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CAN THERE BE A NATURAL DEONTIC LOGIC?

1. INTRODUCTION

Before I can answer the title-question of this piece, I must say what I mean by 'deontic logic' and by 'natural'. This is in itself a substantial task, not least because there are so many distinct but equally compelling conceptions of deontic logic, and the negative answer erotetically implicit in the title must represent for some of those conceptions a sort of denunciation. Deontic logic is a branch of philosophy, a subject matter that some philosophers spend some of their time writing about. To say that deontic logic thus conceived is unnatural might seem to be putting it (as it were) on a level with bestialism, uranism and door-to-door evangelism. Far be it for me to relegate deontic logic, as I would (cheerfully and in the presented order of rigourousness) the other three activities, to the private indulgence of consenting adults. I do not mean deontic logic as an avocation, preoccupation, passion, vice, or instrument of vexation.

I do mean deontic logic as a (possibly finitely axiomatisable) set of sentences in some of which the word 'ought' or its formal representative occurs as a logical constant. I also mean deontic logic as a codified set of inferences the correctness of some of which turns upon the way in which the word 'ought' recurs through their component sentences. These are not meant to be definitions but serve merely as indicators of the sort of thing I have in mind. But, only the sort. For there is a newer conception of deontic logic which deserves place here: that of an inference logic which purports to codify the inferential closure of what ought to be the case, by introducing a deontic consequence relation which is required to preserve 'ought' as an alethic consequence relation is required to preserve truth.¹ There is as well the semantic conception of deontic logic in which various model theoretic representations of axiological notions yield truth conditions for sentences in 'ought' and are axiomatised by this or that deontic system.² In all of these cases the question of naturalness can be raised and its meaning is perhaps clear enough. Does the axiomatic deontic logic reflect the natural inter-

relationships of deontic and nondeontic vocabulary of natural language? Does the deontic proof theory correspond to the inferential facts of ordinary deontic reasoning? The question in the title is really these two questions. The question of this essay is the former.

2. A MUDDLE ABOUT 'OR'

There is one subject about which the writers of introductory logic textbooks are as wrong as they are unanimous. That is the existence in English of an exclusive 'or'. The examples adduced are generally of one or the other of two sorts. The first is of the general pattern

Either he is in Helsinki or he is in Dublin

(which we may call the argument from vagueness). The point of the example is that he cannot be in both places, so only one of the disjuncts can be true; therefore, the 'or' that joins them must be exclusive in sense. But then one might argue that the 'or' that their 'v' represents must vary in meaning between ' p or q ' and ' p or $\neg p$ ', so the 'v' of the formalism must change its meaning from context to context, sometimes being exclusive and sometimes inclusive (or more delicately 'nonexclusive'). In fact, since the truth table for 'v' makes the sentence ' $p \vee q$ ' equivalent to the sentence ' $(p \wedge q) \vee (p \wedge \neg q) \vee (\neg p \wedge q)$ ', the 'v' of the formalism must on this account always be exclusive in an implicit sense. This is rather on a par with the observation that anything expressible using the 'is' of identity can be expressed using the 'is' of predication because we can always in these cases replace 'is' by 'is identical to'. This is not a helpful observation and quite the reverse of corroboration for any remarkable thesis.

The second sort of example is the one which more directly concerns the deontic logician. When it is clear that the sense of 'or' cannot be claimed altered by the nature of the disjuncts which flank it, examples are sought that better serve the myth, examples in which the exclusivity is intrinsic to the 'or'. These examples are of the general pattern

You may spread caviar *or* patum peperium

with the inflection coming down with an undeniable exclusiveness upon the 'or'. There is, of course, a straightforward demolition near to hand. We may simply observe that the emphasis upon 'or' or the pounding of the picnic hamper is just the inflectional or demonstrative equivalent of

the suffixed rider 'but not both', and no more intrinsic to the 'or'. No one denies the possibility of such a qualification, nor that a new particle could be introduced and defined along those lines. But in the definiens the 'or' would have to be nonexclusive, so there is no reason along those lines for regarding the 'or' in the example as exclusive in this sense unless the qualification implicit in inflection or gesture is considered.

A second observation, more serious than the first, is also possible. This is that in the second example, there is no disjunction of any sort, because the 'or' does not join sentences. That, the textbook writer will inform us, is of no consequence. In a sentence like

He is in Dublin or Helsinki

we naturally take the ellipsis into account. That is to say, we see this as an abbreviation of

He is in Dublin or he is in Helsinki.

Ah yes, we reply, but in the condimental example, how is the ellipsis to be understood? It cannot be understood to abbreviate

You may spread caviar (hereafter 'c.') or you may spread patum peperium (hereafter 'g.r.')

since the sentence

Daphne may spread c. or g.r.

implies the sentence

Daphne may spread c.

and also the sentence

Daphne may spread g.r.

These are patently not implied by the disjunction. In fact, that both of these sentences are implied shows that the original sentence is elliptical for a conjunction and not for a disjunction at all. What seems to have misled the authors who cite this sort of example is, in the first place, the presence of the word 'or', and, in the second place, our readiness to read into the inflection or a gestural accompaniment, the clear qualification 'but not both'. Taken together, these seem to have made the leap to the supposed classification irresistible. What place, after all, can the implicit 'but not both' have if the ellipsis expands into a

conjunction? Clearly the hamper thumping or the 'or' thumping is meant to withhold consent for Daphne's combining anchovy paste with fish eggs on her finger of toast. So the sentence with that qualification either explicit or implicit is elliptical for

Daphne may spread c. and Daphne may spread g.r. and
Daphne may not spread both c. and g.r.

Thus the sentence in question is not a disjunction which inflection or gesture or explicit suffixing renders exclusive; rather it is a conjunction, the force of the implicit or explicit qualification being to render it noncombinative. So we have here a puzzling nondisjunctive use of 'or'. I shall claim that the puzzle is an important and revealing one, but not yet a puzzle for deontic logic.

3. DEONTIC LOGIC

Deontic logic wants a deontic operator '*P*'. 'It is permitted that' attached to a sentence to replace the English form which has a predicable 'may do such and such' attached to a nominal, as in this case 'Daphne' or a predicable 'so and so may' attached to a verb form which picks out some or other action, as in this case 'spread c. or g.r.'. So the sentence

Daphne may spread c.

becomes

It is permitted (or 'permissible') that Daphne spreads c.

Thus by the same process, the sentence

Daphne may spread c. or g.r.

neglecting any implicit exclusivity qualification, becomes

It is permitted that Daphne spreads c. or g.r.,

and then, taking 'Daphne spreads c. or g.r.' to be elliptical for disjunction,

It is permitted that Daphne spreads c. or Daphne spreads g.r.

Now arises the puzzle. This translation into the propositional mode translates the English sentence

Daphne may spread c. and Daphne may spread g.r.

into

It is permitted that Daphne spreads c. and it is permitted that Daphen spreads g.r.

It translates the English sentence

Daphne may spread c. or g.r.

into

It is permitted that Daphne spreads c. or Daphne spreads g.r.

But since the two original sentences are equivalent, so ought to be the two translations. That is to say, the formalism ought on this basis to accept the equivalence of the two forms

$$P(\alpha \vee \beta)$$

and

$$P\alpha \wedge P\beta.$$

The problem with this is in part that deontic logicians want to understand the dual of $P\alpha$ (i.e., $\neg P\neg\alpha$, or $O\alpha$) as representing 'ought to' as ' P ' represents 'may'. To accept this distributive equivalence on the basis of the original English sentences will commit him to the acceptance of the equivalence of the forms

$$O(\alpha \wedge \beta)$$

and

$$O\alpha \vee O\beta.$$

But if the same measure of correspondence with English were to be insisted upon, this would have the unwanted consequence that, for example, if Daphne ought to behave sensibly at family outings, then she ought to behave sensibly at family outings and bathe as frequently as possible in warm treacle; in fact, if she ought to do anything, then she ought to do everything. So there is the puzzle. One or the other of the two points of contact with natural language must be relinquished. Either the equivalence of the two forms

$$A \text{ may } \phi x \text{ or } y$$

and

$$A \text{ may } \phi x \text{ and } A \text{ may } \phi y$$

or the inequivalence of the forms

$$A \text{ ought to } \phi x \text{ and } y$$

and

$$A \text{ ought to } \phi x \text{ or } A \text{ ought to } \phi y$$

will not survive the formalisation.

Faced with the choice, deontic logicians have sensibly abandoned the equivalence in favour of the duality of 'ought' and 'may', a course which in the usual treatments gives the equivalence of

$$P(\alpha \vee \beta)$$

and

$$P\alpha \vee P\beta,$$

and the dual equivalence of

$$O(\alpha \wedge \beta)$$

and

$$O\alpha \wedge O\beta.$$

About these equivalences one may have doubts of another sort. They obliterate distinctions which we may well need to preserve. But that problem can be solved without resort to the radical alternative which rejects duality or makes everything obligatory if anything is.³ Here is a sense in which deontic logics are not natural. It seems that either not all the equivalences or not all the inequivalences in the natural language of 'may' and 'ought' can be preserved into a reasonable formalism. But we may yet raise the question as to whether there is a natural logic to these notions. After all, the plain person understands what is meant when permission is given and manages to reason in some fashion or other without giving up that distributive equivalence which deontic logic must reject. Are there codifiable principles which govern the natural use of these terms and which yield that equivalence as a sort of theorem? I shall claim that the natural principles which dictate this equivalence are not deontic, nor in a sense, logical.

This distributive phenomenon has come in for a certain amount of discussion among deontic logicians under the heading of 'free choice permission'.⁴ No disparagement is intended by the absence of a detailed

discussion of their deliberations here. I do not claim even that what they have said is not right so far as it goes. But it seems to me in the first place not to go far enough and in the second, to treat the deontic case too much in isolation from similar distributive phenomena in other, nondeontic contexts. Even within the realm of deontic examples, the heading 'free choice permission' suggests an unduly narrow view of the puzzle. Conjunctive distribution occurs not only over *or*-compounds of actions, but over *or*-compounds of subjects as well. Thus the sentence

Fred or Bill may come

is equivalent to

Fred may come and Bill may come

and in this case as in the others, it is possible to inflect the sentence in such a way that permission is not given for both of them to come, and in any case, permission for both to come is not implied. It seems curious to call this a case of free choice permission, but the distribution nevertheless requires explanation. Let us turn to other, nondeontic contexts. What are these? In the first place, comparatives usually distribute conjunctively over *or*-compound terms. Thus, for example,

Pierre is more important than William or René

is equivalent to

Pierre is more important than William and Pierre is more important than René.

Also familiar logical contexts

If Laurie or Alison leaves, then I leave

is equivalent to

If Laurie leaves, then I leave and if Alison leaves, then I leave.

I shall present two competing hypotheses to explain the phenomenon and say why one hypothesis is to be preferred over the other.

4. THE FIRST HYPOTHESIS

If we speak idiomatically, then to say the former of either of these pairs of sentences will give rise to our audience's understanding us to be

asserting the second, unless we frame the remark in contextual matter which forces an alternative understanding. (We might add 'but I don't know which', and, note, doing so in *either* of the two cases will force a disjunctive reading.) Certainly if we want our audience to understand one of these conjunctions, then the corresponding ellipsis will get across idiomatically what we want to say. So the question is, 'why do we say this using 'or'?' which is to ask, 'why do we not say this using the only syntactically plausible alternative, 'and'?' More precisely, why is 'or' idiomatic and 'and' not, for this purpose and in these contexts?

The only possible answer to this question is that in these contexts or in the generality of contexts of this sort, the use of 'and' would not be understood in this way. Clearly in the second, the hypothetical example, the use of 'and' would give it to be understood that the combination of Laurie's and Alison's leaving would bring about my departure. It is less clear in the comparative case unless more is said contextually about the nature of the relative importance. If, for example, the importance were the importance of being saved from a sinking ship, there could be a clear combinative understanding of 'and'. (If the choice is between saving him and saving both of them, then save him. Similarly, on a cheerful note, for purposes of assassination, he being that much bigger and there being a mere sufficiency of poison.) In the cases of some other comparatives, a combinative understanding of 'and' is more compelling, in some less so. There is clear combinative sense to be made of 'and' in the comparative

Pierre is heavier than William and René

as there is that and immediate plausibility in a combinative reading of

Pierre is lighter than William and René.

But there is no clear combinative sense to be given to

Pierre is more polite than William and René

unless jocularly taken to mean 'than those two put together', that is, very much politer than either. Nevertheless, the need for the distinction in some comparative contexts is sufficient to establish the idiom for all. For there is sufficient similarity among comparative forms for the rule to be a clear one. Without the rule, the nondisjunctive understanding of 'or' where the distinction has place would be less clearly indicated, while the noncombinative understanding of 'and' in the other cases is

not affected by there being such a rule. That is, the need for the distinction in some comparative cases is more likely to beget a rule of idiom for all comparative cases than the absence of this need in other cases is to inhibit the evolution of such a rule. So an idiom which always distributes comparative contexts over an *or*-compound can be explained by the need for the idiom in some, even if not all, cases. Such an explanation does not require the subsidiary hypothesis that the idiom has seeped from central to other cases. As evidence that it is the need for noncombinative conjunctive compounds that has risen to the nondisjunctive 'or', we may observe that outside comparative contexts, where the combinative-noncombinative distinction has no place, 'or' resumes its disjunctive reading. The sentence

Pierre is a cousin of Georges and Henri

cannot be given a combinative sense, as could not any other such statement of familial relationship. Here there is no need for a conjunctively distributive *or*-compound. Thus the sentence

Pierre is a cousin of Georges or Henri

will not, without some quite unidiomatic inflectional and contextual enforcement (such as '...so shoot which you like') be understood conjunctively.

That is the first of the two competing hypotheses. The distributive phenomenon is, according to it, explained by the need in certain contexts for a distinction. The examples cited in which the distinction is not required, but in which the phenomenon occurs anyway, can be explained on this hypothesis without recourse to postulated imitation of usage. In other cases where the distinction is not required, the phenomenon does not occur.

Nevertheless, the existence of an idiom even with a plausible explanation for its evolution does not have the force of syntactic law. It is only when the underlying reason has received notice and then made explicit as a rule that there can be anything like conscious enforcement or authoritative regulation. Thus even if the above hypothesis is correct, we should still expect to find or to be able to concoct cases where 'and' has combinative sense but 'or', unassisted, would naturally be read disjunctively. As for example,

Pierre owes Fred and George fifty pounds

on one reading at least does not distribute conjunctively. However, neither does

Pierre owes Fred or George fifty pounds.

But there are other considerations. Importantly, there are a multitude of distinctions to be made among the cases where *and*-compounds are undistributive. Out of context, the cited case does not indicate, for example, whether the fifty pounds is owed to the collectivity or represents the totalled debts to them individually, and then again, it might just mean 'each'. Perhaps it is not quite unambiguously undistributive because even if it were undistributive, it would still be ambiguous. In such complicated cases, we may have recourse to other more differentiated devices. In any case, none of this diminishes the likelihood that the general understanding of a rule would result in the widespread adoption of a conjunctively distributive *or*-compound even in these cases, and that the widespread acceptance of a formalism of such distributive regularities as there are would dull our apprehension of any such subtleties that it did not explicitly preserve. Consider only the fact that so many learned compilers of university level logic texts persist in failing to notice that these exclusive uses of 'or' are not disjunctive uses at all. Deontic logicians who regard the conjunctively understood *or*-compound permission sentences of English as the anomalous cases to be puzzled over in the light of the received deontic logics are similarly the victims of technology. What would otherwise fall must now be lowered to the ground by committee at an accelerative rate of 9.8 m/sec^2 . A final gesture of despair: linguists will take the main thesis of this section as a challenge. There is always an element of temerity in logicians' trying to do linguistics.

5. THE SECOND HYPOTHESIS

In the second hypothesis, the cases which are the pulse of the idiom's development are those in which the truth conditions of disjunction force conjunctive distributivity. These are then cases which are intermediately translatable into sentences consisting of a disjunction of sentences within the scope of some sentential operator. The hypothetical example will be one such case.

If Laurie or Nicholas leaves, then I leave

is equivalent to

If Laurie leaves or Nicholas leaves, then I leave.

The antecedent is satisfied by Laurie's leaving and also by Nicholas' leaving, the disjunction being true if either disjunct is, so this sentence yields the conjunction

If Laurie leaves then I leave and if Nicholas leaves then I leave.

Moreover, these exhaust the ways for the disjunction to be true; hence the equivalence.

The explanation in terms of truth conditions seems to lie even nearer to the surface when the context which distributes contains a negative particle. Certainly the sentence

He did not arrive on Tuesday or Wednesday

is naturally taken to mean

He did not arrive on Tuesday and he did not arrive on Wednesday

and here again there is an intermediate translation into

It is not the case that he arrived on Tuesday or he arrived on Wednesday

if we set aside the slight ambiguity as to the scope of the prefix. Now the second hypothesis is that it is such cases as these, where *or*-compounds are conjunctively distributive and where *and*-compounds are not, which are imitated in constructions where unlike these there is no explanation to be had in the truth conditions of disjunction and conjunction. Let us, however, put the matter in perspective. In the first place, consider how the ambiguity in the intermediate translation might be removed. Certainly it may be removed by insertion of the word 'either' to act as a sort of left parenthesis, but it could also be removed by suitable inflection as well if a 'that' is inserted after the 'or'. It is difficult to see what intermediate distribution could be invoked to explain the conjunctive distribution over the resulting *or*-compound of *that*-clauses. Again, we may note that not every context containing a negative particle does distribute conjunctively over an *or*-compound.

Consider, for example, the sentence

Either Fred or George did not come.

What makes this hypothesis a candidate is the supposition that truth and falsity conditions of disjunction and conjunction are a hard datum. In a sense of course, they are, but it can scarcely be this fact that explains the evolution of the distributional idiom in other areas. For people ignorant of the laws of Petrus Hispanus nevertheless know that 'not' does not distribute (conjunctively at any rate) over 'and'. That is to say, that much knowledge may be evidenced in their understanding and use of *and*-compounds without their ever showing recognition that 'not' does distribute disjunctively over 'and'. So even if the propositional cases are the paradigm, this need not be so because of their truth and falsity conditions. After all most of the so-called De Morgan laws are not immediately or readily accepted by the generality of introductory logic students, let alone an unconsciously possessed *vade mecum* of usage for the general linguistic community. But without the mention of truth and falsity conditions, propositional uses of 'and' and 'or' have no special place in the explanation. So no explanatory advantage offsets the disadvantage that it depends upon generalisation of the idiom through imitation to other kinds of context. Once we abandon the hope of explaining all cases of conjunctively distributive *or*-compounds by a combination of truth conditions and seepage, we may consider that distribution in the truth functional cases has its source in punctuational requirements rather than in truth conditions. This amounts to little more than regarding falsity conditions of compounds as being more primitive than their truth conditions. This will sound paradoxical, but is an innocent enough suggestion when taken in the light of what we have already seen, and what the historical facts as well as scholarship can reveal about the early development of propositional logic. It amounts to this, that the raw material in language from which the theoretic artifacts of logic have been fashioned are assertions (though that may already be too theoretical to be considered raw) and their punctuated combinations and abbreviations. It is from this material that bearers of truth values emerged as the basic constituents of logical theory. Thus the basic ingredients of falsity conditions for disjunction would already have been present in an abbreviative idiom. Consider only that the present falsity condition for disjunction seems to have been settled upon fairly early while the truth conditions took much longer to

emerge.⁵ Also, many examples can be found to illustrate the use of 'logical' particles to combine assertions rather than to make complex assertions. Consider

You may have some if you want some

contrasted with

You may have some if you are deserving.

Consider

He is coming, because I saw him

contrasted with

He is coming because he wants to

and so on. There is no space here to explore this claim fully, but clearly the idea that punctuation has priority over truth conditions cannot be dismissed.

6. INTERMEDIATE TRANSLATION

It is only if we come to the problem with particular views about the primordially of truth values that we will see the explanation of the conjunctively distributive *or*-compounds even in truth functional cases in the intermediate translation into disjunction plus operator. But even if this initial distribution holds some clue or provides irrefutable justification for distribution in truth functional cases, it will provide no clue as to how things should go where the intermediate translation is the preliminary in the construction of special formal systems with nontruth functional operators. Here in fact there is precious little to go on beyond the requirement of consistency and the distributive idiom of the raw natural language case. In the formalisation of deontic logic there are other desiderata. The frame theoretic apparatus already worked up for the study of modal logics lies available provided that we are prepared to think of obligatoriness as a kind of deontic necessity, and this in itself satisfies a deeply felt unificationist urge. It is furthermore in accord from a distributivity point of view with generally held conceptions of how *ought* contexts behave. The result is that the conjunctive distribution of permissibility over disjunction goes by the board. This is not an objection; if we want a deontic logic at all, we want a consistent

deontic logic, and the cluster of ordinary language equivalences is inconsistent.

This is the position: In the process of formalisation, we frequently have recourse to an intermediate distribution over 'or' and 'and' to take a sentence of the form ' $F(a \text{ or } b)$ ' (or ' $F(a \text{ and } b)$ ') into a formally more manageable form ' $*(\alpha \vee \beta)$ ' (or ' $*(\alpha \wedge \beta)$ '). In doing so we must decide whether ' $*(\alpha \vee \beta)$ ' (or ' $*(\alpha \wedge \beta)$ ') is to be equivalent to ' $*\alpha \vee *\beta$ ' or ' $*\alpha \wedge *\beta$ ' or neither. This is sometimes genuinely a matter for decision rather than discovery, in which the natural distribution of F over ' a or b ' and ' a and b ' is but one consideration among many. There is, however, one historical case in which an author has permitted the natural distributive facts to be decisive. I conclude this essay with a brief consideration of that example.

7. A NATURAL LOGIC OF PREFERENCE

Professor von Wright has studied the possibility of formalising the notion of intrinsic preference.⁶ This, he explains, is the relation which obtains between two things in virtue of someone's liking one of them more than the other. There is an initial difficulty with the very notion of *intrinsic* preference which von Wright has not taken into account and which is relevant here. It arises through an ambiguity evident throughout the work in question between the sort of preference that we express by saying that we like one thing more than another, and the sort which we express by saying that we would rather the one thing than the other. The two are not the same and are frequently in conflict, and even if we consider only those cases in which our likes and preferences are in agreement, there is a formalistically significant reason for distinguishing them, and philosophical grounds as well. Philosophically, the restriction to intrinsic preferences really belongs to the former sort and not to the second. Just as we may have extrinsically inexplicable likes and dislikes, so we may have extrinsically inexplicable orderings of these. But just as we cannot merely want X , but must want to ϕX (for some ϕ) in order for the satisfaction conditions of our wants to be specifiable, so for our preferences to be understood, we must be able to supply a ϕ and a ψ . It cannot be that I would simply rather a than b . There must be some ϕ and ψ such that I would rather ϕa than ψb . Some intrinsicity restriction may yet be salvaged when this is done, but it will not be of the sort that von Wright has envisaged. At the same time, it is this

implicit verb which makes the intermediate distribution possible, and thus the representation of preference sentences by the form $\alpha P\beta$. Genuinely intrinsic preferences which were merely ordered likings could not be represented in this way, except those which are the liking of one kind of state of affairs better than another.

From the point of view of natural distribution over 'or', the distinction is not so important. The sentence

I like a better than b or c

means

I like a better than b and I like a better than c

just as

I would rather ϕa or b than ψc

means

I would rather ϕa than ψc and I would rather ϕb than ψc

and it need make no difference whether the *or*-compound is in the righthand or lefthand position. Here, it seems, we have clear grounds for having in the logic the equivalence

$$((\alpha \vee \beta)P(\gamma \vee \delta)) \equiv ((\alpha P\gamma) \wedge (\alpha P\delta) \wedge (\beta P\gamma) \wedge (\beta P\delta)).$$

Moreover, there is no natural language dual making contrary demands for us to concern ourselves with.

8. PROHAIRETIC DEONTIC LOGIC

It has been suggested that a unary operator O capable of bearing a deontic interpretation might be defined in a logic of preference by

$$O\alpha =_{\text{df}} \alpha P \neg \alpha$$

with the dual, permissibility, consequently to be understood by the equivalence

$$P\alpha \equiv \neg(\neg \alpha P\alpha).$$

If the preference logic has the natural distributive properties as von Wright advocates, the defined deontic operators will have some unusual features. The deontic necessity will, for example, be nonmonotonic. For

suppose that it preserves logical implications. Then if we ought to pay the neighbours ten pounds, then one ought either to pay them their ten pounds or poison the dog next door. (This sort of example has been taken by some authors to demonstrate nonmonotonicity anyway, but for the sake of argument let us suppose that their arguments have been met and their fears allayed.) By the definition, we infer that it is preferable to perform either of these two services than to do neither. By the distribution principle, it is preferable to poison the dog next door than to keep the ten pounds and the poison.

Secondly, certain circumstances will render the deontic logic liable to the full indignity of all-if-any obligation. Merely introduce into the language of the preference logic a propositional constant μ , and into the prohairetic system, the principle

$$[\mu] \vdash \neg(\neg p P p) \equiv p P \mu.$$

By the prohairetic distributive principle we will now have the deontic distributive principle

$$\vdash P(p \vee q) \equiv (Pp \wedge Pq)$$

and all the havoc that that principle wreaks. Now the constant μ must be understood as the minimally disliked state since any permitted state is preferred and every forbidden state is thought at least as bad. There may be some argument that there is no such state, but the hypothesis that there is such a state ought not to have the consequence that if anything is obligatory everything is.

NOTES

¹ See for example [5].

² See [1].

³ See [5].

⁴ See [3] for a recent discussion of this and a partial bibliography of earlier essays. Makinson finds it useful to express the puzzle in quantificational terms. There is a detailed consideration of the connection between the distributive puzzle and the quantificational vocabulary of natural language in [2].

⁵ See, for example, the Kneales on Diogenes on disjunction in [4], p. 148.

⁶ In [6].

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