PARADOXICAL ANNOUNCEMENTS

A NEW and powerful paradox has come to light. The basis of it was produced by Mr. O'Connor in an article entitled "Pragmatic Paradoxes" (MIND, 1948). These are his words. "Consider the following case. The military commander of a certain camp announces on a Saturday evening that during the following week there will be a 'Class A blackout'; the date and time of the blackout are not prescribed because a 'Class A blackout' is defined in the announcement as an exercise which the participants cannot know is going to take place prior to 6.0 p.m. on the evening in which it occurs. It is easy to see that it follows from the announcement of this definition that the exercise cannot take place at all. It cannot take place on Saturday because if it has not occurred on one of the first six days of the week it must occur on the last. And the fact that the participants can know this violates the condition which defines it. Similarly, because it cannot take place on Saturday, it cannot take place on Friday either, because when Saturday is eliminated, Friday is the last available day and is, therefore, invalidated for the same reason as Saturday. And by similar arguments, Thursday, Wednesday, etc., back to Sunday are eliminated in turn, so that the exercise cannot take place at all." Mr. O'Connor goes on to say ". . . there is an obvious fault of definition in this case . . . it is pragmatically self-refuting . . . publication entails that the exercise can never be carried out". He later refers to this example as "rather frivolous". It is not frivolous, for a reason which has escaped him. Suppose that the Commanding Officer arranges for a blackout to take place during the period covered by the announcement. Clearly the date of its occurrence cannot be forecast from the announcement. So it will by definition be a Class-A blackout, and he will be entirely justified in his announcement that a Class-A blackout would take place during this period. Yet, in some sense "the exercise cannot take place at all". It appears that the logical gadget which established this conclusion has somehow short-circuited. I think this flavour of logic refuted by the world makes the paradox rather fascinating. The logician goes pathetically through the motions that have always worked the spell before, but somehow the monster, Reality, has missed the point and advances still. It is helpful to consider some related examples, beginning with a simpler one. Suppose a friend says to you in a knowing way "You are going to have a surprise at lunch-time to-morrow" and then tells you exactly what it is. One would be inclined to say that he has spoilt the surprise. He has falsified his first statement, by giving his grounds for making it; an interesting situation. (*Cf.* "I know something you don't know".) But he has certainly not contradicted himself in anything like the usual

sense. It is sensible enough to talk of the occurrence that is going to surprise someone unless you are speaking to that person. When you are speaking to that person, you talk either about the surprise or about the occurrence but not about both. Not because it is at all self-contradictory but because it is pointless, rather like the remark "I'll wager you can't find the roots of the equation $x^2+5x-24=9$ within thirty seconds. The roots are 3 and -8."

Consider next the inquisitor who points at two boxes on his desk numbered "1" and "2", and says "In one of those boxes is an unexpected egg. You may open them only in the order of their numbers. Which box contains the unexpected egg?" We should not be clear what he meant by an unexpected egg. To begin with it can't be completely unexpected since we know it is one of two boxes. And then we might see that if there were no egg in box number one, there would be no unexpectedness at all about its presence in box two. This makes us feel that it must be in box one; yet if it must be there how can it be unexpected? It looks as if there cannot be an unexpected egg there at all. Puzzled, we might say to the inquisitor "Look, your remark doesn't make good sense when announced to me, for I can show from it that there cannot be an unexpected egg in either box". He replies "Surely the matter is simple enough; there *is* an egg in one of the two boxes and you can't argue it away, nor have you by argument decided in which box it is. Ergo, it is an unexpected egg." And now we have him. For if this is what he means we can argue as follows. "If the egg is not in box one, we should know before opening the second lid that it was in box two, and it would not be unexpected. So the only possibility which might make you right, is that the egg is in box one. Yet since we shall expect to find the egg there, it will not be unexpected; in fact, the egg cannot be unexpected, so you are wrong. We do *not* have to show in which box the egg reposes in order to show that it is not unexpected, but only that it cannot be in either and be unexpected. We were puzzled at first because it seemed the egg had some magic property that caused it to vanish whenever we had deduced its whereabouts. But now you tell us that there is a real egg in one of the boxes and you go on wrongly to claim that it will not be expected. True, it may be expected wrongly but only if your own statement was wrong. There is something very queer about the statement "There is an unexpected egg in one box". It suggests, or can be taken to suggest one state of affairs: the presence of a special kind of egg. But we find that this isn't a special kind of egg in the way that speckled, double yolked, or Easter eggs are special. Not at all: unexpected eggs, for one thing, may be expected eggs at the same time (with respect to the conditions of some other problem and problem-solver). Yet the argument proceeds as though they were eggs with some observable peculiarity, and when (on that assumption) we have deduced their whereabouts, the prize is magically spirited away. The

argument which works so well with addled or ostrich eggs whose presence is asserted in one of the boxes, will not do for unexpected eggs (of, if you like, the assertion won't do), because neither of the possible alternatives, (1) there must be an unexpected egg in box one, or (2) there must be an unexpected egg in box two, is sensible if the unexpectedness applies to the person to whom the alternatives are presented. Since these statements are not in themselves sensible, it is not sensible to talk of ruling them out. Nor sensible to make a statement which is equivalent to a disjunction of such alternatives."

Now consider the extent to which our discussion is relevant to the blackout paradox. We must be clear that " Class-A " does *not* mean " announced on or after 6 p.m. of blackout night, until which time no-one had been certain there would be a blackout " but " which the participants *cannot* know is going to take place prior to 6 p.m. on the evening in which it occurs ". (Mr. O'Connor's words.) What is meant by " cannot know " ? I think the obvious intention is that it should mean " cannot produce a proof ", *i.e.* that a Class-A blackout should be one whose occurrence cannot be deduced from the conditions given. If one is given conditions governing the occurrence of ordinary blackouts then from these one can sometimes show that a blackout must take place on a particular night though no specific announcement has been made about that night: the blackout is then not a Class-A blackout. When it is impossible to tell beforehand that there will be a blackout, and a blackout occurs, then it is a Class-A blackout.

Notice two differences between this paradox and the case of the unexpected egg. First, one can expect to find an egg in a box without proving that it must be there; disappointment is less devastating than disproof. Secondly, statements which are equivalent to disjunctions of pointless statements are pointless, but though statements equivalent to disjunctions may be announced, and the terms of the disjunction might make pointless announcements by themselves, we cannot conclude the pointlessness of the disjunctive announcement.

It now becomes necessary to examine the nature of announcements more closely. It is sufficient to point out two importantly different classes of announcements. The first are publicly uttered statements. The second are ordainments. Discoveries are sometimes announced, and they are announcements of the first kind. Dates for performances and places for meetings are announced; these announcements are ordainments, in a sense guarantees, and are of the second kind. The confusion between these functions of an announcement is an important source of the power behind this paradox. In the sequel I shall make this distinction as between public statements and ordainments, though neither term precisely identifies the class to which it will refer. At first, however, the essential distinction is between ordainments and statements which are *not* announced.

Normally, the fulfilment of an ordainment comprises the verification of the statement made in the same words, *e.g.* the announcement "There will be a blackout next Saturday" (1) is fulfilled when a blackout occurs on Saturday next and the statement made with the same sentence is also verified. The peculiar and puzzling feature of some sentences employing the term "Class-A" is that their use as an ordainment may be improper while as a statement they are a straightforward contingent prediction. Consider the sentence "There will be a Class-A blackout next Saturday" (2). As a statement this is true or false depending on the announcements governing the occurrence of the blackout, and on whether the blackout in fact occurs next Saturday. But as an ordainment it has certain peculiarities. An ordainment typically fixes the time, place, or details of some occurrence or function. Now to ordain the Class-A property of a blackout is to guarantee that its occurrence will be arranged relative to the governing announcement, and the latter will be framed, in such a way that the precise date of the occurrence will not be announced or be deducible from the announcement made. If, while ordaining this, one also announces the precise date of the occurrence, one has made a self-refuting announcement. It is important to decide whether it can properly be said to follow from the ordainment (2) that there will be a blackout on Saturday. Now (2) guarantees the occurrence of a blackout which is to be on the one hand, not specified as to date, and on the other, specifically next Saturday. Granted the incompatibility of these qualifications when ordained, one can conclude that the blackout will be on Saturday and not Class-A or not on Saturday but Class-A. Neither is a proper conclusion: each is an interpretation which we might make in a situation where we believed the self-refuting character of the announcement to be due to a mistake. Since we can draw no proper conclusion from (2) as an ordainment it follows that if a blackout does take place on Saturday, while (2) is the governing announcement (ordainment), it will be a Class-A blackout. From which it follows that (2) as a statement will be correct.

Finally, consider the sentence "There will be a Class-A blackout next week" (3). As a statement, (3) will be true or false depending on the governing announcement and on the occurrence of a blackout next week. Take the particular case in which the governing announcement is (3). This announcement is also self-refuting, in a slightly less obvious sense than (2); the proof follows. Saturday is ostensibly a possible day for the Class-A blackout ordained by (3). But if the blackout is to be on Saturday, then there will be no blackout before Saturday, and on Saturday morning (3) will be equivalent to (2) which is self-refuting as we have shown. Saturday is therefore not a real possibility or else (3) is self-refuting. In general, a Class-A blackout cannot occur on the last of any sequence of nights during which it is ordained or else the governing announce-

ment will be self-refuting. The first five nights of the week now form such a sequence: at the next stage, the first four. And thus the nights of the reversed week fall one by one: falling with the last is the point of the ordainment.

Now if the governing announcement is (3), which is self-refuting, and a blackout occurs on any night of the week, the statement (3) will be verified. And if it was publicly stated, it would still be correct.

Conclusion. At first we thought the reductive proof showed a Class-A blackout to be impossible while in fact any blackout that took place was a Class-A blackout. Now we have come to see that the suicide of the announcement as an ordainment is accompanied by its salvation as a statement.

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