would seem

[1] I incline to think that Aristotle's Logic appeared in answer to a demand for a methodology of scientific proof similar to that for forensic guidance met by the τέχναι ῥητορικαί. That his emphasis was on demonstration is shown by his elaboration of the syllogistic form and the treatment of judgment and concept only as elements in deduction.

quite natural that in his Psychology and the Metaphysics, probably written towards the end of his life, there should be found traces of a decided advance on his former views, although even there his fundamental dualism was not to be resolved. In some respects, indeed, the inner conflict of motives became perhaps most apparent in this field just because of the prominent part played by a new conception. This conception was that of *development*, which differs from other systems of evolution in that it is qualitative instead of quantitative. Or rather, we ought perhaps to state it in somewhat different terms in order to display its relation to his system as a whole. It was remarked above in speaking of Anaximander that organic evolution, as commonly understood, is a *deductive* process seeking to explain the particular by the universal, the individual by the species. In this movement the stress of interest is on the concrete individual which it regards as the real. Aristotle's *development*, however, is just the reverse of this: it moves from the potential to the actual, from matter to form, from percept to concept, from the world to God. And just herein we find merely another phrasing of Aristotle's underlying conflict of motives, without discovering a higher principle to which both are relative. If Aristotle did not attain a spiritual monism, towards which his system manifestly tended, his failure was due to the fixed limits which we have had so frequent occasion to mention; for they thwarted the only conceivable purpose he may have had in placing the teleology, which with Socrates and Plato was external, and its meaning within the process: its starting point and its goal, each absolute and apart, lost all significance for it.

If we view the world as a whole these limits are the ultimate potentiality or unformed matter (*πρώτη ὕλη*), and God its wholly realized meaning (*ἐνέργεια ἄνευ ὕλης*). The terms matter and form, which in the concrete individual (*σύνολον*) are purely functional and correlative, are here abstracted and opposed to each other as irreconcilably as Plato's *μὴ ὄν* and *ὄντως ὄν*, and the problem of mediation becomes as urgent for the one philosopher as for the other. As Plato's efforts toward achieving a causality in his Ideas failed, so also did Aristotle's to attain a real efficiency on the part of God.[1] God is indeed to be the prime mover (*πρῶτον κινοῦν*), but he can act

[1] This subject has lately been canvassed anew in an interesting monograph by Dr. Elser, "Die Lehre des Aristoteles über das Wirken Gottes," 1893.

only as the final cause or end, moving though himself unmoved. On the other hand, all motion proceeds by impact (ἀφή), and thus God is credited with the inconceivable feat of touching the uttermost sphere of the world without experiencing in return a resilient contact.[1] If God, who is to be the true source of motion, is thus reduced to impotence, conversely pure matter must be conceived primarily as that which is always acted upon but itself exerts no energy, excepting, as we shall see, the ungracious one of resistance. Just how resistance is to be understood, however, unless as resiliency, which matter cannot consistently possess, it is impossible to say. In fact the logic of Aristotle's position wreaks its revenges by compelling him to assert outright on occasion that matter has a positive impulse (ὁρμή) toward form.[2]

The effort which he made to solve these contradictions led him close to the confines of spiritualism. God, he said, acts as the beloved object (ὡς ἐρώμενον) which, itself putting forth no effort and remaining unmoved, is the occasion for love in the lover. Such a view, if advanced in full consciousness of its meaning, would render the world a living organism (ζῶον) as Aristotle with most of his countrymen actually conceived it. It is evident, none the less, that he did *not* fully accept this conclusion in its consequences but employed the foregoing terms more or less metaphorically. Yet if there is one fact of which he is more convinced than another it is just this that motion is real,[3] and motion is in his view the specific characteristic of life. When therefore Aristotle reduced all movement ultimately to that of desire, his successor, Theophrastus, perceiving his fickle moods, was justified in starting anew the question

[1] The notion that movement can be propagated only by ἀφή suffers from the general absurdities of the category of causation. It comes in the end to what Venn (Empirical Logic, p. 56) facetiously calls "*screwing up the cause and the effect into close juxtaposition.*"

[2] See *Zeller*, p. 317, n. 1, and p. 349. n. 2. It is of no avail to object that this applies only to matter as appearing in a σύνολον, for even if this were true it would only postpone the problem.

[3] Motion is Aristotle's copula in the physical sphere, and his great insistance on it shows plainly how much he advanced in his more concrete discussions beyond the abstractions of his Logic, in which he was not really conscious of the copula at all, but confounded it with the predicate. Consequently he failed also to attain a consistent theory of negation. See *Zeller*, p. 221, and Prantl, *Gesch. der Logik*, I, 143 ff.

as to the implications of that fact. "If," said he, "there be desire, and above all desire for the highest good, this implies the principle of life (*μετὰ ψυχῆς*); for life would seem to be coextensive with motion, unless one wished to maintain that the objects moved are called living (*ἔμψυχα*) according to an imperfect analogy (*καθ' ὁμοιότητα καὶ διαφοράν.*). For it is the life of those that possess it from which spring the desires for any object."[1]

How easy it would have been for Aristotle to translate the whole of his system into one of spiritual monism may be seen by considering some of his usual forms of statement. Throughout the entire concrete sphere he aims to recognize only relative distinctions between the potential and the actual, distinctions which are relative in the end to human purpose. To be sure his language is not consistent, for he also speaks of individual *ἐντελέχειαι*, as, *e. g.*, a man; but it is plain that in his system man *qua* individual is not fully realized. He is essentially a *ζῶον πολιτικόν*, and as such finds his truest meaning in the state. And so it might perhaps, with perfect justice to Aristotle, be said that the significance of these lower entelechies is only that "things" at a certain stage of individuation have acquired sufficient intrinsic value to be able to stand alone. Such a standpoint is indeed quite legitimate, but when these things are objectified, and are taken to be fixed entities, it marks, if anything, *our inability to show as yet precisely how God is the meaning of all the world.*[2] Again, something may perhaps be gained by considering Aristotle's "four causes," if we remember that they stand for *explanation*, and are not equivalent to physical causation as vulgarly understood. The reason, it would seem, why he could place God so entirely beyond the concrete process of the world, was that he had virtually found its real meaning within it; for it proceeded on its way with only the shadow of influence from without. This consciousness of the all-sufficiency of the concrete system of development was in all probability the strongest motive for the Stoic pantheism. The symbolical significance of Aristotle's fourfold principle of explanation would therefore seem to be just this: the process of

[1] In Wimmer's *Theophrastus*, III, 152.

[2] Aristotle himself seems at times to realize this: See, *e. g.*, *Phys.*, 194 *b* 13 ff: *ἄνθρωπος γὰρ ἄνθρωπον γεννᾷ καὶ ἥλιος. πῶς δ' ἔχει τὸ χωριστὸν καὶ τί ἐστι, φιλοσοφίας τῆς πρώτης διορίσαι ἔργον*, and *cf. Met.*, 1076 *a* 13 ff. In fact, the two last books of the Metaphysics deal largely with this problem.

development, as material cause, is *self*-developing, or the process differentiating itself into *means;* as efficient cause, it is self-*active;* as essential cause, it is self-*defining;* and as final cause it is self-*realizing*. Or, taking the simplified form, it means that this progress of activity, differentiating itself into two correlative aspects as material and formal cause, is *self-explaining* or *means-and-end*. Thus there would be effected a perfectly functional interlacement of the real and the ideal. If, therefore, Aristotle had actually brought the external limits within the concrete reality, as it certainly would seem to have been his practical tendency to do, he might have applied his principle ἄνθρωπος ἄνθρωπον γεννᾷ to the whole, making it thoroughly qualitative, and thus resolved his dualism. It suffices, however, to say that the fixed percept and the fixed concept which he inherited from the Platonic and the Socratic movements of thought respectively, rendered the attainment of this result impossible.[1]

It must now have become clear just how Aristotle's teleology is related to mechanism. His teleology, in a word, depending as it does upon an external end, namely God, is impotent to explain the fact of development except by the aid of an efficient cause which acts according to purely mechanical laws. This is the significance of the familiar formula ἄνθρωπος ἄνθρωπον γεννᾷ, which only served to conceal the real problem. For, in order that Aristotle's theory may even seem to suffice for an explanation of things, he must call in the assistance of efficiency which he asserts to be *of a kind* with the essential and final forms of causation but yet numerically distinct; but surely this reintroduction of the conception of individual "things" renders his attempted solution quite impossible. An adequate teleology, then, cannot oppose itself to mechanism but must include it, as it was Aristotle's manifest desire that it should. The same concrete purposive act assumes a twofold aspect according as it is viewed from before or behind.[2] When we look forward to it,

[1] Siebeck, *Gesch. der Psychologie*, II, pp. 1–7, states Aristotle's position admirably, but he gives him credit for overcoming his dualism more thoroughly than he actually did. The statement which Siebeck gives, in other words, represents Aristotle's tendency more truly than his accomplished result.

[2] Seen from the point of view of explanation this amounts to the same as Aristotle's statement, *Anal. Post.*, 95 *a* 27: ἔστι δὴ ἀπὸ τοῦ ὕστερον γεγονότος ὁ συλλογισμός, ἀρχὴ δὲ καὶ τούτων τὰ γεγονότα, διὸ καὶ ἐπὶ τῶν γινομένων ὡσαύτως· ἀπὸ δ τοῦ πρότερον οὐκ ἔστιν.

view it from behind, it is external teleology; when we glance back over the completed act and analyze it into time sequences, it appears as a result attained by a process of efficient causation, or as mechanism. Thus considered, it is a closed and perfectly defined fact whose parts are precisely what they are and cannot be otherwise. This is exactly the definition of mathematical necessity.[1] If, on the other hand, we turn our eyes forward and observe the unstable equilibration during the adjustment of means to the end, the end alone seems fixed: the particular means to be chosen are shifting and uncertain, and within given limits, indifferent.[2] This point of indifference is passed, however, the moment it is determined just what is to be included in the result, precisely what sort of result we are after. When this is done the whole series of means is forthwith fixed as invariably as the end itself; that is to say, *if* we insist on having that precise result, then we *must* do this and that and *may not* choose our methods capriciously. At this stage we have the case of the hypothetical necessity. So great is our interest in achieving specific results which shall be only just what they are and nothing else, and so essential is it, in order to their attainment, that we shall act thus and not otherwise, that our world appears to us to be completely bound in the chains of an inexorable fate.

But the two partial views of fact thus obtained do not fully supplement each other, though they are purely correlative; for they both ignore the unity of the living process of setting up and realizing ends within which they as separate moments find not only their justification but also their individual extinction. In psychological terms this is the law of habit. It is quite too common to designate by this term the mere repetition of an act without taking account of the continuous readjustment which really constitutes it and renders it practically serviceable. To speak of habit in such a manner is merely to hypostatize an abstraction, and gives rise to all the self-contradictions of the law of causality.[3] Habit, in other words, like every concrete process, resolves itself on analysis into a vibrating

[1] This is what Aristotle calls the μὴ ἐνδεχόμενον ἄλλως ἔχειν. More of this anon.

[2] Here precisely is the point in the development of judgment at which Aristotle's ὁπότερ' ἔτυχεν stands, as we shall presently see.

[3] The usual statement of this so-called law is perhaps the most flagrant illustration of the barren absurdity which results from fixing as objective entities both the

balance of indentity and differentiæ; and it is essential to note that both are equally determined by the whole and have no meaning except as functionally correlated in it. It may be fairly said that we never repeat an act in precisely the same way; the actual appearance of sameness arises only from a similarity in the ends to be subserved, while the differentiæ grow out of the fact that these ends are only similar and not fully identical.[1] Martineau has proposed to consider the laws of nature, which operate mechanically, as its confirmed habits, representing that portion of its free purposive process which might perhaps be called the "residual precipitate" and lies beyond the sphere of its highest interests in spiritual development. But, even so, matter, if set off as something more than functionally distinguished as immediate means for an equally immediate end, becomes an abstraction whose relation to mind presents all the difficulties inherent in the extremest dualism.[2]

Aristotles's principal discussion of these points occurs in the second book of the Physics. Nature (φύσις), he is convinced, works according to ends (ἕνεκά του), and human beings do likewise, except that they do so consciously and with deliberate purpose. It is within this comprehensive sphere that chance (τύχη) and spontaneous action (τὸ αὐτόματον) fall. "We may include under the head of purposive acts," he says, "such as result from reflection and those which proceed from nature. When such actions come about *per accidens* we attribute them to chance; for, just as 'being' (εἶναι) means now *per essentiam*, now *per accidens*, so too in respect of cause: the builder, for example, is the cause *per essentiam* of the house; he is a white or a musicianly builder only *per accidens*. Now the cause *per essentiam* is strictly defined, but that *per accidens* is indefinite, inasmuch as untold qualities may be predicated of an individual. As has been said, then, when this falls within the scope of purposive

percept and the concept, "things" and the "law." I know of no better instance to cite than that given in Gizycki's *Moralphilosophie*, p. 191 f.

[1] So far as I am aware, Hume was the first to recognize that the category of identity arises from the consciousness of means put to "some common end or purpose." See Selby-Bigge's edition of his *Treatise*, p. 257. Hume, to be sure, did not fully seize the significance of his discovery.

[2] Since writing the above I have had my attention called to the admirable articles of Mr. Charles S. Peirce in the *Monist*. I am not quite sure that I fully understand his position, but if I mistake not it is essentially identical with that

actions, it is said to result spontaneously or by chance."[1] The *αὐτόματον* is subsequently[2] defined as an act which broadly speaking is purposive but has not been performed with a view to the actual result. In these statements we have, I believe, the essence of Aristotle's doctrine in the form best adapted to reveal its logical and psychological meaning. Chance is only the practical equivalent of the logical *accidens* and is purely relative to a process of means and ends. We have previously discussed this matter on the psychological side, and may now content ourselves with drawing the conclusions. If the accidental or non-essential is only the fossilized residue of former groupings of qualities regarded as nothing to the purpose, which is represented in logic by the concept as fixing the scope of one's momentary interest; then chance, its counterpart in the more distinctly practical sphere, is only the expression of the dim "fringe" of purpose which was left undefined.[3] The admission of chance, as lack of definition, then means that our scope of enquiry was false, because too limited to embrace all the truth, and that the actual fact, viewed as the result of the factors attended to could therefore not be fully stated in the terms we were handling. This, to be sure, is again simply equivalent to saying that chance is relative to ignorance, but the meaning of that common phrase is more definitely specified. Aristotle has himself remarked upon the unreasonable character of chance, and his words may be instructive. "It is quite true," he admits, "to say that chance is irrational; for reason deals only with what occurs always or at least for the most part, whereas chance lies in the reverse of these."

If thus we find him setting up as fixed entities the *functional differentiæ* of the self-defining process of habit, in the form of chance, we shall naturally expect to see the aspect of identity abstracted and hypostatized as mathematical necessity. It might readily be anticipated that in this ever-recurring manifestation of his ultimate dualism he must fall into self-contradiction at every turn. On the one hand he never grows weary of reiterating that

here presented. His Tychism and Synechism would then be correlative, answering to the differentiæ and identity in the teleological process which may also be viewed as a continuous readjustment of habit.

[1] *Phys.*, 196 *b* 21 ff. [2] *Ibid.*, 197 *b* 18 ff.

[3] Zeller cites numerous passages on pp. 333–4, which show that this general view was consistently held by Aristotle.

nature does nothing in vain: but whenever his barren concept of purpose will not account for the particular phenomenon, he charges it up to chance.[1] It is precisely this defect that contemporary science has set itself to correct, since it cannot refuse the obligation to explain everything. Consequently its category of ends in nature (under whatever name) is being worked out as concretely as the facts themselves. In thus enriching the concept so as to include even the seemingly most non-essential marks, scientists at a blow break down the line of demarkation between that which happens now and again fails to appear, and that which results "always or for the most part." The destruction of natural species marks the first step in this progress, and with their disappearance the need of admitting chance appears to have vanished. Is necessity then to be enthroned by science in its stead?

"As for the necessary," Aristotle asks,[2] "whether is it hypothetical or absolute? For nowadays it is customary to think that necessity inheres in the process of becoming, as if, *e. g.*, one supposed that a wall had come into existence of necessity, because it is the nature of heavy things to tend downwards, and of light ones upwards; for which reason the stones and the foundation are below, the earth, because of its lightness, above them, and the wooden beams, as the lightest, uppermost of all. But the erection of the wall, while it utilized these substances as indispensable, was not due to them, except in so far forth as material was wanted;[3] the rather was it brought about in order to conceal and protect something. In like manner also in respect of such things as are of a distinctly purposive character, production, though not dispensing with what is of a necessary nature [*i. e.*, with what is necessary to the matter in hand], still is not for its sake save as it is material,[3] but proceeds in view of an end, as, *e. g.*, we may ask, Why is the saw of such and such a structure? Because it was made for this specific purpose and with

[1] Aristotle appears to recognize *utility* alone as an end in nature and hence chance products are multiplied (*cf. Zeller*, p. 333, n. 1). The Stoics (*cf. Zeller*, III A., 171) seem to have been the first to make much of *beauty*, which some recent scientists (*e. g.*, the Duke of Argyle) rank among the principal causes of variation.

[2] *Phys.*, II, 9. The words enclosed in brackets are additions of mine.

[3] I take the expressions πλὴν ὡς δι' ὕλην and ἀλλ' ἢ ὡς ὕλην to mean that the materials may themselves enter into the purpose since they are an integral part of the result desired. This points naturally to the folly of making hard and fast dis-

this peculiar object in view. Yet that precise result cannot be attained unless it be made of steel; hence it is necessary that it should be constructed of that metal if it is to be a saw and its purpose is to be accomplished. *Necessity therefore is hypothetical* [*i. e., relative to the means*], *but is not of the end, for the necessary pertains to the matter, while the purposiveness is in the conception.* The necessary in mathematics and in products of nature is similar, but only with reservations. Given the definition of a right line, the sum of the angles of a plane triangle must be equal to two right angles; but this relation of dependence cannot be reversed.[1] If the consequent is not true, then the definition of a right line is not correct. In respect of products of art <the reverse is true,>[2] if the end exists or will exist, so does or will the antecedent also; if not, as before [in the case from mathematics] if the consequent is not true the premise also is not, so likewise here of the end and the purpose; for this also is a starting point, not indeed of an action but of inference regarding it. (In the case of mathematics the end or the concept is the starting point of inference,[3] for it is a theoretical, not a practical art.) Hence, if a house is to exist, then these particular antecedents must happen or exist, or more broadly, the means towards a result; as, *e. g.*, the bricks and stones, if there is to be a house; yet not for the sake of these things, save as materials. None the less, but for them there will be neither house nor saw—neither the

tinctions between means and ends as objectively opposed to the self. At some stage in the process every means is desired and is in so far forth an end; but the only true end is the experience, or more definitely still, *the self experiencing it.*

[1] From this point onward it will be necessary to render the rather obscure passage somewhat freely. Scholars will observe that I have felt obliged to deviate from Prantl's interpretation here and there.

[2] I believe that ἀνάπαλιν here is a corruption. The "reservation" regarding the parallelism between mathematics and natural (or artistic) products I conceive to refer merely to the fact that, on Aristotle's view, necessity in the former proceeds from the definition or the realized end, while in the latter it inheres in matter or the means. Hence in mathematics you cannot reason from a consequent back to the principle, which is more inclusive; and in physics, since there is free purposive action, you cannot infer a result from the existence of an antecedent. The fallacy of both views is apparent: given *all* the antecedents and the result is assured; given *all* the consequences, and the principle is established. In either case the "all" *is* the concept or fact.

[3] See *Gen. Anim.*, 742 *b* 33 ff.

house without the stones, nor the saw without the steel. Nor yet, in the mathematical instance, will the premises be true, unless the sum of the angles be equal to two right ones. It is evident, then, that the necessity in natural products is that of matter and its motions. Consequently the physical philosopher has to speak both of the free or final cause and of the necessary or material cause, but chiefly of the former; for it is the explanation of matter, and not matter of the end. The end is the purpose and his starting point is the definition or conception, just as in matters of art: since the house is such and such, this and that means towards its construction are necessary, and since health is peculiarly constituted, that and the other must needs take place before it can be realized. . . . . *Doubtless there is necessity also in the conception.* The function of sawing is defined as a particular kind of cutting. This will not be realized, however, unless the saw have teeth of a definite structure, and this in turn will not be such unless the saw be made of steel; for *certain parts* [*or marks*] *enter into the concept as its matter.*"[1]

It is sufficiently clear that *Aristotle recognizes only a conditional or hypothetical necessity in nature in so far as it proceeds purely in accordance with purpose.* This necessity is merely the reflex of the stress in the adjustment of means to ends, and since the means *constitute* the end they are the object of free teleological desire as συναίτια[2] quite as much as the end itself, and hence are not in any true sense forced upon the process from without. Aristotle came to recognize, moreover, at the close of the above selection, that it is the end which conditions the necessity of the means, although he had before maintained, and generally was quite consistent in asserting, that the necessity lay in matter as such. It is obvious that this view alone comports with his conception of purpose, and is in reality the true one.

This thought of Aristotle's that nevertheless matter is the cause of necessity is curiously set off by his equally firm conviction that it is also the source of all chance occurrence. In fact it is only the reverse side of the same false position. Matter, even on his own principles, cannot strictly be a cause at all.[3] It is merely an abstrac-

[1] This is only the logical recognition of the fact pointed out above, p. 28, n. 3.

[2] Zeller (p. 331, n. 1) has gathered many passages which serve to illustrate this aspect of necessity.

[3] See *De Gen. et Corrupt.*, 324 *b* 18: ἡ δ' ὕλη ᾗ ὕλη παθητικόν.

tion, as we have seen, from the concrete whole of experience, purely relative to the teleological process of means and ends, and serves to designate certain qualities as not singly or merely in themselves desired, but still available[1] for recomposition into a concrete end; and only as it becomes hypostatized as an objective entity unrelated to any definite pursuit, can it be said to be the basis of all that is non-purposive. But this is precisely what we have remarked of Aristotle's position from the beginning, as being the ground of all his self-contradictions. All this appears most strikingly in the second form of necessity which he distinguishes as "restraint," "hindrance," or "resistance."[2] This amounts, in modern psychological terms, only to "inhibition," and represents *the purely negative aspect of a partial definition of fact.* If, in defining a thing or an act, we take account of certain qualities as present but not particularly desirable and essential, they fall, so to speak, just outside the field of distinct vision and appear later as *accidents.* But it is also possible to ignore a factor completely in the organization of the means to a certain end, and therefore in the process of its realization a hitch will occur. Just because the actual result was not, in anticipation, foreshadowed *completely* in the steps proposed for its attainment, an element wholly unexpected and alien to the purpose appears in it, which may be of sufficient importance to frustrate the expected enjoyment. It is what the Germans so expressively call "ein Strich durch die Rechnung." Democritus was right when he said, "Men have invented the image of Fortune to palliate their own imprudence."

Aristotle distinctly recognizes the relativity of this inhibition to action according to ends.[3] It would have no meaning whatever were it not as the sheer negation of purposiveness. Yet he accords it a very important place in his system, since without it he could

[1] This is what I take to be the aspect of truth from which Aristotle's *δύναμις* was abstracted and hypostatized.

[2] This form of necessity is variously denominated by Aristotle; among the expressions most frequently occurring are these: *τὸ βίαιον, βία, τὸ κωλῦον, τὸ ἐμποδίζον,* and *τὸ κωλυτικόν.*

[3] *Met.*, 1015 *a* 26 ff.: *ἔτι τὸ βίαιον καὶ ἡ βία (sc. ἀναγκαῖον λέγεται)· τοῦτο δ' ἐστὶ τὸ παρὰ τὴν ὁρμὴν καὶ τὴν προαίρεσιν ἐμποδίζον καὶ κωλυτικόν.* See also *Phys.*, 215 *a*, 1: *πρῶτον μὲν οὖν, ὅτι πᾶσα κίνησις ἢ βίᾳ ἢ κατὰ φύσιν. ἀνάγκη δ' ἅν περ ᾖ βίαιος, εἶναι καὶ τὴν κατὰ φύσιν· ἡ μὲν γὰρ βίαιος παρὰ φύσιν ἐστὶν, ἡ δὲ παρὰ φύσιν ὑστέρα τῆς κατὰ φύσιν.* Other important passages are *Phys.*, 230 *a* 29 ff., and 255 *b* 5 ff.

not account for a potentiality remaining unrealized. Accordingly it is seen to be only the reverse aspect of that hypostatized availability for utilization as means in the teleological process which we characterized above as the significance of his δύναμις or ὕλη. The latter, however, was previously shown to be the prolific parent of chance as the summation of all non-purposiveness in nature. Quite naturally, therefore, Aristotle at times practically identifies chance and necessity.[1]

We have now canvassed two aspects in which the spectre of necessity presents itself, and have found that even on Aristotle's own showing they have no meaning except in relation to, are in fact constituted as functional elements within itself by, the free purposive process which distinguishes itself as means and end. But there is another sense in which he supposes necessity to be *absolute*.[2] It is that, in brief, which is eternal. "In a word," he says, "all that exists necessarily is eternal, having neither beginning nor end."[3] We seem to be listening to Plato, and we are not altogether mistaken. "If it is true to say of a given object," he writes in another passage,[4] "that it is a man, it must necessarily be a biped ; for *that is what 'man' signifies*. But if this be necessary, it cannot be said of that same object that it is not a biped ; for *that is precisely what is meant in saying that it cannot but be a man*." "For *the necessary does not admit of being this or that indifferently*, so that if a thing be necessary, it cannot be both so and otherwise."[5] It is clear that the necessary in this sense refers merely to the καθ' αὑτό or the essence, the hypostatized "*meaning*" which Plato sought to preserve from the mischances of our mundane sphere by removing it to the intelligible world of Ideas. In the list of these immortals Aristotle enrolls mathematics and the highest principles that are discovered in his opinion by a process of analogical induction which is the theoretical counterpart of Plato's flight from the distracting world of sense. Their attainment is in fact so immediate that it may be

[1] See, *e. g.*, *Phys.*, 198 *b* 16 ff.

[2] *Met.*, 1072 *b* 11 ff.: τὸ γὰρ ἀναγκαῖον τοσαυταχῶς, τὸ μὲν βίᾳ ὅτι παρὰ τὴν ὁρμήν, τὸ δὲ οὗ οὐκ ἄνευ τὸ εὖ, τὸ δὲ μὴ ἐνδεχόμενον ἄλλως ἀλλ' ἁπλῶς.

[3] *Eth. Nic.*, 1139 *b* 23. *Cf.* also *De Gen. et Corrupt.*, 335 *a* 32 ff., and many other passages.

[4] *Met.*, 1006 *b* 28 ff.

[5] *Ibid.*, 1010 *b* 28 ff.

called spiritual intuition. We have had occasion previously to point out that this conclusion was forced upon Aristotle by his psychology, as the direct outgrowth of the twofold philosophic movement—the Socratic and the Platonic—the results of which he inherited. He did not perceive that the distinct subject and the distinct predicate, the percept and the concept, were functional products or stages of one continuous self-reconstructing process of intellection. Hence he regarded both as immediately "given" and unchangeable. He was only half-aware that these presumtively eternal meanings owe their perpetuity to the persistence of purposive *intention*, as marking the underlying and fundamental lines of development along which the intellectual definition of experience is proceeding.

He did remark, however, that there is a certain similarity in respect of the compulsion exercised by the final cause in nature and by the definition in mathematics.[1] The process of the former he conceived under the form of time and so distinguished it from the latter which is timeless. Hence he recognized a certain reaction of the means in nature upon the end, but was apparently quite unconscious of any modification of mathematical definitions due to "deductions" made from them. Had he lived to witness the doubt of modern mathematicians as to the absolute certainty of his inference from the definition of a right line, that the sum of the angles of a plane triangle is precisely equal to two right angles, he might have changed his attitude toward necessity. If the consequent is a legitimate deduction from the premiss, but is itself possibly false, the absolute validity of the definition, in the form given it in the Euclidean geometry, is itself called in question. All that can be conveyed by the term necessity, used of such principles as these, is, therefore, that it expresses the conviction of the truth of fact so far as it is made out, together with the lingering sense that they are as yet beyond the reach of demonstration. When the fact is fully ascertained, as was said at the beginning, it neither *may* be nor *must* be, it simply *is*. There is, therefore, no necessity even here, except that which is functionally constituted by the actual living process of a purposive definition of experience, and this, as having a meaning or value only within it, is so far from being a

[1] See above, p. 29, n. 2.

contradiction of freedom that it becomes the most effective means towards its realization.

Now, according to Aristotle, only the completed science is truly apodictic, for only then would phenomena be reduced to "laws" which operate invariably. Naturally this holds in his view simply of individual sciences; for, with his doctrine that every discipline starts from its peculiar ultimate ἀρχαί, he had not risen to the conception of one concrete principle capable of explaining the world. The consciousness of the limits of science in his own day led him, as we have just seen, to postulate, on the one hand, *necessary* προτάσεις which are exempt from the requirement of being proved because they are presuppositions of intelligible experience and intuitively certain. This sense of necessity we have remarked to be itself hypothetical, since it arises in the process of experimentation, when we *must* regard our theory as absolutely true in order to test it in its application. But this same consciousness of incompleteness in the explanation of things showed itself positively in Aristotle's assertion that knowledge can deal not only with the "eternal" and with those phenomena which, like those of astronomy, recur always, but also with such as appear ordinarily or "for the most part," like those of nature in general. It is to the existence of this ὡς ἐπὶ τὸ πολύ that he attributes the possibility of chance and freedom, and he accounts for it by referring it to the incalculable nature of matter.[1] Nothing could, apparently, be more manifest than that these two aspects, of chance and necessity, are purely correlative, and both equally relative to a midway stage in science and the growth of the judgment.[2] Up to a certain point the causal nexus is complete; beyond that, so far as we know, it may as well be that as this.[3] It was this conviction that led Aristotle to maintain that there are limits to proof in either direction; which merely states the dilemma of common logic that in induction you fail of attaining necessary principles, and in deduction there remains a vast surplus of marks which do not flow from the premisses. And this break in the logical process we have before traced to the psychological abstraction of fixed percepts and concepts.

[1] See on this point, Prantl, *Gesch. der Logik*, I, p. 175 ff.

[2] I borrow this apt expression from the article by Professor Dewey mentioned above.

[3] See *Met.*, 1027 *b* 11.

As Aristotle seized upon the fact of motion in nature as the aspect of fact which was most fruitful for explanation and defended it, though rather unsuccessfully from the logical standpoint, against the arguments of Zeno, so he bent all his energies toward vindicating man's freedom in action. Human action is to him only a higher form of that purposive movement from potentiality to actuality which appears throughout nature. Its distinguishing characteristics are consciousness and chiefly intelligence. Man is constituted of soul and body, the soul being the entelechy or realization of the body's possibilities. As such it belongs to that class of beings which, as "form," are initial causes of final or purposive action. When one has traced a train of causation back to a human being, one has come to the limit of his enquiry: his being a man is sufficient explanation for the origination of the act. The reason, more specifically, why it is useless to continue the quest, is that, being rational, man has within him the capacity of contradictory actions; for it is the characteristic of reason, as against irrational δυνάμεις, to take cognizance of opposites, though it does grasp the real more firmly than the unreal.[1] Thus, while a physical δύναμις, say the potentially warm, can develop only into the actually warm, and will immediately do so unless there is some external hindrance, the physician, or the art of medicine, being rational δυνάμεις, can produce health or sickness. It is to this aspect of man's nature, then, that Aristotle makes appeal in order to defend freedom in action.[2] Since human beings are subject to no external constraint, and possess an equal capacity for doing things contradictorily opposed one to the other, predetermination at least is excluded.

But, anxious as Aristotle is to maintain at all hazards this exemption from external compulsion, he by no means teaches indeterminism in the modern sense. Freedom with him means primarily the freedom of reason, not that of the "will," for he had not attained to the scholastic pigeon-hole doctrine of independent faculties. The will or choice,[3] rather, is a function of intellection, and hence,

[1] On the rational and irrational δυνάμεις see *Met.*, 1046 *a* 36 ff.

[2] The whole case of δυνάμεις μετὰ λόγου and the indifference supposed to result from them is plainly one more instance of the fallacy of the Plurality of Causes.

[3] Aristotle calls it προαίρεσις, and the subject is treated at great length in the *Nic. Ethics*, especially in Book III.

since reason is the highest realization of human capacities, men's actions will be truly free, in his sense, only when they are wholly governed by rational purpose. Consistently with the views of Socrates and Plato, Aristotle therefore makes freedom virtually an ideal rather than an actual posession of the majority of mankind, and to that extent, it may safely be said, the Stoics concurred with him. So long as we confine our inquiry to his intention, there cannot be much difficulty in his doctrine; but we shall find that his psychology conflicted hopelessly with the conditions essential to the problem of freedom in action. Yet this is only what was to have been expected after what has previously been said of his fundamental dualism,[1] which here manifests itself almost as clearly as in his Logic.

According to Aristotle's system of development, there must be a constant progress from sensation to reason, mediated by imagination, memory and reflection, in which series the lower is always the "matter" to the "form" appearing in the next higher. The νοῦς or reason, as the highest of all, and that which most truly constitutes a man, is of course the "form" *par excellence*. Not to mention other difficulties which crop out just here in superabundance, the νοῦς, as pure form, can consistently act only as the *final cause* of the body, while the pleasure-pains, giving rise to desires, must take the place of the mechanical cause. The latter, to use Kant's language, are "blind" without the influence of intellect, the reason, on the other hand, is "empty," without receiving a content from them. This is only a recurrence of our old problem that all the teleology is found in the end, all the efficiency at the beginning of the series. Yet the reason is said to be the rightful ruler over the irrational desires, though they only too frequently revolt and carry the day. The difficulty is increased, rather than diminished, by a division in the reason itself. Situated as it is as the coping-stone, so to speak, of the two-fold edifice of man's nature, consisting of the cognitive and the motive elements, it is called into requisition both for theory and for practice. Since, then, Aristotle inherited the intellectualism of Socrates, aggravated in the philosophy of Plato, he naturally ranked the theoretical reason above the practical, and with so distinct a bias in its favor it was but natural that he distinguished it

[1] On the following see Zeller, pp. 592 ff.

completely from the latter. So far did he proceed along this path, that he marked it off completely from the remainder of man's soul and, like God in the macrocosm, called the theoretical reason χωριστός, "apart," as entering into man from without.

Thus secluded and undisturbed in its blissful and eternal contemplation, the active reason is, in its relation to the concrete human life, a precise analogue of God in reference to the world.[1] It is the only part of man that could properly define his duty, but its dictum could be at most a blank categorical imperative, with no specifications and with no power to secure its enforcement in conduct. The passive reason was a mere stop-gap introduced surreptitiously to perform the impossible office of mediator. Just how will or choice is related to it Aristotle fails to tell us, possibly because he could give no answer. Zeller has pointed out the hopeless breach in the system at this point, and scholars have essayed in vain to construct a consistent and intelligible theory of volition on the basis of the various assertions scattered through the works of Aristotle. *The crucial question is whether volition, as a function of reason, can have efficiency in initiating activity, and this question must be answered in the negative.*[2]

While thus it appears that Aristotle's cosmological and psychological arguments for freedom, if we may so call them, both were doomed to failure because of the presuppositions of his system with its unresolved dualism, he was still far from abandoning its defense. In the ninth chapter of the work *De Interpretatione*[3] another direction was taken. The Principle of Contradiction, or

[1] The relation of the active reason to God has been the subject perhaps of more discussion than any other question arising from Aristotle's system. It occupied the thoughts chiefly perhaps of mediaeval philosophers, but the Neo-Platonists also made much of it. Aristotle's successor, Theophrastus, was certainly among the first to notice it particularly, and it appears to me not unlikely that the Pseudo-Platonic dialogue Alcibiades I, on which Proclus wrote an elaborate commentary, covertly treated of it in the discussion of the empirical and the absolute self, under the analogy of the eye-seeing eye.

[2] See Zeller, pp. 598–601. Heman, *Des Aristoteles Lehre von der Freiheit des menschlichen Willens*, Leipzig, 1887, has summed up his subject very well in the main; but he has tried to obviate difficulties raised by Zeller (p. 599, nn. 3 and 4), and in so doing has shown that he has not yet grasped the logic of Aristotle's position. See particularly p. 40, note; pp. 98 ff.; and p. 103.

[3] The genuineness of this brief logical and grammatical treatise has been

more specifically the law of the Excluded Middle, because of its assertion that *of two perfectly contradictory statements one must be true and the other false*, might be employed to uphold fatalism, to the exclusion of all freedom, chance or indifference. Hence an exception to its application is made in favor of particular judgments relative to futurity. Of the past or present it is unreservedly true that the validity of one contradictory excludes that of the other; but to extend this proposition so as to cover future events would lead to patent absurdity. Truth and falsity are terms applicable only to judgments, and appeal must be made in the last resort to fact. In respect of what is still to come there exists as yet no test; therefore it is, indeed, quite admissible to assert that *an event will or will not occur*, but since it is not apparent which alternative is to be substantiated by the actual result, it cannot be conceded that either of the two assertions, "*it will occur*," or, "*it will not occur*," propounded separately, expresses truth or fact. All that it would be strictly allowable to say is that *the event is in prospect*,[1] not that *it will be*. To say more would be presumption.

"It is indeed necessary that that which is should be *when it is*, and that which is not should not be *when it is not*, yet it is not necessary that everything which is should transpire, nor that everything which is not should not transpire; for it is not the same to say that everything necessarily is when it is and to assert in general that everything is necessarily." These words[2] sufficiently indicate Aristotle's thought. To say that a thing *is necessary* means only that it *is* just what it is and nothing else, and entitles one in no way to infer how it *came* to be. In other words, the Principles of Contradiction and of the Exclded Middle have value only within the judgment, which is itself a teleological process. Both serve only to draw the legitimate or implied inferences from the Principle of Identity. This principle means merely that A, analyzed as means or percept and synthesized as end or concept, is just equal to or valid for A: as means constituting the end, A as subject, *must* be

called in question; but, whatever the fact may be in regard to its authorship, there can be no doubt as to its representing Aristotelian doctrine on this point.

[1] So I prefer to render ὅτι μέλλει as opposed to ὅτι ἔσται in *De Gener. et Corrupt.*, 337 *b* 3 ff. At any rate it is clear that it is intended to convey the idea of indefiniteness and the possibility of change. Compare *De Interpr.*, 19 *a* 7 ff.

[2] *De Interpret.*, 19 *a* 23 ff.

taken to be equivalent for the nonce to just A, the end. On reflection one sees that *it cannot be non-A*, which states the Principle of Contradiction, and that there is neither in B, nor in any other non-A, a middle term or anything outside of A that it can stand for, which formulates the Principle of the Excluded Middle. But since these principles, one and all, arise in the definition of ends, it is absurd to turn them against free teleology in order to hypostatize the necessity which is only functional in its progress.[1] Aristotle's failure to appreciate this fact led him into his untenable position as to a distinction in respect to time, and is one more illustration of his tendency toward an abstract and formal view of thinking. I may here quote from Mr. Bosanquet:[2] "Schopenhauer rightly maintains that *absolute necessity* is a *contradictio in adjecto*, because all necessity is *ex hypothesi* conditional. . . . Absolute necessity was a false ideal, and produced a fallacious preference of necessity to reality. For a *part*, necessity is a higher point of view than mere *perceptive reality*, because necessity involves relation to the whole, whereas perceptive reality, being isolated, is only formal or potential reality. For the whole, reality is a higher point of view than necessity, for reality is its self-dependence as a whole, while necessity would at once depress it into a part."

Aristotle makes much use, in the argumeut to which we have just referred, of the existence of an ὁπότερ' ἔτυχε or the indifference of chance.[3] Its existence is due, as we have seen, to the nature of that potentiality which inheres primarily in matter, but it finds its fullest expression in human action. Nevertheless he cannot conceal the fact that there are varying degrees of probability as well in respect of truth as also in the courses which men are likely to pursue.[4] The former is so manifestly a contradiction of the possibility of pure indifference that we may pass it by without further notice. But even the indeterminism in moral action, which is thus practically asserted, is decidedly limited in its scope by two considera-

[1] On the meaning of the Principle of Contradiction and the law of the Excluded Middle, in their relations to the Principle of Identity, compare Bosanquet's *Logic*, II, pp. 205 ff. It will be readily seen how my statement differs from Mr. Bosanquet's.

[2] *Ibid.*, p. 213.

[3] See above, p. 25 ff.

[4] See *De Interpret.*, 19 *a* 20 ff.

tions. In the first place, in so far as acts are truly free they are intentional, and as such they are subject to the regulation of the reason. But on the other hand, though habits are originally due to purposive action, they may become so fixed that they control conduct to the exclusion of a momentary interference of rational preference. Hence we see even here the beginnings of that break in man's active nature which led in the end to such paradoxes as a will not coöperating in an act free from external compulsion and a noumenal freedom set over against phenomenal necessity.

Now these patent inconsistencies could not escape detection in the vigorous intellectual activity at Athens. And among all the difficult and vague conceptions in the Aristotelian system none was so shifting and impossible to grasp as that of potentiality. It appears in a thousand different forms, and was conceded by Aristotle to be in many cases metaphorical; yet it is compelled to do service in all of the most trying situations. Hence it formed the natural point of attack for all opponents of his doctrine. Among these we have to mention chiefly the Stoics who virtually denied the existence of the contingent and reduced all things to necessity. Everything in their system emphasizes the reality of an universal law which maintains the order of the world amid the flux and flow of particular things. This appears in its most characteristic form in their Logic. The categorical judgment is no longer the type, and the only forms of syllogism which they appear to have considered were the hypothetical and the disjunctive. In like manner they identified the definition and the concept and regarded the particular only as subsumed under the general.[1] There can be no reasonable doubt as to the meaning of all this. The keynote to the system of the earlier Stoics is their *moral earnestness*, their intense preoccupation with an ideal. If we keep this in mind it will go far toward explaining their philosophy. Suppose that a schoolboy is homesick and wants to visit his parents during the approaching holidays: how he will husband the money *necessary* to his purpose! This desperate clutching of the means is what I suppose their *materialism* and its accompanying *sensationalism* to stand for, and the eager pursuit of their end represents their *teleology*. The stress of adjusting means and end shows itself in the law of *fate*, which was

[1] See Prantl, *Gesch. der Logik*, I, p. 426.

not, in their thought, a limitation so much as an index to duty. In this closed and taut-drawn system of means and end there can be no duplicity of reference nor ambiguity in action. Everything *merely potential* is excluded.[1]

Now, it was in this effort on the part of the Stoics to correlate[2] and organize the world of fact completely in one homogeneous system, that they naturally came to view individual inferences as interdependent, and so they dwelt, as I have said, all but exclusively on hypothetical disjunctive syllogisms. This seems so clearly the expression of their standpoint that we cannot understand why Prantl should have regarded their logic as a *mere* formalization of the Peripatetic.[3] Another, and a most significant, result of their merging the particular moment in the all-inclusive system, was that they thus broke down the conventional distinctions of time into past, present, and future, finding the meaning of all within the present.[4]

[1] We noticed before that chance represents only that surplus of means to a given end which is connoted by the term συμβεβηκός or what is purely indifferent. Just this fiction is destroyed by viewing the whole as one system. The particular is thus accounted of only in relation to the universal, as the Stoics practically did. Besides *the concept is only an incomplete definition of a particular*, and when the particular as such vanishes in the whole *the completed concept is the definition*..

[2] If, as it would seem probable from all accounts, the Stoics meant "*correlation*" by their fourth category (πρός τι πῶς ἔχον ποιὸν ὑποκείμενον — the examples given are parent and child, right and left), this also would be an interesting evidence of their desire to put everything into *a closed system;* for a fact was supposed to be completely defined only when stated in that category.

[3] Prantl, *o. c. p.* 402, speaking of the logic of the Stoics and Epicureans, says: "Darum beruhen auch in Bezug auf die Logik alle Verschlechterungen, welche uns von hier an durchgreifend begegnen, nicht mehr, wie bei den älteren Peripatetikern, in einer unbewussten Schwäche der Spekulation in Bezug auf Zusammenhang und Bedeutung der aristotelischen Gesammt-Philosophie, sondern in den positiven Verstössen einer Richtung, welche bloss den subjectiv-praktischen Bedürfnissen durch doctrinäres Gerede genügen will, und *für welche daher das platonisch-aristotelische Princip einer mit der Philosophie überhaupt verknüpften Logik gar nicht vorhanden ist.*" Surely such a view of the history of thought is fully as *formal* as Prantl would represent the logic of the Stoics to be. It seems to me that this subject deserves more sympathetic treatment, however great the formalism was which they introduced into the doctrine of the syllogism. Victor Brochard, Sur la Logique des Stoïciens, in the *Archiv f. Gesch. der Philosophie*, V, 1892, pp. 449 ff., has treated of Stoic nominalism quite appreciatively.

[4] On this, see Prantl, p. 451, note 136, and p. 459.

When this view was once taken, it is clear that they had to attack Aristotle's exception to the law of the Excluded Middle. This they did, and thereafter this topic formed the principal point of contention between the Stoics who employed it to establish their thorough-going fatalism, and their opponents, who sought to defend freedom of action.[1] Among those defenders of freedom against the arguments of the Stoics are to be numbered not only the Peripatetics, Academics, and Sceptics, but also the Epicureans; and the fact that Epicurus[2] himself found it necessary to take his stand expressly with Aristotle, shows that the Stoics must have assumed this position from the beginning.[3]

Among the arguments most frequently urged against the Stoic doctrine of fatalism was the so-called λόγος ἀργός, namely, that the principle would lead to sloth, since action and prudence would be unavailing. Aristotle himself adduces this consideration,[4] for he is supremely interested in deliberate conduct. Accordingly, the fact of deliberation, the weighing of means, occupies a great share of his

[1] This fact is shown not only by the frequency with which mention is made of the law of Excl. Middle in all of the rather voluminous writings of the ancients on the subjects of Fate, Divine Foreknowledge, Divination, Astrology, etc., but also by the importance attached to Aristotle's dictum by all of his commentators. Thus Ammonius: *τοῦτο μέν τοι τὸ θεώρημα τὸ νῦν ὑπ' Ἀριστοτέλους κινούμενον, δοκεῖ μὲν εἶναι λογικόν, κατὰ ἀλήθειαν δὲ πρὸς πάντα μόρια τῆς φιλοσοφίας ἐστὶν ἀναγκαῖον· κατά τε γὰρ τὴν ἠθικὴν φιλοσοφίαν πᾶσαν ἀνάγκη προσλαμβάνειν, ὡς οὐ πάντα ἐστί τε καὶ γίνεται ἐξ ἀνάγκης, ἀλλ' ἔστι τινὰ καὶ ἐφ' ἡμῖν.* Another commentator praises Aristotle for not confining himself to purely logical consideration in this logical treatise and giving scope to the largest and most important considerations of philosophy. Simplicius in his *Comment. on the Categories*, 103 B, expressly states that the Stoics (presumably first) applied the law also to futures. In my Dissertation *Pseudo-Platonica*, p. 26, I have collected some of the references to this controversy. I could now add many others if it seemed desirable.

[2] See Cicero, *De Nat. Deorum*, I, XXV, 69 f., with Mayor's note, esp. 70: "Idem facit (Epicurus) contra dialecticos; a quibus cum traditum sit in omnibus disjunctionibus in quibus 'aut etiam aut non' poneretur, alterum utrum esse verum, pertimuit, ne, si concessum esset hujus modi aliquid, 'Aut vivet cras aut non vivet Epicurus,' alterutrum fieret necessarium, etc." There is a slight inaccuracy here which Cicero himself corrects *De Fato*. c. 37. Indirectly Epicurus' attitude serves to confirm the age if not the genuineness of the tract *De Interpretatione*.

[3] Schmekel's *Philosophie der mittleren Stoa*, 1892, pp. 155–184, has done good service in tracing back later arguments against Fate, like Cicero's, etc., to the school of Carneades. There is, however, still much to do in this direction.

[4] *De Interpret.*, 18 *b* 31: *ὥστε οὔτε βουλεύεσθαι δέοι ἂν οὔτε πραγματεύεσθαι.*

attention in the Rhetoric and the Ethics. "The great majority of matters with which decisions and enquiries have to deal are of such nature as to admit of being different; for men consult and institute investigations regarding what they do, and actions are altogether of this class, none of them, practically, being governed by necessity."[1] It is upon such facts as these, and with such a comparatively naive consciousness of freedom, that Aristotle proceeds to develop his ethical theory. But this view must be shaken the moment that the nature of time is more critically examined. We cannot enter here into an elaborate history of ancient conceptions of time in general, but some remarks may be quite in place. Respecting the present there could be no serious question until the full development of Scepticism, but regarding the past and the future the case was different. Aristotle, of course, considered the past as a potentiality realized in the present, and the future as existing potentially in the present moment.[2] But in the gradual effacement which the conception of potentiality suffered, this answer could not long be accepted as satisfactory.

We have already remarked that the Stoics, in their energetic effort to sum up all the particular objects of experience in one self-consistent system, practically drew past and future into the present; and we have an express statement of Chrysippus' doctrine concerning time. "Past and future time have a certain reality, but do not really exist, save as accidental qualities are said to exist, as, *e. g.*, 'walking' is a fact *when I am walking*, but when I sit or lie down, it is not."[3] Epicurus defined time as a quality two removes from reality, *i. e.*, the atoms.[4] Critolaus, a contemporary of Carneades, declared it to be a mental instrument of measurement, according it no objective existence.[5] If thus the dogmatic schools tended more and more to deprive it of substantial validity, the Sceptics of the third and second centuries B. C. ended by denying it altogether, or at least making it wholly unknowable.[6]

[1] *Rhet.*, 1357 *a* 23 ff.

[2] This would be clear even from general considerations of his system; but see also *De Interpret.*, 19 *b* 2, where he speaks of futures as τῶν μὴ ὄντων δυνατῶν δὲ εἶναι ἢ μὴ εἶναι. It required only the disintegration of the δυνατόν to reach the μὴ ὄν.

[3] In Wachsmuth's *Stobaeus*, I, p. 106. [4] *Ibid.*, p. 103, and Sext. Empir. X, 219.

[5] *Stobaeus, ibid.*, p. 103.

[6] Sextus Empiricus has two lengthy discussions of Time, *Pyrrhon.*, III, 136 ff.,

Considering the important part which the thought of futurity plays in all ethical theory, it is not strange that it should have been most keenly criticised and the results of its supposed annihilation drawn out in their relation to conduct. This is done in two spurious dialogues, *Demodocus* and *Sisyphus*, which found their way into the manuscripts of Plato, but which I believe to have originated in the period after Carneades,[1] and in two orations of Dio Chrysostomus.[2] In the *Sisyphus* and *Demodocus* the argument turns upon the question whether deliberation is possible, and a general denial is practically reached by showing that in giving or taking counsel a knowledge of the things under discussion would be necessary, which, however, is rendered impossible by the conditions of the case. Deliberation has to do with futures, and they are non-existent.[3] The conclusion, therefore, is purely sceptical. The twenty-sixth oration of Dio follows the argument of the *Sisyphus* very closely, except that the parts are somewhat transposed. But the sceptical movement has spent itself, and Dio comes at the last to the curious conclusion, that, though the discussion proves the futility of deliberation because of our inability to know the future, one must learn and devote himself to study, in order that he may give competent advice and not fall into error. Such doubts are those only of a *littérateur* and travelling teacher who wishes to recommend himself and the cause of education.[4] In the other oration, he says of the philosophers, among whom he includes himself, that they, in contrast to vain rhetoricians, have a real foreknowledge of events and have long ago taken counsel with themselves regarding them.[5]

All these questionings, however, were primarily due to the Platonic-Aristotelian distinctions in intellection arising from the fixed juxtaposition of the eternal and necessary on the one hand, and the

and *Adv. Math.*, X, 176 ff. His arguments against it doubtless go back to the earlier Sceptics. He quotes *Timon*, X, 197, and we must conclude from this fact that the subject began to be thoroughly canvassed not many generation after Aristotle.

[1] See my Dissertation, above mentioned, pp. 22 ff.

[2] *Orations* XXII and XXVI.

[3] All of these works, *Sisyphus*, *Demodocus*, *Dio*, and *Sextus Empir.* call futures μὴ ὄντα without qualification.

[4] This conclusion is only playfully suggested in *Sisyphus*, 390 A.

[5] *Orat.* XXII, p. 511, Reiske.

contingent and not really intelligible on the other.[1] "Let us postulate," says Aristotle,[2] "that there are two parts of the rational faculty; one with which we contemplate that sort of real existence whose principles do not admit of being different, and one with which we contemplate what may vary. For, in relation to objects which are generically different, we must assume equally separate and distinct parts of the soul naturally related each to its appropriate object, if indeed, as we believe, knowledge belongs to them in virtue of similarity and kinship. The first of these we may call the cognitive, the second the inferential;[3] for deliberating and drawing inferences are one and the same, and no one deliberates about matters that do not admit of variation. Hence the inferential is a subdivision of the rational faculty." Deliberation, he then proceeds to say, is a form of search or enquiry, and wisdom in counsel is not scientific knowledge, nor yet is it merely a matter of good luck. Rather it is to be called a species of prudence—for prudent men are good counsellors—the right perception of that which is advantageous for the procurement of an end, whereof prudence is the right apprehension.

It is clear that Aristotle's own dictum with regard to the future rendered his utterances on deliberation self-contradictory. If one cannot truthfully say that this particular result *will* follow, but must abide the actual event before one's statement can be true, then a foreknowledge of the right means is also impossible. His difficulty lay in believing that certain judgments are absolutely true, as containing predicates which are fixed and eternal in their meaning. Could he have seen that the principles of mathematics and astronomy, in which he reposed so much confidence, would themselves suffer a continual reconstruction as knowledge advanced, he might have perceived that all individual judgments are incomplete and provisional. As such there can be no radical distinctions between scientific and practical judgments: both still proceed from a subject which is not fully defined. But the recognition of previously

[1] Plato said that matter was at the very best ἁπτὸν λογισμῷ τινὶ νόθῳ, μόγις πιστόν, *Tim.*, 52 B; and Aristotle, *Met.*, 1036 *a* 8, says: ἡ δὲ ὕλη ἄγνωστος καθ' αὑτήν. In both systems matter is the contingent or its source, and is the μὴ ὡρισμένον or the ἄπειρον.

[2] *Eth. Nic.*, 1139 *a* 6 ff.

[3] So I render, for convenience, ἐπιστημονικόν and λογιστικόν. Aristotle elsewhere defines βουλεύεσθαι as συλλογισμός τις.

undefined qualities in the subject which vitiate or rather demand the re-formation of the predicate, ordinarily impresses us less in science than in practice. Perhaps the reason lies in the less subjective character of theory. Scientists are more devoted to *truth* than to a particular *theory*. Hence there are not such heart-burnings over negative instances, refusing to be explained by our hypotheses, as we experience when, through lack of foresight, "ein Strich durch die Rechnung" frustrates our most cherished plans. Yet the case is really the same: only, because we are so eager to act, our definitions of the means in practice are perhaps relatively more incomplete. Now and then, however, the disclosure of the inadequacy of a theory will shock the world quite as much as the conviction that one has been reckoning without his host. The discoveries of Kepler and Galileo, all things considered, doubtless produced a greater effect in France than the failure of the late war with Germany.

Thus we are at length brought back, after long wanderings, to our point of departure. Theory is only a phase of action, and the keynote of action is progress toward organization and unity. To set up fixed limits to this process is to falsify fact, and the doing so can lead only to self-contradiction. It is in fact only a transference of the functional boundaries, set up by the individual act, to reality at large: what is true of the part is not equally true of the whole. Thus the contingent and the necessary, which possess a true meaning only within a limited scope defined by a particular end, are generalized and erected into absolute fact. But, really, *absolute necessity* is as unmeaning as *absolute contingency*. For both conceptions we shall do well to substitute that of less or greater completeness in the definition of fact.