'OUGHT' AND OTHER RESTRICTED NECESSITIES.

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Introduction

In *A Treatise of Human Nature*, (Book III, Part I, Section I) David Hume complains about those who argue from propositions with 'copulations' of 'is' and 'is not' to propositions that are 'connected with an *ought* or an *ought not*'. Most have taken him to be complaining about those who argue from factual or allegedly factual propositions to propositions with moral content. On the assumption that any true proposition is factual, this could be a complaint only if propositions with moral content were invariably false, or perhaps if moral utterances lacked truth value. But it is arguable that Hume intended neither of these; for he proceeds by saying that 'this *ought*, or *ought not*, expresses some new relation or affirmation' that 'should be observed and explained'. Since then, very many have observed the alleged 'is-ought' gap, but Alan White's *Modal Thinking* [1975] remains outstanding for its insights into the semantics and pragmatics of 'ought' and associated modal words. The two such insights of importance for the purposes of this paper are:

(a) that the logic of 'ought' is distinct from the logic of 'is obliged' (and from the logic of 'morally obliged');

(b) that the proposition expressed by a statement of the form 'X ought to V' is context dependent, that is, is a function of the history of the dialogue as well as the semantics of the statement itself.

In this paper, the nature of this context dependence is pursued, with a view to elucidating further two things concerning 'ought' that have been of concern to ethicists:

(i)   the relationship between facts about the world and 'ought' statements, and
(ii)   whether 'X ought to V' entails 'X can V or could have V-ed', for agent X and verb phrase V.

However, the bulk of the paper will be concerned with a necessary prelimi-
nary to discussion of these matters, namely the presentation of a semantic
model for 'ought' statements. This model will be one of a type applicable
to the semantics of several terms which indicate a restricted necessity for
some proposition, that is, the truth of that proposition throughout a certain
range of possibilities. These terms include 'necessarily', 'must', 'is obliged
to', 'needs to', 'has to', 'ought to', 'should' and some conditionals. These
semantic models, then, are of the *de dicto* variety, but that will not disallow
that the statements so analysed may be exhibiting a *de re* pragmatics and
syntax.

Semantics for Restricted Necessity.

Alan White [1975, Chapter 11] has correctly objected to the idea that all
'ought' statements are about propositions. Syntactically, 'must', 'ought', etc.
act as operators on predicates descriptive of individuals. In that sense the
resulting statements are all *de re*. This syntax has a pragmatic purpose,
namely to indicate the *subject* of the assertion and hence the facts relevant
to the evaluation of the statement. Sometimes the subject is the indefinite
'it' as in 'It ought to V' for some infinitive verb phrase 'to V', for example
'to be raining' or 'to be the case that **p**'. But the syntax remains *de re* for
all that.

   However, as claimed in Hinckfuss [1993], semantic models do not have
to be regarded as providing synonyms for the locutions they model or as
being about the same sorts of things. In the case of propositional calculus,
for example, 'Mary will go and Alice will go' is about Mary and Alice. It
is not about two propositions, the proposition that Mary will go and the
proposition that Alice will go, and hence it is not asserting that the con-
junction of those propositions is true. But that hinders not that truth-functio-
nal analysis, despite its extra ontological baggage, provides a useful seman-
tic *model* for 'and' and some other connectives in the sense that the models
can show us which arguments are valid in the ontologically economical
language. To be of use for such a purpose, a semantic model need only be
what Hartry Field [1980] has called a *conservative extension* of the language
they model.

   The model to be presented has much in common with the model for
conditionals elaborated in Hinckfuss [1990]. In particular, there is reference
to two context dependent sets of propositions, C and D, called *relevant facts*

and *suppositions* respectively. Briefly, the relevant facts are the truths which refer to any of those things that the dialogue is about at the time of utterance of a locution, but nothing else. Francois Recanati [1986] has called the set of things the dialogue is about the *domain of discourse*. We shall not concern ourselves here with the complete story of how the domain of discourse is generated by the dialogue. However, by way of example, we shall allow that locutions of 'Hello. How's Mary?' and 'Mary has a cat' place Mary in the domain of discourse.

The relevant facts are not, in general, closed under entailment. For assume that Mary is a member of the universe of discourse and that Alice is not. Assume also that it is true that Mary is a student and hence that the proposition that Mary is a student is a relevant fact. But its entailment, that either Mary or Alice is a student, referring as it does to Alice who is not a member of the domain of discourse, is not a relevant fact.

Suppositions may be deliberately introduced into the dialogue by locutions designed for that purpose, for example, the first of the following pair of locutions:

Suppose Alice goes to the dance. Will Jim go?

To answer 'Yes' to the question which comprises the second locution does not commit the speaker to the proposition that Jim will go, but only the conditional:

If Alice goes, Jim will go.

Suppositions, then, operate on assertive locutions to produce an assertion of a conditional the antecedent of which is the supposed proposition and the consequent of which is the proposition given in the assertive locution.

We allow that more than one supposition may govern any one assertive locution and that the same supposition can govern more than one assertion. Part of the story of this article is how suppositions, together with relevant facts, generate the possibilities that are under discussion. We allow that suppositions may be introduced into the dialogue by means other than that illustrated above, and that perhaps some (for example, logically simplifying fictions regarding numbers) may be assumed to be in place by virtue of a standing pragmatic convention. In Hinckfuss [1993] these are called *presuppositions*.

To proceed, then, with our analysis of restricted necessity, let L_R be any

restricted necessity operator ('it must be the case that', 'it ought to be the case that' etc.). The analysis of L_Rp is:

L_Rp expresses a truth iff *ceteris paribus*, given **D**, **p**; and this is, in turn, is analysed as:

(CP) L_Rp expresses a truth if and only if every consistent set of propositions containing the suppositions, D, and a maximal subset of the relevant facts, C, entails **p**.

To be more explicit still, allow that if some letter, Q say, refers to any set of propositions, then **Q** (bold face) is the conjunction of those propositions. Now say of any set of propositions, M, that M is *maximally consistent* within some set of propositions, S, iff

   (i) M $\subseteq$ S

and

   (ii) any proposition is a member of M if it is both consistent with the conjunction, **M**, of members of M and is a member of S; that is,

(r)(($\Diamond$ (**M**&r)&r$\in$S) $\supset$ r$\in$M)

Say that M is *maximally M_1-consistent* within a set S of propositions iff, in addition to clauses (i) and (ii) above,

   (iii) M_1 $\subseteq$ M.

Then CP says that, with relevant facts C and suppositions D, a locution of L_Rp expresses a truth iff:

(M)(M is maximally D-consistent within CUD $\supset$ (**M** $\rightarrow$ **p**)).

Let us call the union of maximally D-consistent sets within CUD, C_D, and the disjunctive proposition corresponding to C_D, $\mathbf{C_D}$. Then our analysis becomes:

   A locution of L_Rp expresses a truth iff $\mathbf{C_D}$ $\rightarrow$ **p**.

A restricted possibility operation on p, $M_R p$, may then be defined as

$$\sim L_R \sim p$$

that is,

$$(C_D \dashv\!\beta \sim p),$$

that is,

$$\Diamond (C_D \& p).$$

Clearly, if D is consistent with C, there is one and only one maximally consistent D- consistent set within CUD and that is CUD itself. Under these circumstances, then, $C_D \equiv (C\&D)$, and $L_R p$ expresses a truth iff $(C\&D) \rightarrow p$.

The analysis of $L_R p$ in case $\Diamond (C\&D)$ is shown diagrammatically in figure 1. Points on the diagram represent maximally consistent sets of propositions or 'possible worlds'. Any area in the diagram represents a proposition or rather the set of possible worlds at which the proposition is true. That some proposition p_1 has an area which lies wholly within the area for some proposition p_2 illustrates that p_1 entails p_2. Conjunctions are represented by the intersections of the areas of the two propositions and disjunctions by their union. Since, in the case under consideration, $(C\&D)$ is consistent and entails p, the intersection of C and D is non-null and lies wholly within the set of possibilities for p. So $L_R p$.
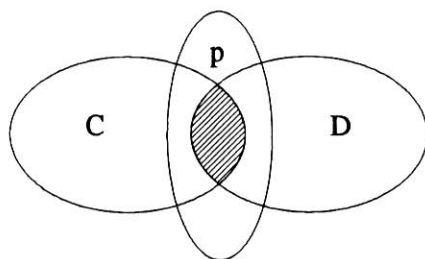

Figure 1.

Figure 2 illustrates the analysis of $L_R p$ for $C = \{C_1, C_2, C_3, C_4\}$, where $\sim \Diamond (C_1 \& D)$, $\sim \Diamond (C_2 \& C_4 \& D)$, and $\sim \Diamond (C_3 \& C_4 \& D)$, but $\Diamond (C_2 \& C_3 \& D)$ and $\Diamond (C_4 \& D)$. Both $(C_2 \& C_3 \& D)$ and $(C_4 \& D)$ lie within p, so $L_R p$.
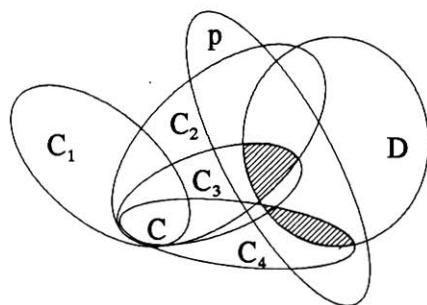
Figure 2.

Note that the analysis is unworldly insofar as it is about possibilities that may or may not obtain. The possibility corresponding to the real world will lie in the intersection, C, of the sets of possibilities corresponding to the relevant facts. But it will not in general, lie in the union of those maximally D-consistent sets of propositions within CUD. Although **C** must be true, C_D may be false.

   One may wish to allow, nevertheless, that the relevant facts have an affect on whether $L_R p$ expresses a truth and hence that $L_R p$ tells one something *about* the relevant facts. However, even that information can be minimal in case all the members of C are inconsistent with **D**. In that case, $L_R p \equiv$ (**D**$\rightarrow$p).

   It can be shown, using a proof similar to one in Hinckfuss [1990] for the corresponding analysis of conditionals, that if the relevant facts are closed under entailment, CP reduces to:

(CPC) '$L_R p$' expresses a truth iff (**D**$\rightarrow$p) $\vee$ ($\Diamond$ (**C&D**)&((**C&D**)$\rightarrow$p))

Again, as in Hinckfuss [1990], it can be shown also that (CP) and (CPC) are not equivalent when the proviso is dropped. In general, as argued above, the proviso should be dropped.

   (In the analysis of 'counterfactuals' given by Kratzer [1981] this proviso is not dropped. The terms 'maximally consistent within' and 'maximally p-consistent within' have been borrowed from Kratzer, but the definition of those terms differs from Kratzer's. The condition of being a member of S in clause (ii), is altered from Kratzer's corresponding condition of being an entailment of a member of S.)

   Given that the definition of L_R is based on classical propositional calculus

with an S5 semantics for $\Diamond$, $\Box$ and $\rightarrow$, the resulting logic of the restricted necessity operator, L_R, may be shown (using semantic tableaus for S5, after replacement of $L_R\alpha$ with $(C_D\rightarrow\alpha)$) to be what Hughes and Cresswell [1984] call a normal modal logic in that it allows uniform substitution, modus ponens and necessitation as transformation rules for logical truths and contains as a logical truth the formula

K_R $L_R(p \supset q) \supset (L_R p \supset L_R q)$

The S5-style formula

E_R $M_R p \supset L_R M_R p$

is also a logical truth.
   An important omission, however, is

TR $L_R p \supset p$

for **p** may be false in fact, even if it is true throughout the range of possibilities determined by C_D.
   Although the S4 style axiom

4_R $L_R p \supset L_R L_R p$

passes muster, the Brouwerian style of axiom

B_R $\sim p \supset L_R \sim L_R p$

does not. Again the counterexample is the model in which **p** is false, but is true throughout the range of possibilities C_D.
   Suppositions are sometimes inconsistent. This is not only because we are, from time to time, irrational, but also because we sometimes wish to assume inconsistencies for the purposes of a proof by *reductio ad absurdum*. But if **D** is logically impossible, so is C_D, whence $\sim \Diamond (C_D \& t)$, for any logical truth, **t**. In that case, $\sim M_R t$. So, surprisingly, perhaps, the formula

$$M_R t$$

is not a logical truth.

Tautologies are all logically possible because they are true in all possibilities. But they are not true in any member of a restricted range of possibilities, when that restricted range contains no possibilities whatever.

For similar reasons, the formula

$$L_Rp \supset M_Rp$$

fails. If the set, D, of suppositions is an inconsistent set of propositions, then for *any* proposition, p, we have $L_Rp \& \sim M_Rp$. If only for this reason, 'must' does not imply 'can'.

Instances of $L_Rp \& \sim M_Rp$ (p must be the case but it cannot be the case) are often regarded as paradoxes. The classical resolution of such paradoxes lies in locating the logically inconsistent supposition and showing why it should be regarded as logically inconsistent. Those who regard the paradox as unresolvable have the onus of showing that there is no associated supposition that is inconsistent, or, if there is, that that supposition also has to be true, under the circumstances. The effect of the latter rationale would be to explain, but not to resolve, one paradox in terms of another.

Extra Requirements for 'ought'.

It will be assumed here that, for identical relevant facts and suppositions, a statement to the effect that something, X, necessarily V's is equivalent to all of 'X must V', 'X has to V', 'X is obliged to V' and 'It is necessary that X V's'. Again, and this is stressed, *given identical relevant facts and suppositions*, it seems plausible that all of the above entail that X ought to V, or equivalently, that X should V, but not *vice-versa*. If that is so, the use of 'ought' or 'should' rather than 'must', must yield a greater constraint on the possibilities defined by C_D. It can do this by decreasing the possibilities allowed by D. The use of 'ought', rather than 'must', therefore introduces further suppositional commitment. If the possibilities under discussion in some context using 'must' are C_D, let us name the subset of these that would be relevant in that same context were 'ought' being used instead, C_{Do}. (See figure 3.)
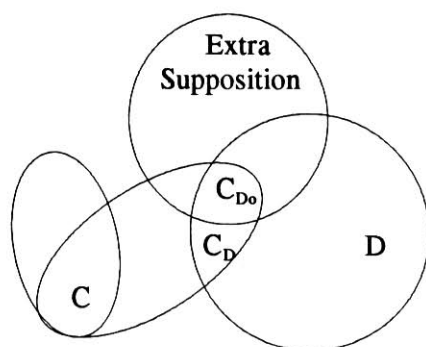
Figure 3.

White (p160) says that any 'attempt to discover a necessary connection between a statement about what one ought to do and a statement about what one is obliged ... to do is doomed to failure.' This makes it appear that White would not allow our entailment from what must be or what is obliged to be the case to what ought to be the case. But he goes on to say that the conditional supposition that, if on one requirement one is obliged to do something then, when all things are considered, one ought to do it, is both sensible and 'too weak'. Again on 'ought' and 'must' he says (p158) that to say what ought to be must be is too strong, while to say what must be ought to be is too weak. These latter statements could be read as supporting the contention that 'must' and 'obliged' statements entail the corresponding ought statements but not *vice versa*. Compare: to describe the situation 'Either Mary or Alice will go' with 'Mary will go' is too strong; to describe the situation 'Mary will go' with 'Either Mary or Alice will go' is too weak. So I shall assume that White's denial of a necessary connection between 'must' and 'obliged' statements and their corresponding 'ought' statements should be taken as a denial only of their logical equivalence.

Assuming that $C_{D_o} \subseteq C_D$, what can be said about the extra supposition that is being introduced by 'ought'? White (pp142-143) rejects the idea that what ought to be the case is always what is best and also rejects the idea that what ought to be the case is always what is right. Are those two ideas different or the same? The best of a bad bunch may not be right for the job. But the best (choice) for the job will always be the right choice for the job

and the one that ought to be chosen; but that choice is not necessarily one that *must* be made.

Will what is right always be what is best? White says 'No'. His argument is that a counterexample to the doctrine is that the right house in the street (to visit) may not be the best house in the street. But if we are going to compare the semantics of 'best' and 'right' statements, we should, as in any semantic comparison of context dependent statements, keep those contextual determinants constant from statement to statement (as White himself correctly insists). Now the right house to visit is (say) the one at which we are expected. That is, it is right *for optimising visiting expectations*. The fact that that is not the best house *to live in*, says nothing about the relationship between 'right' and 'best'. The question is not whether 'X is best for Y' is equivalent to 'X is right for Z' for any Y and Z, but rather whether 'X is best for Y' is equivalent to 'X is right for Y' and further, whether either or both of these are equivalent to 'It ought to be X for Y'.

One might argue that one's best gamble on the horse race may not be the right gamble on that race. But there are two requirements that are being coalesced in this example: optimising my chances of winning and actually winning. The two are not the same. What is the right gamble for optimising my chances of winning? Surely that is the best gamble for optimising my chances of winning. What is the best gamble for actually winning? Surely it is the right gamble for actually winning.

Someone may wish to argue that what is right may not be best in the following way. In a given situation with a given requirement, Y, the best thing, if it exists, is unique. (Someone may say that there can be equal bests, a tie for first. But in such cases it would be more common to say that there was no best thing.) In any case, even in a situation where there is a unique best, there may be multiple right ways. Routes A, B, C, D are all right ways of getting home in a hurry. But route A is the best way; it gets you home fastest. So what is *a* right way home may not be *the* best way home.

However, again if we consider our requirements in more detail and ensure that the requirements are kept constant, the argument loses its conviction. Which way ought you to take? Route A if you are after the best way. Any of A, B, C or D if you are merely after a right way. Thus the requirements governing the 'ought' statement may be either for the best or for something that is right. But if one is after the best, then whatever is best is *the* right way and that is what we ought to do or to have or to be. If we are merely after something that works and if quite a few things work, then it is false

that we ought to do any particular one of those things. But we ought to do one of them for all that. Thus what we or anything else ought to do or be is singular, even if many things meet the requirement. The singular thing that we ought to do or be and that is both best and right in that case is: do or be one of the things that meet the requirement.

White says that 'ought' introduces what is *appropriate* to the situation from a range of possible contenders, given the presupposed requirements. Thus if one does what one morally or prudentially ought to do one does what is appropriate, given the circumstances and the moral or prudential requirements, picked out from the possible things one could do. But morality and prudence may have nothing to do with it. If Mary ought to have reached Sydney by now, then her reaching Sydney is appropriate, given the circumstances and the 'requirements' that what happens is what usually happens, chosen from the range of what could happen. If this is the piece that ought to go here in this jig-saw puzzle, then it is the appropriate choice from the pieces that could have gone in there, given the requirement that the jig-saw be put together correctly.

Note that 'requirements' is not used above in such a way that the 'requirements' are always required. Should another word should be used? When we say that Mary ought to have arrived by now, in a context where we are talking about what usually happens, it is not necessarily being presupposed that the speaker *requires* that things are normal. Compare:

Joan: It's amazing, the world has been in an economic mess for ages and there is no world war as yet.
Alice: Yes, a world war ought to have begun by now.

The requirement that things be normal may not be required, let alone thought to be best, right or appropriate by any individual. Should we think of a better word for it? No, for something may be best, right, appropriate or required for the satisfaction of some requirement or purpose where that requirement or purpose is abstracted from any particular individual's requirements or purposes.

A similar problem arises with my use of 'supposition'. The antecedent of a conditional is a supposition, but need not be supposed by anyone, including the speaker. Consider:

Joan: If Mary goes, Alice will go.
Grace: Are you supposing that Mary will go?

Joan: No, I'm just saying what would happen on that supposition.

Here Joan is using 'supposition' as something that could be supposed. Similarly, White could be taken as using 'requirement' as something that could be required. A requirement that could be satisfied is not necessarily something that someone actually requires. A storekeeper may cater for many requirements that are never required by any of her customers. So I'll stick to 'supposition' and 'requirement'.

'Ought' and 'Is'.

If 'ought' statements indicate some evaluative relationship (best for, right for, appropriate for) between some proposition and some other proposition (or, if you like, between two sets of possibilities), then what *ought* to be so may seem to have little to do with what *is* so as opposed to what *is not*. The sets of possibilities under consideration will, as like as not, be representative of falsehoods.

This feature of 'ought' statements, if correctly diagnosed, would extend also to other forms of restricted necessity, including logical entailment. In world talk, they would be true with respect to any possible world, not because they correctly describe that world or any other world, but because they correctly describe relationships between sets of worlds. They are not truths *in* a world, but rather truths *about* sets of worlds. They are not true of this world any more than they are of any other world. Does that mean that their truth-makers are superworldly, or supernatural or at least non-natural?

Some would argue for the existence of supernatural things by pointing out that the property common to all doors, that property which made a door a door, was not a natural object to be found lying about in this world. Those of a nominalist bent might agree that properties are supernatural or at least non-natural, but disagree about the existence of such properties.

There seems no reason why a nominalist should not have the same attitude towards possibilities. But if possibilities do not exist, and statements of the form 'X ought to Y' are statements whose truth-makers are possibilities, then it appears that we should say that all such 'ought' statements express falsehoods. Would not any proposition without a truth-maker be false?

There are a number of confusions to be sorted out here. Firstly, we must distinguish between the *truth-makers* of a statement and what the statement

is *about*. Take a statement made in standard English using the sentence 'All spinsters are women'. Such a statement would be said truly. But though it is about spinsters, the spinsters of this world are not its truth-makers. Rather it is said truly because of the speaker's semantic intentions when uttering 'spinsters' and 'women' and embedding those utterances in a sentence of that sort. The truth-maker is the speaker herself or more narrowly, the speaker's linguistic act, including its mental aspects. The speaker is speaking truly when she says 'All spinsters are women' because she means her use of 'spinster' be taken to describe women only. The truth-in-all-possibilities account of logical truth can be regarded as a fictive model of the semantic aspects of any such linguistic happening abstracted from any actual event.

Nothing in what I have just said implies that 'All spinsters are women' in standard English is to be semantically reduced to propositions about speaker's intentions. 'All spinsters are women' is about spinsters, not speakers. The talk of speaker's intentions is an explanation of why a speaker using the sentence is speaking truly. It is not a statement of semantic e-quivalence.

The second point about the super-worldliness of the *ceteris paribus* analysis of 'ought' statements is that it is not wholly super-worldly. The possibilities under discussion will, in general, include some relevant facts. We can therefore regard 'ought' statements and other restricted modal statements, including conditionals, as having at least some facts among their truth-makers. What makes these statements true, then, is that these very worldly facts are of a certain sort. That is, the truth-makers for these statements, like other contingent statements, are aspects of the actual world - as well as the speaker's semantic intentions, of course. No mysteries there.

There is a third matter, however, which needs attention if White is right in regarding 'ought' statements as saying that certain sorts of things are *appropriate* to others. If such statements are to be true, their truth needs to be explained in a natural way (at least for nominalists and naturalists). What in the world could count as such a truth-maker?

That depends on the 'circumstances', 'requirement', the 'set of alter-natives', and the 'aspect', to quote White, that generate the extra sup-positions of the 'ought' statement. To give a reason why X ought to be Y is to point out how X's being Y is one of the alternatives that satisfy the requirement in the circumstances under discussion. As White correctly points out, these criteria are not part of the meaning of 'ought'. They vary from case to case in a context dependent way. But they may be perfectly natural truth-makers for all that. To use an example of White's:

> This nut ought to do because crank-case bolts are of a standard pattern and it came from another crank-case.

That's all that being appropriate amounts to in that case. For another nut in another circumstance with another requirement (that it burr the thread, for example) what is appropriate may be something different. The point is that what is appropriate need not require evaluative insight. There are natural facts that are discoverable in quite ordinary ways that tell us whether the nut ought to do the job.

When the requirement is that X does what is morally correct, however, that will not be the case if the non-naturalists are right. No matter what facts we discover about the world, both 'X ought to Y' and its negation will be consistent with those facts, according to the non-naturalist story. If any such moral 'ought' statements are true, therefore, there will have to be non-natural evaluative relationships between possibilities. Those who reject such non-natural relationships must therefore also reject the truth of those 'ought' statements which concern moral requirements. Those who accept such relationships must tell us why we should also accept them or at least give us a well-grounded epistemological justification for accepting them. In any case, if what is meant by an 'is' statement is one whose truth-makers are to be found in the world, rather than a non- natural or supernatural inter-worldly possibility space, there will indeed be an 'is-ought' gap in that case.

We have seen that, in cases where there is no 'is-ought' gap, what ought to be the case or what should be the case, may have nothing whatsoever to do with morality. For that reason, Renford Bambrough's 'proof' [1979, p15] that we have *moral* knowledge will not do. For that we have moral knowledge does not follow from his premise that 'We know that this child, who is about to undergo what would otherwise be painful surgery, should be given an anaesthetic before the operation'. The supposition which would generate the knowledge that such a statement could express could be merely the very plausible supposition that we all share the aim of minimising the suffering of the child. What Bambrough needs for his proof is the much stronger, but far less plausible premise that we know that we have an objective moral obligation to give an anaesthetic to the child before its operation.

'Ought' and 'Can'.

Is it possible that X ought to be Y when X cannot be Y? On the analysis as we have it so far, given the same relevant facts and suppositions, $Op \rightarrow$ $(C_{Do} \rightarrow p)$. We also have it that $C_{Do} \subseteq C_D$, so $C_{Do} \rightarrow C_D$. So the question is whether the following propositions consistent:

$$C_{Do} \rightarrow C_D$$
$$C_{Do} \rightarrow p$$
$$\sim \diamond (C_D \& p)$$

These three are compatible, but together they entail that $\sim \diamond C_{Do}$, that is, that it is impossible for anything to be appropriate to our requirements under the circumstances. On our analysis, that would make Op true for any p at all. That is, given that it is impossible to satisfy our requirements, anything and everything ought to be the case. That seems like a reductio. We cannot, surely, have both Op and $O \sim p$.

Maybe we can. Suppose our requirement is to bring about some impossible situation, say one in which both p and $\sim p$ were true. In that case we ought to make p true and we ought to make $\sim p$ true as well; and we can not do both of those things.

'Ought', then, does not imply 'can'. Impossible requirements provide the counterexample.

Does that apply when the requirements are that we act with moral rectitude? That depends on whether moral requirements can in some circumstances be impossible to satisfy. Are the moral principles rule inconsistent? If they are made by God and God is the sort of person that some modern novelists seem to believe God to be, the answer is certainly yes. You *can* be damned if you do and damned if you don't. Hence the idea that is prevalent in ethical thought that 'ought' implies 'can' entails that the ultimate moral principles are rule consistent; that is, that in any given situation, it is never the case that one morally ought to both do something and not do that thing.

Conclusion

In this paper, an account has been given of the logic and pragmatics of restricted modalities, such as 'ought', 'must' and 'is obliged', in terms of

the facts relevant to a dialogue and the suppositions that are operative at the time when the modal statement is uttered. On the assumption that the correct modal logic for unrestricted logical necessity is S5, the logic of restricted necessity is shown to be a normal modal logic that is as strong as the logic that results when the axiom

$$L_R p \supset p$$

is deleted from the S5 axioms. Other formulae which fail as logical truths for restricted modality are the Brouwerian formula

$$\sim p \supset L_R \sim L_R p$$

and also the formulae

$$M_R t$$

where t is a logical truth, and

$$L_R p \supset M_R p$$

whose failure is of importance in the analysis and resolution of paradoxes.

The relationship between 'ought' statements and other restricted modal statements rests on the imposition of an extra supposition or 'requirement' for the 'ought' statements. Given that the relevant facts and other suppositions are the same, statements about what must be or what is obliged to be the case entail corresponding statements about what ought to be the case but not *vice versa*.

'Ought' statements or 'obligation' statements are not to be identified and neither sort of statement need be more likely to be relevant to moral matters than they are to physics or any other subject matter.

There is no reason to think of 'ought' statements *qua* 'ought' statements as non-factual, non-natural or supernatural. Insofar as some 'ought' statements with moral requirements are correctly regarded as being non-natural or supernatural, that would be due to the nature of the requirement rather than the logic of 'ought'.

Finally, on the analysis given here, 'X ought to V' does not entail 'X can V'. A counterexample is provided if the extra requirements raised by the 'ought' statement eliminate all the possibilities for behaviour under discus-

sion. Moral principles that are rule-inconsistent may provide such an example.

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