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CONDITIONS

THE first part of this paper examines some prevalent confusions concerning the notions of necessary condition and sufficient condition. The second part deals with some philosophical problems affected by the confusions. At some crucial points my remarks are more intuitive than I would like, but a more rigorous formulation presupposes a more adequate explication of such notions as *cause, meaning, identity* than is presently available.

PART I

Conditionship is not normally predicated of statements, but rather of the truth of statements or of the existence of states of affairs or things or the occurrence of events, and the like. I use small letters (p, q, r) as dummy sentences which are used to assert the existence of states of affairs (events, etc.), the corresponding dummy names of which are capital letters (P, Q, R). For example, if 'p' is "Ted is dead," 'P' is the name of the state-of-affairs: Ted's being dead. The sentence 'p' can be read as the sentence "P obtains." Further, '$P = Q$' means that the things referred to by 'P' and 'Q' are identical. Of course, '$p = q$' and '$P \equiv Q$' are nonsense.

The sentence (1) "P is a sufficient condition of Q" is usually said to mean one or more of the following:

(1a) '$p \supset q$' is true. (Material Implication)
(1b) P does not obtain without Q obtaining. (Constant Conjunction)
(1c) P cannot obtain without Q obtaining. (Necessary Compatibility)

Correspondingly, the sentence (2) "Q is a necessary condition of P" is said to mean:

(2a) '$\sim q \supset \sim p$' is true. ($p \supset q \equiv \sim q \supset \sim p$)
(2b) P does not obtain without Q obtaining.
(2c) P cannot obtain without Q obtaining.

From each of the three pairs of definitions it follows immediately that (3) P is a sufficient condition of Q if and only if Q is a necessary condition of P ($1 \equiv 2$). From 3 it follows that (4) P is a necessary and sufficient condition of Q if and only if Q is a necessary and sufficient condition of P.

Now all of this is mistake compounded on mistake. In saying that, I assume, of course, that the philosophical use of the word 'condition' is supposed to mirror the ordinary use and that the foregoing definitions are not supposed to be merely stipulative. And I think that the way philosophers usually introduce and explain this notion (e.g., in textbooks) is good evidence for this assumption. If they have not intended the ordinary use, then their use is both misleading and otiose. But most important, regardless of whether or not the deviation from ordinary use is intentional, it has consequences, it creates some philosophical problems and obscures the solution of others. In part II I show how the proper use of the notion of condition leads to solutions of philosophical problems.

Let us see what is wrong with 1a–c and 2a–c. First, note that they are not equivalent to each other. The assertion that 1a is equivalent to 1 and 2a is equivalent to 2 implies all the following falsehoods (A–F). The interpretation of 1b and 2b when P or Q never obtains is debatable, but "$(1 \equiv 1b)(2 \equiv 2b)$" clearly implies all but D, and perhaps D as well. There is also some unclarity in 1c and 2c, but "$(1c \equiv 1)(2c \equiv 2)$" clearly implies A, B, C, and perhaps also F. The six falsehoods are:

(A) Proposition 3 (above) is true.
(B) Proposition 4 (above) is true.
(C) If '$P = Q$' is true, then P is a necessary and sufficient condition of Q and Q is a necessary and sufficient condition of P.
(D) If P never obtains (either necessarily or contingently) or if Q always obtains (either necessarily or contingently), then P is a sufficient condition of Q and Q is a necessary condition of P.
(E) There is a condition relation between any two (or more) events or states of affairs that are constantly conjoined but not causally related.
(F) If 'p' and 'q' are each necessarily true, then the truth of each is a necessary and sufficient condition of the truth of the other. More broadly, there can be conditions of the truth of a necessary truth.

My reasons for calling each of these false will appear in the course of my remarks.

When the word 'condition' is used in the phrases 'necessary condition' and 'sufficient condition' it is a relational term like 'before'; it is always "condition *of* (or *for*)." And just as, if x is before y, then y is after x, if P is a condition of Q, then Q is a *consequence* of P (or P and R, if P is necessary but not sufficient). And just as being before or being after is a relation between at least two distinct things (x cannot be before or after x), being a condition or a consequence is a relation between at least two distinct things. P cannot be a condition or consequence of P. Thus, C is false. Being male is a necessary condition of being a bachelor, but being an unmarried male is identical with being a bachelor, and thus is neither a condition nor a consequence of it. [Note: if '$p \equiv q$' is a necessary truth and '$P = Q$' is true, then 'p' and 'q' need not mean the same (be synonymous).]

Further, if Q is a consequence of P, then Q must be both (I) in some way *posterior* to P and (II) in some way *dependent* on P. Conversely, if P is a condition of Q, then P must be both (I) in some way *prior* to Q and (II) in some way *nondependent* on Q (neither independent of nor dependent on Q). (Compare: prerequisite/*pre requisite*.) Obviously, the expression, 'in some way', needs to be spelled out. But there are various types of condition relations—e.g., causal, logical, legal.[1] The kind of priority and dependency is a matter of the type of relation involved. Now, no doubt a variety of difficult and important problems become relevant at this point, and I shall be making a few slight remarks about some of them. But I think some useful things can be said about conditions without entering the controversy over analyticity or causality.

If I and II are accepted, D and E can immediately be seen to be false. The falsity of F may require some discussion. One might think that the truth of "$(x)(x = x)$" is a condition of the truth of "My nose is identical with my nose." But since Lewis Carroll that has been known to be a mistake; the truth of the latter does not depend on or presuppose the former. Nor is there a condition relation between the premises and the conclusion of a mathematical or logical proof where the conclusion is a necessary truth. It may be, as some philosophers (e.g., Wittgenstein) have argued, that the *sense* of the conclusion depends on the proof, but its *truth* does not. The truth of a necessary truth is not conditional upon any other truth. In short, a necessary truth is not a contingent (i.e., contingent upon something else) truth.

But the most significant implication of I and II is that A and B are false: it is impossible for P to be both prior to and posterior to Q, both dependent and nondependent on Q, both a condition and a consequence of Q. There is no mutual implication between 1 and 2; indeed, they are mutually exclusive. Take what should be obvious

[1] Legal conditions, as in a law, contract, or game, are often neglected or wrongly assimilated to logical conditions. But changing a rule of baseball is changing the game of baseball and not the meaning of 'baseball'. Legal conditions are probably the etymologically original type of condition.

counterexamples to 3. Being at least 21 is a necessary condition of being a voter, but it would be absurd to say that being a voter is a (sufficient) condition of being 21. It is not a condition at all; it is a consequence. Making a touchdown is a sufficient condition of scoring six points, but it would be absurd to say that scoring six points is a necessary condition of making a touchdown.

Other cases may seem less obvious, and so I want to explain how and why one can get confused about 3 and 4. One source of confusion is the fact that sometimes two states of affairs share more than one kind of condition relation. For example, Ted's being dead is a legally necessary condition of Ted's being buried, and Ted's being buried is a causally sufficient condition of Ted's being dead. But Ted's being buried is not a legally sufficient condition of Ted's being dead, and Ted's being dead is not a causally necessary condition of Ted's being buried. But such cases of mixed conditions are in the minority.

A more serious and subtle cause of confusion is the fact that the condition relation implies a truth-functional relation which in turn gives rise to an evidential relation. Leaving 1c and 2c to one side for the moment, let us turn to the relation between 1 and 1a–b and 2 and 2a–b. The relation between 1 and 1a–b is that 1 implies 1a–b but 1a–b does not imply 1; similarly, "$2 \supset$ 2a–b" is true, but "2a–b $\supset 2$" is false. More specifically, the relation here is itself an instance of a condition relation. The truth of 1 is a logically sufficient condition of the truth of 1a–b, and the truth of 2 is a logically sufficient condition of the truth of 2a–b.

1a, 1b, 2a, 2b all express essentially the same truth-functional relation; 1 and 2 each imply that relation, but also more than that. If 1 or 2 is true, then it must not be, so to speak, an accident or coincidence that P does not obtain without Q obtaining. It is not enough to consider the truth of 'p' and 'q' separately; one must also consider the truth of some 'r' of the form: "Q obtains because P obtains" or "Q obtains as a result of P obtaining" or "Q obtains by means of P obtaining" or "Q obtains in virtue of the fact that P obtains" or "Q must obtain in order that P obtain," etc. Unless some such statement is true there is no condition relation. If P is a condition of Q, then 'p' (or some sentence equivalent to 'p') must be able to play an essential role in some kind of explanation or justification of the truth of 'q' (not just any kind, since those involving only evidential relations will not suffice). Thus, 1 and 2 are each sufficient conditions of P's not obtaining without Q obtaining; that is, P does not obtain without Q obtaining *because of* 1 (P being a sufficient condition of Q) or 2 (Q being a necessary condition of P).

In consequence of this, the truth of 1 and the truth of 2 are each sufficient conditions of the truth of '*p*' being *sufficient evidence* for the truth of '*q*' and of the falsity of '*q*' being *sufficient evidence* for the falsity of '*p*'. Thus if 1 *or* 2 is true, one can argue *both* from the occurrence of *P* to the occurrence of *Q and* from the nonoccurrence of *Q* to the nonoccurrence of *P*. It is this fact above all that leads one to believe that 3 and 4 are true. This confusion can, perhaps, be made clearest by studying 1c and 2c, which are the best approximations to 1 and 2.

The sentence "*P* cannot obtain without *Q* obtaining" does not, by itself, imply which of *P* and *Q* is the condition and which is the consequence; it is, so to speak, nondirectional. The sentence can be used to assert merely that the two things have to go together—and never mind which, if any, is the condition. Used in this way, the sentence is not a substitute for 1 or 2. Yet this sentence *can* be used as 1c to assert 1 or used as 2c to assert 2. And this is to say that 1c is not really equivalent to 2c.

A comparable sentence is "You can't be President without being a great man." This might mean either that being a great man is a necessary condition of being President because you won't be nominated or elected unless you already have substantial renown or that being President is a sufficient condition of being great since the office is of such importance that anyone holding it becomes a historically significant person. This kind of ambiguity is peculiar to only a small class of sentences. But this sentence—and any sentence of the form "*P* cannot obtain without *Q* obtaining"—is susceptible of another kind of ambiguity: that between a condition relation and an evidential relation. This ambiguity is made more difficult to detect by the fact that such sentences as "*Q* obtains because *P* obtains" mirror the ambiguity; they can mean either that *Q* obtains as a result of *P* obtaining or that *Q* obtains, as is shown by the fact that *P* obtains. Consequently, one asserts "*P* cannot obtain without *Q* obtaining" and shifts back and forth between the condition and the evidential relations unwittingly, and concludes that '1c $\equiv$ 2c' is true.

Take, for example, "*x* being bigger than *y* and *y* being bigger than *z* (*P*) cannot obtain without *x* being bigger than *z* (*Q*)." *Q* is a necessary condition of *P*, but one is seduced into thinking that *P* is a sufficient condition of *Q*. After all, *P* cannot obtain without *Q* obtaining; *Q* follows from *P*; *Q* is logically implied by *P*. (Stuttering is a common feature of such arguments.) In fact, *Q* obtains because *P* obtains. Yet note that *Q* does not obtain as a result of *P* obtaining. It is not *x*'s being bigger than *y* and *y*'s being bigger than *z* that results in *x*'s being bigger than *z*; the size of *y* is irrelevant; the sizes of *x* and *z* are nondependent on y. Instead, one would use the sentence "Q obtains because P obtains" where one wished to establish the conclusion, Q, on the basis of certain known facts, P. Now while one can similarly argue "not-P, because not-Q" (the evidential relation), one can also say things like: "Q must obtain in order that P obtain."

Once the distinction between a condition and a consequence is clear, it is easy to distinguish the necessary conditions from the sufficient ones. The necessary conditions are those conditions such that, if they do not obtain, their consequences do not obtain (or alternatively—cannot obtain). The sufficient conditions are those conditions such that, if they obtain, their consequences do obtain (or alternatively—cannot not obtain). Thus, once "P is a condition of Q" is established, the decision whether P is necessary or sufficient or both can be made solely on truth-functional grounds—but then the decision on the truth of "P is a condition of Q" cannot be made solely on truth-functional grounds. Note that these definitions do not allow one to infer 1 from 2 or 2 from 1. Thus, neither 3 nor 4 is inferable.

So far I have concentrated on cases where P is a necessary or a sufficient condition of Q, but not both. Now the following guide can be laid down: If '$p \equiv q$' is a necessary truth, then either '$P = Q$' is true *or* 'p' or 'q' or both are necessary truths *or* P or Q but not both is a logically (or legally) necessary and sufficient condition of the other, its consequence. This guide is the key to my handling of two of the problems of part II. These problems are a sample of the many cases in philosophy in which one senses a difference between two logically equivalent statements but cannot say what the difference is. I am saying that the difference is that between a condition and its consequence. (Note that the traditional definitions of 'condition', all of which implied 4, prevented one from making such a distinction.)

An example of the use of this guide: Suppose the game *chuss* is exactly like chess except that checkmating is the only way one can win a game (i.e., no forfeits, etc.). Then, X checkmates if and only if X wins a chuss game. Thus '$p \equiv q$' is necessarily true. But clearly neither 'p' nor 'q' is necessarily true. Nor is '$P = Q$' true; checkmating is a move in a game, but winning a game is not a move in a game.[2] Thus there is a condition relation: checkmating is the neces-

[2] Often the considerations I offer for the falsity of '$P = Q$' may seem quite weak. However, in the course of showing which of P and Q is the condition an additional and much stronger proof of nonidentity is always implicit—namely, "Q as a result of P" (or some other such statement) is true, while "P as a result of Q" is false or absurd. Such nonsubstitutability implies nonidentity.

sary and sufficient condition of winning, the consequence. Obviously the decision as to which is the condition and which is the consequence cannot be made on truth-functional grounds. Instead, the decision is based on the truth of "*X* wins as a result of mating," "In order to win *X* must mate," etc., and the falsity (or absurdity) of "*X* mates as a result of winning," "In order to mate, *X* must win," etc. Of course, one can say "*X* mates because *X* wins," but that statement would be used to express the evidential relation.

PART II

Being. Aristotle argued that a species (secondary substance, universal) is ontologically less fundamental than the individuals (primary substance, particulars) which are its members, because the species cannot exist if its members do not exist. Commentators have found this a strange argument, since the Platonist can reply in kind that an individual cannot exist without its species' existing. That is, if 'P' is the existence of some individual (e.g., a dog) and 'Q' is the existence of its species, then '$p \equiv q$' is necessarily true. Now neither 'p' nor 'q' is a necessary truth. And '$P = Q$' is false, as is evidenced by a host of examples of the fallacies of distribution and composition (e.g., the flamingo species is disappearing and in danger of becoming extinct, therefore that flamingo is disappearing and in danger of becoming extinct). Thus there is a condition relation, and Aristotle was right—P is the condition of Q.

Compare: (10) The species dog exists because a dog exists. (11) A dog exists because the species dog exists. Both 10 and 11 can be true if used to express an evidential relation, but even here the truth of 11 is posterior to and dependent on the truth of 10. If used to assert a condition relation, 10 is true, and 11 is false or absurd.

First, the evidential relation. Suppose it were an open question whether the species dog is extant. Then someone must locate an individual dog before anyone is justified in asserting that the species is extant. Now suppose it were an open question whether some particular dog or any dog exists. Again, one must show that an individual of a certain description exists. Now, one can be justified in asserting that there exist individual dogs without ever having acquaintance with any dog. Here one might assert 11. One would be relying, directly or indirectly, on some information that someone has had acquaintance with a dog. Thus 11 is posterior to and dependent on 10.

Now, the condition relation. Let us ask what must happen in order that a species or an individual "come into existence." A tilon is the offspring of a tiger and a lion or of two tilons. Presently there are no tilons. Now, how does one get the species tilon to exist?—"By producing *a* tilon (or two)." Though not a very informative answer, it is true. And how does one get *a* tilon to exist?—"By producing the species tilon." That is false or absurd.—"By producing *a* tilon." That is only uninformative, not false.—"By mating the species lion and the species tiger." That is absurd.—"By mating *a* lion and *a* tiger." That is true and informative. The best answer would be instructions on how to mate a lion and a tiger. That is, in order to bring into existence either an individual or a species one must first produce the conditions requisite for producing an individual. What the mating produces, what comes out of the womb is an individual, a tilon. The logical consequence is the existence of the species. Thus, the existence of the individual is a logically sufficient condition of the existence of the species.

Now let us ask what must happen in order that an individual or species cease to exist. The assertion "In order to kill that dog you would have to kill off the species" would make sense only if one meant that the life of that dog is in some way causally dependent on there being other living dogs. There is no difficulty about the assertion "In order to kill off the species dog you would have to kill that dog." It is a logically necessary condition of the existence of the species that some dog exist, and hence it is a logically necessary condition of the nonexistence of the species that no dog exist, and hence that that dog not exist. Hence the existence of the species is a logical consequence of the existence of an individual, and hence it is logically posterior to and dependent on individuals. And that is as good a ground as any for calling the species ontologically less fundamental.

Truth. If 'q' is " 'p' is true," then '$p \equiv q$' is a necessary truth. On the basis of this it has been argued that the predicate 'is true' is logically superfluous in " 'p' is true." This argument presupposes that if two contingently true statements are necessarily materially equivalent, then they are cognitively synonymous. This is precisely one of the preconceptions that my remarks are directed against.

Suppose 'p' is "Ted is dead"; then 'P' names the state of affairs, Ted being dead. And 'q' is " 'Ted is dead' is true"; hence Q is the state of affairs, the statement "Ted is dead" being true. Neither 'p' nor 'q' is necessarily true.[3] And '$P = Q$' is false. To be sure it is not

[3] If 'p' were a necessary truth, my argument here would show that there can be conditions of a necessary truth—namely, " 'p' is true." And that runs counter to my remarks on F (357 above). One exit from this would be to argue that, although, e.g., "$6 + 5 = 11$" is a necessary truth, " '$6 + 5 = 11$' is true" is not a necessary truth. This seems an unpromising move. My inclination is rather to admit

clear what sort of thing Q is, but that itself is a reason for denying Q's identity with P. Another good reason for that denial and, hence, for denying that 'p' means the same as 'q', is that to assert 'p' is to say something about poor Ted and not about a statement, whereas to assert 'q' is to say something about a statement and only indirectly about Ted.

Thus there is a condition relation. P is the condition of Q, which is the consequence. Compare: (20) Ted is dead, because "Ted is dead" is true. (21) "Ted is dead" is true, because Ted is dead. No doubt there is little occasion to assert either. 21 may seem odd, but only because it is so trivial. But 20 makes no sense except where one is inferring Ted's demise from the truth of the statement. Yet even here with the evidential relation, P is prior to and nondependent on Q. In order to show that Ted is dead or that the statement is true we take the required steps (e.g., looking) to show that Ted is dead.

A more useful comparison is: (20a) Ted is dead in virtue of the fact that "Ted is dead" is true. (21a) "Ted is dead" is true in virtue of the fact that Ted is dead. 21a is true; 20a is absurd. Thus, P, the truth of 'p', is a logically necessary and sufficient condition of Q, the truth of " 'p' is true." This is, I think, at least one of the truths implied by the correspondence theory of truth.

Fatalism. Richard Taylor has argued for the thesis of fatalism[4]—namely that, if X (some person or thing[5]) does P (some act or event), then X could not have done $\sim P$. His argument purports to employ only six premises. Three of them are truisms. Three of them are false: they are the assertions '$1 \equiv 1c$', '$2 \equiv 2c$', and 3. 3 is the operative premise; if it is accepted, the conclusion follows. Put baldly, the argument is this: If P is a sufficient condition of Q, then Q is a necessary condition of P, and $\sim P$ is a sufficient condition of $\sim Q$, and $\sim Q$ is a necessary condition of $\sim P$. Since, necessarily, one of the necessary conditions does not obtain, the act or event of which it is a necessary condition cannot obtain. Granting that every act or event has some consequences (however trivial), the fatalist thesis is secured.

A study of Taylor's article clearly reveals that the critical confusion is that between the conditional and the evidential relation. That confusion requires no further argument or clarification here. But there is a related confusion that may also be present in Taylor's

the paradox and submit it as only one more anomaly begotten by the philosophical conception of a necessary truth.

[4] "Fatalism," *Philosophical Review*, LXXI, 1 (January 1962): 56–66.

[5] Some of Taylor's critics wrongly suppose that his argument flounders on the intricacies of the concepts of human action. Those concepts are irrelevant to his argument.

article and is worth mentioning here. The confusion is that between the conditions of *P* itself and the conditions of *P*'s being a condition of *Q*. If *P* is a condition of *Q*, then *Q* does not enter into the conditions of *P*. But obviously, *Q* must be involved in the logical conditions of *P*'s being a condition of *Q*. But this is trivial. Taylor needs *Q* to be a condition of *P* itself, but it is not.

Actually, since I find fatalism not only false but ultimately incoherent, I view Taylor's argument as a neat *reductio* proof of the falsity of 3 and, hence, of the falsity of '$(1 \equiv 1c)(2 \equiv 2c)$' from which it is derived. At the very least the argument illustrates how a seemingly innocuous misuse or stipulative use of an ordinary word can create philosophic confusion.[6]

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BOOK REVIEWS

Plato's Progress. GILBERT RYLE. New York: Cambridge University Press, 1966. 311 p. $6.50.

A book on Plato by one of the most eminent of contemporary philosophers naturally raises great expectations, particularly when that philosopher is an accomplished scholar who has already made important contributions to the interpretation of Plato's work. In a sense our expectations are disappointed, since *Plato's Progress* turns out to be not at all, or only tangentially, an examination of Plato's philosophy. Ryle's book is first and foremost an attempt to rewrite the literary and intellectual biography of the author of the dialogues along radically new lines. Philosophical theories and the arguments connected with them are nowhere analyzed in detail. (There are at best a few hints in this direction for the later dialogues; see pp. 273, 276 f, 281–283.) Nevertheless a definite interpretation of Plato's doctrines and a very specific view of the nature of philosophy is presupposed by this account of Plato's intellectual development. Fortunately Ryle has provided, almost at the same time, a long article on Plato in the new *Encyclopedia of Philosophy* where philosophical

[6] Taylor, with Roderick M. Chisholm ("Making Things to Have Happened," *Analysis*, xx, 4 (March 1960): 73–78), produced an additional (though related) confusion by using a similar argument employing a form of 3 to conclude that effects (*so-called* "necessary conditions") can precede their causes (*so-called* "sufficient conditions"). William Dray, in a reply in the same issue ("Taylor and Chisholm on Making Things to Have Happened": 79–82), accurately locates the confusion in their definition of sufficient condition, which is such that any *P*, the occurrence of which is sufficient *evidence* of the occurrence of some *Q*, would be called the cause of *Q*.