

PARACONSISTENT DIALOGUES; or, how to start talking to Cretans^(*)

Jim MACKENZIE and Graham PRIEST

One of the central issues raised by proposals for paraconsistent logics is how these logics would affect behaviour in dialogue and linguistic interaction. After all, one might think, if there is nothing logically wrong with being inconsistent, then there is nothing logically wrong with any sort of linguistic conduct at all. Doesn't the (classical) logical principle *ex impossible quodlibet* ($P, \vdash Q$) express just this: that if we allow inconsistency, we allow anything? It is the purpose of the present paper to examine this possibility, and to describe what changes adopting a paraconsistent logic would make to behaviour in argument.

We begin by considering a simple account of how the requirement to be consistent in dialogue might be described. We suppose that for each person in a dialogue at each stage, there is a store (Hamblin, 1970: 257, calls it a commitment store; cf. Lewis, 1979) of the sentences which that person has asserted or accepted in the dialogue to that stage and has not subsequently withdrawn. We speak of *sentences* deliberately, and try now to clarify our usage. A sentence is a linguistic object whose utterance may count as a move in the dialogue; like other linguistic objects, a sentence is a type whose tokens are physical objects or processes. In most non-dialogical logics, sentences are uniformly indicative, and of a kind which may be associated with truth values. To describe dialogue, we may need to identify other kinds of sentences: questions, withdrawals, points of order (or objections), challenges, requests, commands, suppositions, definitions, promises, stipulations, distinctions, and so on. Where we speak of sentences, we leave open the possibility that some or all of these non-indicative species are included. If we wish to confine ourselves to that species of sentences which may be asserted, we speak of *statements*, though we allow the possibility that the statement to which somebody becomes committed by an utterance need not be the same as the sentence uttered (for example, indexicals may

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be replaced by constants). But a statement, as a sentence, is in our usage a linguistic object (in this we follow Kneale & Kneale, 1962: 49-51). We speak of sentences and of statements to keep our account as general as possible; for though it may be argued that other objects (statements in another sense, as acts; or perhaps propositions) are required for some purpose or other, it seems impossible to describe dialogue in any detail without dealing in sentences at some point, and so we present our account in terms of them only.

In some dialogue contexts, a store might consist only of those statements the participant has actually asserted; but reflection suggests that it would be more realistic to allow not only assertion but also other kinds of linguistic interaction to add statements to a person's store. For example: if I say 'Yes' to 'Is it raining?' then I should be counted as putting 'It is raining' in my store; if I merely answer 'I don't know' to 'Where is Sue's husband?', then I should be counted as putting 'Sue has a husband' in my store -- to avoid that I should have had to have answered 'I didn't know she was married' or something like that; if I do not object when statements are asserted by others, perhaps those statements should be put in my store (that is, a rule to the effect that *silence means assent*; this rule clearly applies to some kinds of statements in some kinds of dialogues, and just as clearly does not apply to other kinds of statements in other kinds of dialogues). However, for our present purposes it is not necessary to decide exactly what the effects of various kinds of linguistic acts on stores are.

The phrase "has not subsequently withdrawn" was, like the word "sentences", used advisedly. Withdrawal is important because in most sorts of dialogue the growth of a commitment store is not cumulative or monotonic: people can change their minds and admit mistakes, and thereby remove or withdraw sentences from their commitment stores. If this is possible, it may be the case that a particular sentence is included in a participant's store at some stage of a conversation, and not included in that participant's store at a later stage, as a result of what has occurred in the conversation between the two stages. To reject that possibility would be to exclude most kinds of real dialogues from our field of vision.

It would be possible, and it is tempting, to include in stores not only the particular sentences which are generated by the actual conversation, but also their consequences. But to do so would involve specifying a particular logic (theory of inference) with which we deduce those consequences. It would also make the contents of stores in most cases infinite (in classical logic, for example, any sentence '*P*' has as consequences all sentences of the form

' $P \vee Q$ '). We resist this temptation for two reasons. First, the logic governing a conversation ought to be embodied in the conversation and to be apparent to the participants, rather than imposed on them from outside by ourselves as theorists. We may, of course, set up dialogues governed by a chosen logic; but we may also wish to explore the logics actually used by people in various kinds of discussion, and it is only possible to explore those logics if we avoid imposing our own logical principles beforehand. Second, it is easier and more intuitively comprehensible to deal with individual sentences than with deductively closed infinite sets of sentences (that is, with theories), especially when it comes to removing sentences from a store.

Beyond these remarks, we do not specify what a store is to be like. Formally, a person's store may be considered as a sequence of sets of sentences, most conveniently defined inductively by rules which state the effects of the utterance of each kind of sentence on its speaker's, its addressee's, and its other hearers' stores. Intuitively, a store might be thought of as a slate on which tokens of sentences are inscribed and from which they may be erased. Each participant keeps track of what is in every participant's store, and at least in simple conversations there is no dispute about the contents of stores. Anybody who has not heard the earlier course of a conversation typically needs to be "filled in" by being told the salient contents of each participant's store when joining the conversation, and we are all familiar with how people do this, and with how a newcomer can ask for it to be done, in ordinary conversations.

It is tempting to require that the contents of a commitment store should at all times be consistent. This temptation also we reject, for two reasons. People often do not notice inconsistencies, and this seems to do little harm. (In the third paragraph of chapter six, Robinson Crusoe tells us that "I pulled off all my clothes" before he swam out to the ship. When he climbs aboard it later in the same paragraph, "... you may be sure my first work was to search and to see what was spoiled and what was free; and first I found that all the ship's provisions were dry and untouched by the water, and being very well disposed to eat, I went to the bread-room and filled my pockets with biscuit...", Defoe, 1718: 50-51.) Nor is this merely a quirk, a result of the limits of human powers of attention and information processing capacity or what Russell once called "merely medical limitations". For many interesting logics, the set of theorems is not decidable; that is, there is no effective procedure (Mendelson, 1964: 227-8, 254-7; and see also his 1990) which will tell us whether a given sentence is a theorem. Therefore also, the set of anti-theorems for those logics is not decidable; and thus,

whether the addition of a particular statement to a given store results in that store implying or containing an anti-theorem of the logic concerned is not a decidable matter. So, finally, if we required stores always to be consistent, it would not be effectively decidable whether the assertion of a particular sentence at a given stage was a legal contribution to the dialogue, or whether it was illegal (or, perhaps, had less than its usual commitment effect) in virtue of making somebody's store inconsistent. This is the first reason, that to require stores always to be consistent would mean that we should not have a guarantee that there is an effective procedure by which to decide whether a given event was a legal continuation of the dialogue or not.

At first sight we would suppose it to be a requirement of the statements in a commitment-store that they be *consistent*; but on reflection, we may come to think that, although there does exist an ideal concept of a 'rational man' which implies perpetual consistency, the supposition is by no means necessary to the operation of a satisfactory dialectical system. In fact, even where our ideals of rationality are concerned, we frequently settle for much less than this: a man is "rational", in a satisfactory sense, if he is capable of appreciating and remedying inconsistencies when they are pointed out. We should reflect, too, that consistency presupposes the ability to detect even very remote consequences of what is stored, and that this would itself make nonsense of certain kinds of possible dialectical application. Could we model a discussion, between mathematicians, of the validity of a certain theorem, if we had to model the mathematicians themselves as all-seeing? In a discussion of a proof a participant may be committed to one step, but not yet committed to the next, which may still be under discussion. This, at least, is so in the sense of "commitment" relevant to dialectical systems: others may use what sense they may.

Hamblin, 1970: 264-4

The second reason depends more specifically on our purpose in this paper, which is to describe behaviour in dialogue with respect to inconsistency: if we exclude the possibility of inconsistent contents in a store by stipulation at the beginning, then the resulting system will disqualify itself from describing precisely the kind of behaviour in which we are interested.

Though we are not excluding all inconsistency by definition, we do suppose that the people who participate in the dialogues can recognise some sets

of statements as inconsistent (and, what is related, some arguments as valid). To give some structure to our account of their ability, we suppose it to consist in the ability to recognise whether or not an argument exemplifies one of a list of preferred argument forms. The items on the list could, for instance, be set-to-formula consecutions by which logicians state inference rules for a natural deduction system. (This may indeed be how our ability to recognise valid arguments works; if it is not, if there is some deeper account, then that deeper account will have to deal with a vast range of valid arguments which have been certified as valid on grounds of precisely this kind, and so will have the means to link up with the account here offered.) Any argument which exemplifies one of these given forms may be called *immediately valid*. It should be noted that adding formulae to the premiss set of such a consecution need not preserve immediate validity: it may be that $T \vdash s$ is immediately valid but that $T \cup \{x\} \vdash s$ is not. Adding statements to the premiss set may destroy immediacy because "the members of T can be so 'buried' among others that the relation is not immediate", Mackenzie, 1979: 708.

Exactly which consecutions are to be included on the list we shall leave open: it may be a set of consecutions sufficient for classical logic, or intuitionist logic, or Aristotelian syllogism, or some more outré logic. Nor need all the consecutions on the list be valid in the sense recognised by logicians. In any circle of conversation, there are statements which are taken for granted, and which it would be regarded as a breach of the rules of conversations of that kind to deny, express doubt about, or ask for reasons to accept. ("For a doctor does not deliberate whether he shall heal, nor an orator whether he shall persuade, nor a statesman whether he shall produce law and order, nor does any one else deliberate about his end." Aristotle, *Eth. Nic.* iii 3, 1112b12.) In a football team's tactics meeting, whether to try to win the match is not a matter for debate.

We next define two associated notions. (The following definitions are suitable for classical or near-classical logics; minor modifications are necessary with some non-classical logics, such as the intuitionist.) Any set of statements which consists of just the premisses of an immediately valid argument and the denial of the conclusion of that argument, is to be called *immediately inconsistent*, Imn ; and any conditional whose consequent is an immediate consequence of all the conjuncts of its antecedent is an *immediate conditional*, Imc . Thus if Modus Ponens is immediately valid (if the consecution ' P , If P then $Q \vdash Q$ ' is on the list of argument forms), then the argument

'The platypus is endangered; If the platypus is endangered, then the quoll is endangered; Therefore the quoll is endangered'

is an immediately valid argument, the set

{ 'The platypus is endangered', 'If the platypus is endangered, then the quoll is endangered', 'The quoll is not endangered' }

is an immediately inconsistent set, and the statement

'If both the platypus is endangered and if the platypus is endangered then the quoll is endangered, then the quoll is endangered'

is an immediate conditional. It is clear that, whereas validity and inconsistency may be undecidable, *immediate* validity, *immediate* inconsistency, and being an *immediate* conditional are all decidable and (if the list of valid argument forms is reasonably short) decidable in real time. Hence the "*immediate*" concepts can be used in formulating rules without loss of effective decidability of the rules of dialogue.

In these terms, we may state straightforward rules which enable participants to require immediate consistency of one another. Immediate conditionals are a privileged class of statements: once a participant has a statement of this class in his or her commitment store, it cannot be removed. Thus no participant may deny, express doubt about, or ask for reasons to accept, an immediate conditional. They are immune in dialogues of the kind in which they are immediate. In the most austere kinds of dialogue, the class of immediate conditionals is at its smallest, perhaps limited only to the corresponding to introduction and elimination schemata for the logical connectives; but in most realistic kinds of dialogue, the class of immediate conditionals will be somewhat larger, and (as already mentioned) it may contain statements which are not logically valid, such as the desirability of winning a particular football match. The immediate conditionals may be thought of as the axioms of the logic of the dialogue.

But the immediate properties are more than the axioms of a monological system, for in dialogue we deal with interactions between participants. In our initial (consistent) dialogue systems, if someone (say Bob) has at any stage an immediately inconsistent set of statements in his store, another participant (call her Ann) may object, specifying precisely the immediately inconsistent set; and in response to this objection, Bob's only legal reply

is to remove one of the statements in the specified set from his store by withdrawing it. Objections of this kind are not permitted unless the set *is* immediately inconsistent, and Bob *does* have all of them in his store (we could investigate relaxing either of these restrictions, but shall not do so here).

But committing oneself to immediately inconsistent statements is not the only way to be inconsistent. It is also inconsistent to express doubt about, or ask for reasons to accept, something which follows immediately from what is in one's store. That was the inconsistency which the Tortoise persisted in committing in its dialogue with Achilles in Lewis Carroll's delightful and instructive 1895 (see also Mackenzie, 1979). Thus we must also provide that if Bob says something which removes a statement from his store (or which would remove a statement from his store if the statement were there), and that statement is an immediate consequence of other statements in his store, then again Ann may object to his removing utterance by specifying the immediate argument; and Bob must reply to this objection either by removing one of the premisses of the argument, or by asserting (and thus putting in his store) the conclusion of the argument, the statement which he had wrongly removed. (Again, we require for the present discussion that the argument *is* immediate, that Bob *does* have its premisses in his store, and that he *has* just said something which would remove it from his store if it were there: objections can only be raised if justified.) Thus we deal with immediate inconsistency by withdrawal as well as by assertion. There are other kinds still, such as asking a question whose presuppositions are immediately inconsistent with one's commitments; but these two simplest cases may stand proxy for any others which the language of dialogue permits.

To be concrete, if Modus Ponens is in the list of immediately valid argument forms, the rule against retaining immediately inconsistent commitments when an objection is raised means that if Bob has in his store {'The platypus is endangered', 'If the platypus is endangered, then the quoll is endangered', 'The quoll is not endangered'}. and Ann objects, Bob must next say one of:

I'm not sure that the platypus is endangered

I'm not sure that if the platypus is endangered, then the quoll is endangered

I'm not sure that the quoll is not endangered

(where prefixing a statement with 'I'm not sure that' produces the *withdrawal* of the statement, a sentence which removes the statement from the speaker's store if it is there. This seems an idiomatic way to construct withdrawals, but nothing hangs on the precise phrase used so long as the function of withdrawing is achieved.) Further, if Bob has in his store {'The platypus is endangered', 'If the platypus is endangered, then the quoll is endangered'} and expresses doubt about whether the quoll is endangered (e.g. by saying 'I'm not sure that the quoll is endangered'), and Ann objects, then the rule about immediate inconsistency by withdrawal requires that Bob must, next say one of:

I'm not sure that the platypus is endangered

I'm not sure that if the platypus is endangered, then the quoll is endangered

The quoll is endangered

And *mutatis mutandis* for any other argument form included with Modus Ponens in the list of preferred immediate forms. This is our formulation of Hamblin's requirement that the participants be "capable of appreciating and remedying inconsistencies when they are pointed out" (Hamblin, 1970: 264).

The first kind of objection lets Ann force Bob to withdraw inconsistent commitments. The second kind lets her force him to admit consequences of his commitments (or withdraw those commitments). It would be possible to have only the second kind, and make it impossible for her to force him to retract; whatever his commitments, however inconsistent, he could always keep them provided he was prepared to admit their immediate consequences, unless those consequences were themselves inadmissible (which means, in present terms, the denials of immediate conditionals, but other statements might be ruled inadmissible for particular classes of dialogues). But to allow both kinds is more realistic.

Proofs are possible in dialogue, for example by successively asking appropriate questions. (Questions are clearly a class of sentences with special functions in dialogue. These functions may be indicated intuitively by saying that a question must be answered, and by the participant to whom it is addressed. The precise rules governing questions and the relations another sentence must have to a question to answer it is another matter we shall leave unspecified here.) Let us suppose that not only Modus Ponens but also the argument schemata

$$1. (P \& Q) \vdash Q$$

and

$$2. (P \supset Q) \vdash ((Q \supset R) \supset (P \supset R))$$

are immediately valid, but that

$$3. (Q \supset R) \vdash ((P \& Q) \supset R)$$

is not. Suppose further that Ann asks Bob the questions of conditionals of the forms

$$4. ((P \& Q) \supset Q)$$

and

$$5. (((P \& Q) \supset Q) \supset ((Q \supset R) \supset ((P \& Q) \supset R)))$$

She thereby forces him to commit himself to these conditionals, for they are immediate and cannot be denied or withdrawn, and he can therefore only answer her questions by admitting them. Then Ann has him in a position from which the conditional from the schema (3) follows from his commitments (4) and (5) by Modus Ponens. But (4) is an immediate conditional from the schema (1), and so it cannot be withdrawn or removed. And (5) similarly, since it is of the form

$$6. ((P \supset Q) \supset ((Q \supset R) \supset (P \supset R)))$$

and hence is an immediate conditional which instantiates the schema (2), cannot be withdrawn or removed. Those two conditionals, once in his store, must remain there. Hence Bob is liable to an objection should he henceforth deny, doubt, or ask for reasons to accept (6), and he cannot reply to such objection except by admitting (6), since immediate conditionals cannot be withdrawn. Once Bob is committed to them he must stay committed to them. No step in this sequence can be denied, doubted, or challenged. With more resources than simply questions and answers, of course, more elaborate kinds of proof are possible.

Thus far we have been considering the set of immediately valid arguments

as being constructed *a priori*, given to the participants as part of the structure of the dialogues in which they are to engage. But it is also possible to investigate the immediately valid arguments, the immediate inconsistencies, and the immediate conditionals, *a posteriori*, by listening to and joining in dialogues of some pre-existing class. In this case, we proceed as empirical scientists, and try to identify the set of schemata accepted by the participants as immediately valid by, for example, expressing doubt about conditionals, or accepting the premisses of a schema and expressing doubt about its conclusion. If these should happen to be immediately valid schemata, our conduct will be illegal, and the people who are used to engage in dialogues of this kind will evince surprise, puzzlement, or anger. (Caution should be exercised when engaging in research of this kind in bars with large, tattooed men who have names like "Spike".) In this *a posteriori* enterprise, the immediate conditionals form a set of statements identified by the fact that the participants regard it as an error to deny, doubt, or ask for reasons to accept them, and signify this by "bizarreness reactions" if someone does so. (See Quine, 1960 §7, pp. 29ff., §13, pp. 57ff., §15, pp. 68ff., and Parsons, 1974.) In an *a posteriori* investigation, the immediate conditionals are simply a set of statements privileged in the dialogue; and as such, they need not be regarded as logically valid by logicians, and it is even possible that they need not all be conditional in form. Equally, from this point of view an immediate inconsistency is simply a set of statements whose acceptance renders one liable to a resolution demand without further ado.

A full description of dialogues in which these two sets were investigated *a posteriori* would require a more sophisticated set of rules, in which participants were permitted to deny, doubt, or ask for reasons to accept immediate conditionals, but this had to be met by a bizarreness reaction; and in which participants may issue resolution demands to which they are not entitled by an immediate inconsistency (of either kind) on the part of the other, provided again that the response was a bizarreness reaction.

Still greater adequacy again could be obtained by permitting debate as to whether bizarreness reactions themselves were justified; but this would be too complicated to handle at the present level of generality. Indeed, it would seem to raise issues too complicated to be handled using any ordinary logic as the theory of inference; perhaps only a significance logic like those described by Goddard & Routley, 1973, would have sufficient resources.

The results of *a posteriori* investigation cannot be laid down in advance. They must be left to be discovered *a posteriori*. If so, then we cannot lay down in advance that there will be discovered a neat syntactic connection

between that set of statements which are privileged, which it is bizarre to deny, doubt, or ask for reasons to accept; and that set of statements and relationships which generate liabilities to resolution demands. There need be no syntactic function which will take us from an immediate conditional to an immediate inconsistency or *vice versa*. The two sets may each contain elements which do not correspond to any element of the other. Logical privilege and liability to resolution demand need not be interdefinable. It may be that becoming committed to '*P*', '*If P then Q*' and '*Not Q*' (or to the first two, and expressing doubt about or asking for reasons to accept '*Q*') renders one liable to a resolution demand, but that '*If both P and if P then Q, then Q*' is not immune from denial, doubt, or challenge; or that the latter is immune, but that the corresponding structures do not render one liable to a resolution demand. There would then be no unique set of preferred immediate schemata which explained both immunity and liability. This would be a pity, and complicate the *a posteriori* investigation, but it may be what is found. Nor is there any guarantee in the *a posteriori* case that the two classes, the statements immune from denial, doubt, and challenge, and the structures which generate liability to resolution demands, should fit together nicely and form a consistent set of statements. The participants may have an inconsistency in what they take to be immediately valid. '*If an action is deceptive, it should not be performed*' and '*If an action endangers human life, it should not be performed*' may both be immune from denial, doubt, or challenge; and the possibility of a situation in which whatever one does one either deceives or endangers may simply not have arisen for participants in dialogues of the kind under consideration until this moment. They have never asked themselves how to respond when the Gestapo officer asks about the Jews hiding in the attic.

Let us return to the simplified case in which bizarreness reactions are permitted but cannot be debated. We have left open to further specification as much of our system of dialogue as possible, in order to make the discussion generally applicable; but already some things are clear. One is that if the system permits argumentation, then *ex impossibile quodlibet* arguments are not successful arguments in dialogue; they are not successful even if the governing logic (the natural deduction system whose rules are just the immediately valid argument forms) is classical. They are not successful because they leave the person who uses them open to a resolution demand. If Bob (a) argues '*Fermat's last theorem is true, Fermat's last theorem is not true, Therefore the bishop is an ass*', or if he (b) replies to '*How do we know that the bishop is an ass?*' by saying '*Because Fermat's last theorem*

is true, and Fermat's last theorem is not true', his argument is in neither case successful, even though the consecution ' $P, \sim P \vdash Q$ ' is classically valid, and even if it is included on the list of immediately valid forms. For in each case, Bob is liable to an objection for having both a statement and its denial in his store as soon as he propounds his argument; and thus he has gained nothing, but rather lost. (What he would be trying to gain by arguing is to say something which would put Ann's store in such a state that he would have a strategy by which he could render her liable to an objection for immediate inconsistency should she deny or express doubt about his conclusion before removing commitment to his premisses —see Mackenzie, 1984.) Even in this very simple system, classical logic, and other logics which provide that *ex impossibile quodlibet*, can be adopted without the fear that any self-contradiction will lead to catastrophe or to psychotic breakdowns among the participants.

Another result which should be apparent is that the rules as stated, though they may capture the demand that participants can force each other to be immediately consistent, are much too restrictive to be useful for describing even quite rigorously logical discussions. When Ann accuses Bob of immediate inconsistency, Bob in real life would have other options as well as those permitted by the above rules. If Bob had in his store the statement 'Scrooge went to the bank' and its denial, and Ann objected, then Bob could (as an alternative to withdrawing either statement) distinguish the two meanings of 'bank' and emerge with 'Scrooge went to the counting house', 'Scrooge did not go to the river verge' in his store (Mackenzie, 1988). Even the most superficial reading of medieval philosophy shows the need to allow this option. Thus our simple and straightforward account is oversimplified and too restrictive. We must allow participants to distinguish different meanings of terms as another way out of an apparent immediate inconsistency. There may be other ways out too, requests for further explanation or specification of terms, objections to ambiguity due to syntax (amphiboly) rather than to lexical meaning, and so on. All these possibilities could be investigated in detail, and the account appropriately adjusted.

But nothing that has been said to this point involves any concessions to paraconsistent logic, and should be acceptable to adherents of traditional, classical, modal, and intuitionist logics as well as to relevantists and other paraconsistentists.

Where we do step away from consistent logics is in cases like the following. The set of immediate schemata is controlled by the participants, and if we are investigating *a posteriori* a class of dialogues to find the set of

schemata governing those dialogues, this set may result in inconsistencies. The set of immediate argument schemata need not have the properties which classical logicians adopt (or at least, proclaim themselves as adopting) for their own discussions. Perhaps immediately valid sequences can be constructed both for a statement and for the denial of that statement. Dommage! In such a case, it would seem that there is a grounded contradiction. The supporter of consistency is at liberty to suggest that the immediate schemata in such a case are faulty, and that those schemata responsible for the problem should be identified and removed forthwith from the privileged class and subjected to critical discussion. That is a possible course of action which may have merit in particular cases. But there is no guarantee in advance that the results of that discussion must always be the permanent abandonment of the offending argument schemata (and associated conditionals and sets) from immediacy. It may be that there would be reasons for taking another course, and allowing the possibility that there just are some immediate inconsistencies which are grounded. For the liar sentence 'This sentence is false', for example, there is a very brief and plausible argument that it is true, and a similarly brief and plausible argument that it is false, and perhaps we should simply accept that they are both good arguments and that the liar sentence is both true and false (Priest, 1987: 11, 18, 30-1, 90-1).

There are many kinds of case which may be considered to be grounded inconsistencies. One source is the semantic paradoxes, those attributed to Epimenides, Grelling, Berry, Richard, and Koenig, etc., and with them the whole question of reasoning in a semantically closed language. Since all natural languages, undefiled by Tarskian hierarchies, are semantically closed, this is not unimportant. Another source is the set-theoretical paradoxes of Russell, Cantor, Burali-Forti, Mirimanoff, etc. Grounded inconsistencies may also arise in discussions of the moment of change, and of motion in general, and of inconsistent obligations and legal principles (Priest, 1987). In each case in which it is accepted that there is a grounded inconsistency, there needs to be specified a procedure by which a participant may show that an immediate inconsistency is grounded (as well as false), and by successfully carrying out that procedure reply to a resolution demand. *Most* immediate inconsistencies are simply false and not grounded, and thus none of those procedures can be carried out for them, and resolution demands of them will have their expected effects as in dialogues in which no immediate inconsistencies are grounded.

But if we are to allow, even in principle, that some contradictions are grounded, we must explain how Bob should be allowed to reply to the

objection that he has an inconsistency in his store when what he has is a grounded contradiction. Instead of either withdrawing one statement from the inconsistent set, or pointing to an equivocation, he should be permitted to show that it is an inconsistent set which is not merely false but also grounded, by providing sequences of immediately valid steps from immune statements to each member of the set on which the resolution demand was delivered. His store is now immediately inconsistent, but in a paraconsistent dialogue this is acceptable, for the immediate inconsistency is not only false, but also grounded. This reply is unavailable in consistent dialogues, which allow only the replies of removing the inconsistency or pointing to an equivocation; but in them equally Bob may have an inconsistency, and even an immediate inconsistency, in his store indefinitely if Ann does not notice it, or if she chooses to ignore it. The move to paraconsistency in dialogue is rather like an extension to the possibilities of pleading equivocation. To point to an equivocation is obviously a way of resolving an apparent immediate inconsistency in any natural language, though as Hamblin, 1970: ch. 9, found, we have no satisfactory theory of equivocation. (For an account of the role of accusations of equivocation in formal dialogues, see Mackenzie, 1988.)

At the first stage, we may require that Bob's sequences of steps *are* immediately valid and *do* show that the contradiction is grounded; in some more developed system, those arguments too could be debated. In dialogue, one frequently needs to refer to what has been said earlier, and to talk about the conditions in which an assertion would be true or false; and thus, one needs (or at least finds convenient) a language which is semantically closed. To accept the limitation of consistency when considering dialogues in semantically closed languages would leave any participant open to being put in a position of being liable to an objection for immediate inconsistency at any time; the other participant need only ask the question 'Is it the case that the sentence 'This sentence is not true' is true?', to which either answer leads to inconsistency. But to allow such a tactic to be used at any time against anybody would be silly. Objections for immediate inconsistency have an important function, to force participants to accept the consequences of their assertions and concessions. To adopt a rule which makes these objections available at will even against those who argue carefully and consistently would be to weaken that function. Why bother to avoid a penalty which can be imposed at will, however one conducts oneself? Yet that is the consequence of the consistency requirement in dialogues in semantically closed languages.

After he has shown that an immediate inconsistency is grounded, Bob has an immediate inconsistency in his store; does this not permit Ann to demand resolution of him at any later stage? Worse, can she not demand resolution of him for other arguments which have nothing to do with the immediate inconsistency which he has argued is grounded? (The second of these questions expresses the fear that permitting any grounded inconsistency will lead to logical catastrophe.) With these two questions we have arrived at last at the heart of the problem of permitting inconsistency in dialogue.

The answer to the first question is that Ann *can* demand resolution of Bob at any later stage, for he has and retains an immediate inconsistency in his store. But each time she does so, he may reply with the same sequences of steps which show that the inconsistency is grounded, and unless Ann has some new objection to make to those steps her demanding resolution again will be simply a tedious and pointless repetition. It would be possible to forbid this happening more than a certain number of times (as with the rules governing stalemate in chess), but to do so would be unnatural. Repetitions of sequences of moves often do occur in carefully argued dialogues, such as explaining to a student how a proof works in mathematics, and any particular upper bound on the number of permitted repetitions would be arbitrary. Thus our answer to the first question is that yes, Ann can continue to demand resolution of Bob for the grounded inconsistency in his store at any stage thereafter, but that since he has shown how he will reply and since his reply will keep his store in the same state, it is pointless for her to do so unless she has some new objection to his arguments for the groundedness of the inconsistency.

The answer to the second question is different. For Ann to demand resolution of this inconsistency as part of another argument is not possible. A demand for resolution of an immediately inconsistent set must be directed specifically against that set, and not against something which contains it as a subset. Similarly a demand for resolution of a consecution must be directed against an immediately valid consecution, and not at a consecution which has additional premisses. Thus though $\{ 'P', 'P \supset Q', '\sim Q' \}$ is an immediately inconsistent set, $\{ 'P', 'R', 'P \supset Q', '\sim Q' \}$ (where '*R*' is distinct from the other elements) is not, and though ' $P, P \supset Q \vdash Q$ ' is an immediately valid consecution, ' $P, R, P \supset Q \vdash Q$ ' (with the same requirements on '*R*') is not. What secures that this should hold is not an ad hoc restriction, but was introduced into discussions of formal dialogues very early, when only consistent dialogues were under consideration (in Mackenzie, 1979: 708, quoted above). The justification was then, and is now,

computability: an *immediately* inconsistent set should be recognisable as such, and burying its inconsistent elements in a larger set may obscure this. To charge Defoe with inconsistency, we need to identify just those sentences in his story which are inconsistent with each other; we cannot merely ask him to resolve the inconsistency in his whole work without identifying what the inconsistency is. Frege could have ignored an accusation that his system was inconsistent, but he could not ignore Russell's letter identifying specific assertions from which a sentence and its denial immediately followed. To accuse someone of inconsistency, it is necessary to identify the statements which are immediately inconsistent with one another, and to level the objection at them. And if this is required, Ann cannot raise the grounded inconsistency in Bob's store as an objection to any argument he may construct which does not have among its premisses both arms of that inconsistency.

Thus suppose that Bob is committed to ' $P \ \& \ \sim P$ ', but has shown that it is grounded, and has also committed them both to ' R ' and ' $R \supset Q$ ', and seems about to ask Ann the question of ' Q ', a statement she does not wish to admit. She can indeed object to his grounded inconsistency (and be treated to a repetition of his argument that it is grounded); but she cannot object to the immediate inconsistency of $\{ 'P \ \& \ \sim P', 'R' \}$ (and thereby avoid the unwelcome conclusion ' Q ' he seems about to press on her), for that set, though inconsistent, is not *immediately* so. Buried inconsistencies are not immediate.

On the other hand, the argument from the self-contradiction ' $P \ \& \ \sim P$ ' to one of its conjuncts ' P ' is not open to the same objection if the self-contradiction can be shown by Bob to be grounded.

- n A: Resolve $\{ 'P \ \& \ \sim P' \}$
- $n+1$ B: Grounded inconsistency $P \ \& \ \sim P$
- $n+2$ A: How know P ?
- $n+3$ B: $P \ \& \ \sim P$

Ann can demand resolution of the set, $\{ 'P \ \& \ \sim P' \}$, but Bob has already shown how he will deal with that: he would simply repeat patiently his argument that it is grounded. Thus it is pointless of her to demand resolution of it. His argument step conditional, ' $(P \ \& \ \sim P) \supset P$ ', is an instance of the rule $\&E$ or Simplification, and thus an immediate conditional immune from challenge in dialogues in which $\&E$ is immediately valid. Bob can establish ' P ' and also ' $\sim P$ ' from their conjunction, provided only that he can establish it.

By allowing Bob a way out of immediate inconsistency over and above resolving it or pointing to an equivocation, we do not give him the ability to prove whatever he likes. To argue for ' Q ' by asserting ' $P \ \& \ \sim P$ ' still leaves him open to objection. (If the self-contradiction is grounded, it does not help in a defence of ' Q ', and if it is not it is liable to objection on its own account.) The case is rather the reverse; for our rule prevents Ann, when trying to escape some undesired conclusion ' Q ' which follows from her commitments, from avoiding having it brought home to her by tying Bob up with an irrelevant liar paradox which subjects him to unceasing objections for inconsistency. The desire of many advocates of consistency, that people should be responsible for the consequences of their assertions and that the rules of debate should disallow sophistic evasions of this responsibility, is a desire we wholeheartedly share.⁽¹⁾ In discussions in semantically closed languages, however, that, desire is best realised not by the simple rule which suffices in simpler languages of avoiding all immediate inconsistencies, but rather by a rule which distinguishes those immediate inconsistencies which are merely false and to be avoided, from other immediate inconsistencies which are grounded as well as false, and which should be dealt with as we have recommended. In much of the earlier writing on formal systems of dialogue, including Mackenzie, 1979, 1984, 1988, the danger of immediate inconsistency was overemphasised. It can now be seen that the danger which participants in dialogue ought to be concerned to avoid is liability to resolution demands; and that this liability is incurred by some, but not necessarily by all, immediate inconsistencies. If we wish to speak to those who, like Epimenides the Cretan, proclaim themselves to be liars, or who hold internally inconsistent positions, we

⁽¹⁾ See, for example:

For we find only too often that dialecticians, when in logical difficulties, as a last resort tell their opponents that their criticism is mistaken because it is based on logic of the ordinary type instead of on dialectic; if they would only use dialectic, they would see that the contradictions which they have found in some arguments of the dialecticians are quite legitimate (namely from the dialectic point of view).

Popper, 1940: 328-9.

See also Popper's discussion of the first of the elements he finds in Hegel's dialectic, under "(a)", p. 327, and his criticisms in § 3, p. 334, of the use of dialectic "following the example of Engels' *Anti-Duhring*" to defend Marxism in a way which undermines "the anti-dogmatic attitude once so strongly supported by Marx and Engels", p. 335. Like Popper, and like Marx and Engels as he presents them, we believe that there can be no worse obstacle to the growth of science than a reinforced dogmatism.

must elaborate the rules governing replies to objections for inconsistency. It is possible to conduct logically well-behaved discussions in semantically closed languages (such as Epimenides' Greek, and our English): indeed, it has even, on occasion, been achieved.

University of Sydney (Jim Mackenzie)
University of Queensland (Graham Priest)

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