A Note for Discussion: Treating Disjunctive Obligation and Conjunctive Action in Event Semantics with Disquotation

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Abstract

Standard deontic logics are about what obtains in deontically ideal worlds. Deontic reasoning from the perspective of event semantics and the disquotation (ESD) theory, which we describe briefly, is about individual obligations, permissions, etc. in this, admittedly non-ideal world. Standard deontic logics are beset with a number of puzzling paradoxes and anomalies. Our suggestion here is that at least some of these problems can be dispelled if we take the perspective of event semantics and disquotation with regard to deontic reasoning. We make good on this suggestion by discussing how ESD theory succeeds in treating puzzles of action conjunction in deontic contexts and in treating the paradox of deontic disjunction.

1 Introduction

A number of puzzles and paradoxes are well known to attend deontic logic in its standard forms. Our concern in this discussion note is with two particular areas of deontic logic: the first, a family of paradoxes attributed originally to Ross [11] and describable as deontic paradoxes of disjunction; the second, a puzzle pertaining to conjunctive action.

The first area we look into is the paradoxes exemplified by, and largely derived from, the observation originally made by Ross that

$$\models \mathcal{O}P \rightarrow \mathcal{O}(P \vee Q) \tag{1}$$

This has generally been interpreted so as to allow that "if one is obliged to mail a particular letter, then one is obliged either to mail it or burn it." And this sort of interpretation has generally been seen as untoward. Of course, this gloss on Equation (1) has been disputed. Under ideal possible world semantics, for example, it has been argued that it is not paradoxical to conclude that if P is true in a deontically ideal world, then so is $(P \vee Q)$. Certainly, whether these paradoxes—or indeed the other paradoxes of deontic logic—are, in Quine's terms, veridical or falsidical can be and has been argued. Our focus is elsewhere.

We wish to explore how event semantics with disquotation theory [8] might be used to model deontic reasoning and inference, as it pertains to the deontic paradoxes of disjunction. It might be both that Equation (1) can be saved from paradox by a deft semantics *and* that the deft semantics fails to model our ordinary reasoning and sense of deontic inference. In any event, and without passing on that eventuality, we simply wish to explore an alternative formulation.

The second area we wish to investigate in this discussion note is the puzzle of conjunctive action. The puzzle arises in the case of technical fulfilment of an obligation, but interference with the desired effects of the obliged action. In this situation, there is a seeming absence of certain useful inferences from Anderson's reduction [2] of obligation to violation in the case of non-performance:

$$\mathcal{O}P =_{def} \Box(\neg P \rightarrow V) \tag{2}$$

Taking P as 'the letter was mailed' $\mathcal{O}P$ is not violated when the letter is mailed. But what of the case when we add the conjunct Q, taking Q as 'the mailbox containing the letter was burned by the mailer'? It seems there is some form of violation pertaining to the obligation, which is omitted from

Anderson's definition. Anderson's reduction does not licence the inference from $P \wedge Q$ to V. Indeed, in general, this inference is not desirable, since Q may be 'the mailman was given a bonus for expediting' rather than 'the mailbox was burned'. Still though, we require some rule that posits a form of violation in the case of interference leading to intended effect's of the obligation not being achieved. In short, our concern is to look at how what we might call *arson's reduction* of the effects of action, through interference, might be accounted for in the variant of Anderson's reduction we employ in disquotation theory. The problem is one of conjunctive action.

In the next section we sketch an event-based formalization for deontic reasoning, so that we might apply it to the two puzzles afore-mentioned: Ross's Paradox and 'arson's reduction'. We treat the former first, and explain the deontic reasoning case involving deontic disjunction. We then turn to our second puzzle, of conjunctive action (specifically, interference), and explore how violation might be related to obligation and intention in event semantics.

2 Précis: Deontics & Disquotation

A logic is, at least in part, a formal model of a realm of discourse. The language oridinarily employed in deontic reasoning is intensional, so any formal model of it would seem to require its own intensional language. Because first-order logic is extensional, the temptation has been to develop a non-extensional modeling language for deontic reasoning, based on such familiar operations as those for obligation and permission ($\mathcal{O}$ and $\mathcal{P}$ in our notation here). Standard deontic logic and its variants have been natural and justly celebrated results of pursuing this move.

Our aim in this section is to sketch an alternative form of representation for deontic reasoning, employing Kimbrough's disquotation theory for representation of propositional content. Space limitations prevent us from describing the theory and its motivations in fully adequate detail. We shall sketch the main points and develop our argument in what follows by examples. There are two key elements in the theory: (1) use of event semantics to individuate eventualities (events, states, processes [10]; called occurrences by [1]), and (2) using quotation to encapsulate propositional content and disquotation to unwrap it for purposes of inference. See [8] for further details on the disquotation theory.[1]

[1]Much of the remainder of this section is revised from [8].

The first step in the general direction of the disquotation theory is to combine the Anderson reduction with event semantics. The Anderson reduction first [2, 9]. Instead of $\mathcal{O}\phi$ for "It ought to be the case that ϕ" we have $\Box(\neg\phi \rightarrow V)$ where V is the bad (violation) condition. That is, "ϕ ought to be true" is unpacked as "Necessarily, if ϕ isn't true, then the bad happens" (and that's not good!).

Focusing for present purposes on simple sentences, having a single verb and governing event, the Anderson reduction may be reframed so as to exploit the underlying events. Suppose that a delivery is obligated: a is obliged to deliver goods g to s, for the sake of (because of) the obligating occurrence e.[2,3]

Expression 1 $\mathcal{O}\exists e_1(\mathit{deliver}(e_1) \wedge \mathit{Sub}(e_1,\ a) \wedge \mathit{Obj}(e_1,g) \wedge \mathit{IndObj}(e_1,\ s) \wedge \mathit{Sake}(e_1,\ e))$

Our fundamental schema for *ought* follows the form (standard in the disquotation theory):

Fundamental Schema 1 (Ought) $\exists e(\mathit{ought}(e) \wedge \mathit{Obj}(e,\ \ulcorner\phi\urcorner) \wedge \Gamma)$

and our example (Expression 1) instantiates in a predictable fashion:

Expression 2 $\exists e(\mathit{ought}(e) \wedge \mathit{Obj}(e,\ \ulcorner \exists e_1(\mathit{deliver}(e_1) \wedge \mathit{Sub}(e_1,\ a) \wedge \mathit{Obj}(e_1,g) \wedge \mathit{IndObj}(e_1,\ s) \wedge \mathit{Sake}(e_1,\ \boxed{e})\urcorner))$

The content of the deontic imperative is encapsulated with the quotation operator, $\ulcorner\cdot\urcorner$, which maps a formula to a name. (The box operator exposes its contents, here e, to quantification outside of the quotation operator.) Corresponding closely to the spirit of the Anderson reduction gives us the *weak* ought rule:

Axiom Schema 1 (Weak Ought Rule)
$\forall e((\mathit{ought}(e) \wedge \mathit{Obj}(e,\ \ulcorner\phi\urcorner)) \rightarrow (\neg\phi \rightarrow V(e)))$

Note that we have $(\neg\phi \rightarrow \mathrm{V}(e))$ rather than $\Box(\neg\phi \rightarrow \mathrm{V}(e))$ as in the Anderson reduction. This is as it should be. The fundamental schema ensures

[2]What if e is already in use in the expression? This is a technical issue and can be handled by carefully stating rules for introducing and replacing names.

[3]For the sake of simplicity, we are using standard grammatical categories—*Sub* for subject, *Obj* for direct object, etc. It is almost surely preferable to use thematic roles instead—*Agent*, *Theme*, *Benefactive*, etc. We leave that outside the scope of this paper, since it does not strongly affect the points at hand.

sufficient intensionality, so that if ϕ ought to be the case and $\phi \leftrightarrow \psi$, it does *not* follow merely from the fundamental schema that ψ ought to be the case. (It does follow from the rule of inference in D^*, see below.) Moreover, it does follow from the axiom schema that if $\neg\psi$ then the same violation condition obtains when $\neg\phi$. Of course, they go together as it happens.

Our use of event semantics permits distinguishing V more finely as $V(e)$; instead of *the* violation condition, e names *a* violation condition. This allows us to employ the *strong* ought rule:

Axiom Schema 2 (Strong Ought Rule)
$\forall e((ought(e) \wedge Obj(e, \lceil\phi\rceil)) \rightarrow (\neg\phi \leftrightarrow V(e)))$

Permission works similarly.

Expression 3 (Permission) $\exists e(permit(e) \wedge Obj(e, \lceil \exists e_1(deliver(e_1) \wedge Sub(e_1, a) \wedge Obj(e_1, g) \wedge IndObj(e_1, s) \wedge Sake(e_1, \boxed{e}) \rceil))$

Fundamental Schema 2 (Permission) $\exists e(permit(e) \wedge Obj(e, \lceil \phi \rceil) \wedge \Gamma)$

Permissions don't lead to violations. You can't violate a permission.

Axiom Schema 3 (Permission Rule)
$\forall e((permit(e) \wedge Obj(e, \lceil\phi\rceil)) \rightarrow \neg V(e))$

Finally, prohibition, for which we have weak and strong rules, as with obligation.

Axiom Schema 4 (Weak Prohibition Rule)

$\forall e((prohibit(e) \wedge Obj(e, \lceil\phi\rceil)) \rightarrow (\phi \rightarrow V(e)))$

Axiom Schema 5 (Strong Prohibition Rule)
$\forall e((prohibit(e) \wedge Obj(e, \lceil\phi\rceil)) \rightarrow (\phi \leftrightarrow V(e)))$

A final comment, the Anderson reduction can be interpreted in the spirit of the semantics for standard deontic logics. "$\Box(\neg\phi \rightarrow V)$" is naturally interpreted as "Every possible world accessible from ours in which $\neg\phi$ obtains is not a deontically ideal world." No such interpretation need be made for the disquotation variant of deontic representation. Occurrences (eventualities) happen in our world and some of them have deontic properties. If an eventuality, e, is deontically untoward, we can say $V(e)$ (or variants thereof), and if not we can say $\neg V(e)$ (or variants thereof). In either, case we needn't look abroad for meaning.

Now let us apply these ideas to our first area of concern: the paradox of deontic disjunction (Ross's Paradox).

3 Vacuous Disjunction

Suppose P is "Alan mails the letter," and Q is "Alan burns the letter," then as noted previously in standard deontic logic and its variants

$$\models \mathcal{O}(P) \rightarrow \mathcal{O}(P \vee Q) \tag{3}$$

As noted earlier the suggestion of paradox can be rebutted by claiming that indeed in every deontically ideal world Alan mails the letter or he burns it. We recognize the force of this rebuttal. It may also be argued that this sort of misleading, information losing inference is present and accepted in ordinary logic. While it may be true that John, an identified individual, has grey hair, and consequently that he has either grey hair or black hair, such an assertion is pragmatically troublesome as it is, and at the least, misleading. Similarly, for an identified obligation, to mail the letter, describing it as the obligation to either mail or burn the letter is technically true, under a possible worlds interpretation, but pragmatically deceptive.

Can we do better in representing obligations? Well, we can do differently using the disquotation theory. Let's see how and then discuss whether it might be better. $\mathcal{O}(P)$ goes into the disquotation representation as:

Expression 4 $\exists e(\mathit{ought}(e) \wedge \mathit{Obj}(e, \ulcorner P \urcorner))$

(See Fundamental Schema (1) for the general pattern.) Repeating the Strong Ought Rule (Axiom Schema 2):

Axiom Schema 6 (Strong Ought Rule)
$\forall e((\mathit{ought}(e) \wedge \mathit{Obj}(e, \ulcorner \phi \urcorner)) \rightarrow (\neg\phi \leftrightarrow \mathit{V}(e)))$

Note that from Expression (4) and Axiom Schema (2) (or 6) it does *not* follow that:

Expression 5 $\exists e(\mathit{ought}(e) \wedge \mathit{Obj}(e, \ulcorner P \vee Q \urcorner))$

The paradoxical inference is blocked. It *is* true that if there is no violation then $(P \vee Q)$ and that if $\neg(P \vee Q)$ then there will be a violation (of e). These inferences strike our intuitions (which admittedly may vary among the reasonable) as unproblematic. And the troublesome inference to an obligation to either mail the letter or burn it is blocked.[4] More generally,

[4]Of course it would be possible to state additional axiom schemas that permitted the inference to an obligation on the disjunction. We don't see why anyone would choose to do so, but the disquotation theory leaves this path open to those who would embrace the paradox. See [8].

we note that the disquotation theory allows an obligation to be attached purely to a propositional content, without being attached to any of its logical consequences. This, we think, is something of a virtue.

To treat the second puzzle we introduced earlier (§1), let us now look at how we might posit violation in the case of action but subsequent interference.[5]

4 Vacuuming conjunction: Arson's reduction

We have looked at the case of disjunction (mailing or burning), but what of the case of conjunction (mailing and burning, either in parallel or in sequence)? We might call this the case of 'vacuuming conjunction': the desired effects of the obliged action are emptied by interference.

What if John, who was obliged to mail the letter, mails it and then burns the mailbox? That is, what if the action is performed in concert with other actions that alter the action's *effects*? Technically, even though the letter was burned before it was so much as postmarked, it seems the letter was in some sense mailed, and consequently the obligation was in some sense fulfilled. But a representation that views the obligation as unequivocally filled seems perhaps to miss the intention and spirit of the obligation. For it seems that it was not only John's obligation to mail the letter, but to see to it, in some appropriate sense, that the recipient receive the letter. Merely performing an action (mailing) is insufficient to fulfil the obligation: there seems to be an implicit requirement that reasonable endeavors be taken so ensure that the desired effects of the action (receiving) are realized.

These sorts of worries are not obviated by any straightforward representation using the disquotation theory. Suppose John is obliged to mail letter g to s, then we have:

Expression 6 (Obligation to mail) $\exists e(ought(e) \wedge Obj(e, \ulcorner \exists e_1(mailing(e_1) \wedge Sub(e_1, John) \wedge Obj(e_1, g) \wedge IndObj(e_1, s) \wedge Sake(e_1, \boxed{e}) \urcorner))$

Suppose that John indeed mails the letter as required (to s, etc.). From the Strong Ought Rule, Axiom Schema (2), it follows that no violation of this particular obligation has occurred. But John actually burned the mailbox after mailing the letter, thereby destroying the letter and, presumably, missing the intent behind the original obligation. Note that under the present

[5]Indeed, active interference is not the only circumstance that might bring about some violation: prior awareness, or expected awareness, of action futility might also amount to a violation. We shall have space only to map the logical development in disquotation theory of the notion of active interference though.

representation inference is monotonic. Adding the fact that John burns the mailbox will not defeat the conclusion that the original obligation is not a violation. What to do?

Consider the matter more generally. The problem, we think, is this: is the obligation intended to promote a certain action (means) or certain effects (ends) ? If an action is obliged, but any open-ended number of actions performed sequentially or concurrently, or even events previously anticipated or anticipable, could alter the effects of the action, should we not instead speak of the obligation as being upon the agent to produce certain effects (states-of-affairs) that hold over some interval? A variety of logicians and philosophers have tackled the problem of associating an agent with the *results* of their agency or interference, rather than merely with the action the agent took. von Wright has discussed this issue in [16]. The notion of seeing to it (*stit*) that a resultant state of affairs is brought about is explored by Belnap and Perloff [4], Horty and Belnap [7], Elgesem, and others. The $\mathcal{E}_i A$ modalities, born in work by Kanger, Pörn, and Lindahl, denote, roughly, that 'agent i brings it about that A'. Jones, Santos, and Carmo [12, 13] have refined and supplemented this with characterizations of indirect action ($\mathcal{G}_i A$) and not-necessarily-successful attempt or influence ($\mathcal{H}_i A$). The point of $\mathcal{G}_i A$, the 'successful influence' operator, is that some states-of-affairs may be achieved indirectly through others. The point of $\mathcal{H}_i A$ is that some obligations require success, whereas others require only that reasonable endeavors are exercised. That is, the obligation may be to 'make a good *attempt* to bring about A', rather than to 'bring about A'.

While we do not purport to explore the logical intricacies of these proposals, the operators are pertinent to an exploration of our scenario. We might consider whether the obligation to see to it that the letter is received is fulfilled in each of the following scenarios:

1. you mail the letter but burn the mailbox, knowing that the letter is still within

2. you mail the letter but burn the mailbox, thinking that the letter has been collected already, when in fact it has not, and unintentionally succeed in destroying the letter

3. you mail the letter and burn the mailbox, intending to destroy it, but fail; the letter arrives unscathed in spite of your attempts to stop it

4. you mail the letter, knowing that the delivery service is unreliable (awareness of action futility)

5. you mail the letter, not knowing that the delivery service is unreliable, but you *ought to* have known that (there is reasonable expectation of awareness of action futility)

6. you mail the letter, registered, are notified of its destruction in a post office fire (not of your doing) and refuse to resend it.

7. you mail the letter with insufficient postage; the recipient receives it but has had to pay excess postage.

8. you mail the letter with sufficient postage; the recipient receives it but refuses to take delivery of it, for no good reason.

It seems we need some representation in event semantics of the following attitudes to propositional content:

1. intending (to achieve a state-of-affairs, or to interfere)

2. attempting (to achieve a state-of-affairs, or to interfere), whether the attempt is successful or not

3. interfering (successfully).

4. expecting (that an action would be futile)

We shall here only deal with the cases of attempting and of active interference.

As Santos, Carmo, and Jones suggest, some organizational specific definition of 'attempting' (making reasonable endeavours) is required: in some organizations attribution of obligation to another party may be sufficient. In others, as Dobson and Strens informally suggest [15], directing, supervising, monitoring, verifying, or and/or encouraging other agents to bring about the state of affairs may be required. Attribution of agentive responsibility for a state of affairs has been discussed by other authors [3, 5]. What we want to know is, for a given organization and action, when an obligation has been violated. We might give the following violation conditions: for obligations requiring success - when the desired state of affairs does not come about. For obligations that merely require reasonable endeavors, the violation condition is: the non-existence of a reasonable attempt to bring about. However, by and large, these seem to be application specific (organization and contract specific), and indeed state-of-affairs specific rules. What counts as making reasonable endeavors to achieve X (e.g. assigning obligation) may not count as making reasonable endeavors to do Y, depending on such criteria as the

criticality of X and Y, relative harm of omission, and other context specific criteria.

As for the issue of interfering with the desired effects of an obliged action, perhaps we can tackle the issue by saying that mailing fills the obligation, and any other action that negates the effects of mailing violates not the obligation, but some other norm, such as a common law principle of fairness that is associated with obligations.

However these matters come out, whatever philosophy one comes to rest at, our *suggestion* is that one's considered views can be accommodated by the disquotation theory: one simply adds axiom schema to represent one's views. One plausible move is a more encompassing notion of the molecular right which has the obligation as an atom. In the case of the mailed letter, perhaps the source of the puzzle is that the original right is larger than merely the obligation represented. John, we think, likely is in a situation creating an obligation for him to mail the letter *and* not interfere with its delivery, i.e., he is *prohibited* from interfering with the delivery of the letter. But the prohibition extends beyond just the obliged party, to the beneficiary as well. For example, Steve issues a purchase order to Alan, who goes to great trouble and expense to produce and ship the goods requested. In the meantime, Steve finds a better deal. When Alan's goods arrive, Steve refuses to accept them. When Alan's invoice arrives, Steve refuses to pay on the grounds that he never received the goods. What we want to say is that there is a general rule governing commerce and purchase orders saying that if you issue a purchase order, then you are obliged to accept delivery. More generally, you are forbidden to interfere with the completion of the supplier's obligations. Indeed, in general, any party, including third parties, may be forbidden from interfering with the completion (achievement of desired effects) of an obligation.

So we have really two deontic statements. Our original obligation to mail must be supplemented with two appendages: its intended effects and a prohibition against any party interfering with the intended effects of the obligation. This prohibition would be an instantiation of the Strong Prohibition Rule, Axiom Schema 5. The obligation, its intended effects, and the linked prohibition can be represented in the following expression:

The obligation is to mail the letter to s:

Expression 7 (Obligation) $\exists e,e_2,e_4(ought(e) \wedge Obj(e, \ulcorner \exists e_1(mailing(e_1) \wedge Sub(e_1, John) \wedge Obj(e_1,g) \wedge IndObj(e_1, s) \wedge Sake(e_1, \boxed{e}) \urcorner)) \wedge ...$

The intention of the obligation is that the mailed letter be received by the addressee:

Expression 8 (Intention to achieve effect) ... $(intended(e_2) \wedge Sake(e_2, e) \wedge Obj(e_2, \lceil \exists e_3(receiving(e_3) \wedge Sub(e_3, s) \wedge Obj(e_3, g)) \rceil)) \wedge ...$

And any interfering with the intended receipt is prohibited:

Expression 9 (Prohibition against interference) ... $(prohibit(e_4) \wedge Obj(e_4, \lceil \exists e_5(interfering(e_5) \wedge Obj(e_5, e_3)) \rceil))$

This is an event-semantics rendition of the spirit of Kanger, Lindahl, and Sergot's normative positions [14]. Sergot [14] points out a molecular right - constituted of, say, an atomic obligation and associated prohibition - may be infringed by interference or attempted interference. Infringement of a right may therefore arise from violation of any of its constituent obligations and prohibitions. A typical obligation to perform action is merely one element of a right, and an associated prohibition against interfering with the action's effects forms another constituent of the right.

In the event that the goods arrive, but are refused, we have two violations. Steve has violated his prohibition against interfering with the delivery, and Alan has violated his obligation to deliver since delivery never happened. Such cases motivate the need for distinction between violation and liability to damages. Steve should be punished (violation and liability), Alan should be forgiven (violation without liability). In disquotation theory then, Alan is only liable in the event that he was responsible for non-delivery. Responsibility here is of course ambiguous: do we mean 'to blame' or 'to be held liable'. Alan may have been to blame for non-delivery if Steve's refusal to accept was because Alan sent a damaged package. But Alan's insurance company may be liable in the event that the package was damaged in an accident involving Alan's delivery truck, where Alan was insured against damages arising from such an accident.

The distinction between standing and dischargeable obligations is also pertinent here. Once Alan's obligation to deliver has been violated, through John's refusal to accept delivery received in good condition, Alan is in many cases no longer obliged to deliver the goods. The obligation has ended. Equally though, it may be that even when Alan is not at fault he is still liable to try again.

The prohibition against interfering might be generalized to a 'first do no harm' principle. This principle pertains to obligations relating to degrees and amounts. Is the obligation to pay $8 fulfilled by a payment of $10, given that paying $10 necessarily entails paying $8 ? A dilemma arises: paying $10 might oblige the recipient to return the extra $2 - a transaction cost that might exceed $2. But equally, the payment of $10 might merely be

set off against an account; with the \$8 perhaps apportioned to the current obligation, and the remaining \$2 to some other past obligation, or held back for apportionment to a future obligation.

In a medical scenario, administering 10mg might be fatal if only 8mg should have been administered.

It might of course be possible also to specify that the obligation is specifically to pay exactly \$8 in a single payment, in which case paying \$10 does not entail paying \$8 in a single payment. Similarly administering exactly 8mg in a single shot is not entailed by administering 10mg. The distinction between *physical* payments or doses and *abstract, accumulated* payments or doses appears helpful: colloquially, 'paying \$10' may refer to an abstraction of two physical payments of \$8 and \$2, to a single physical payment of \$10, or even to part of one physical payment of \$20. In logic, we may need to be more specific as to whether we are referring to a physical event, or some abstraction of accumulated events or portions of events. As has been pointed our in the literature on events in linguistics, the distinction may be fuzzy: is the filling of a tank, interrupted momentarily by a very brief spillage from the inlet hose, one filling or two? Or, indeed, was there a single attack on the World Trade Center on September 11^{th}, or were there two separate attacks, minutes apart? \$3.6billion dollars rides on the latter question [6]. The answer, we believe, is to be decided by social conventions, laws, contracts, or even arbitration. The analyst should, where necessary, be specific about which definition of the term for each event (payment, dose, filling, attack) is being used, perhaps qualifying as 'attack, in terms of clause 42 of insurance contract entered into between parties on 24th May 1990', or 'attack, in terms of New York case law', or 'attack, in terms of U.S. insurance industry standard usage defined in Industry Guideline 1982-C'. Our goal should be to capture diverse opinions, and specify where appropriate which assessment was used, not to mandate a single perspective.

In any event, to return to our examples (payment and medication) it seems that the violation in both cases is perhaps not of the obligation, but of a separate prohibition against causing harm. That is, the overpayment and overdosing examples point to the existence of an implicit prohibition against causing harm. The customer should not cause undue expense to their supplier; the doctor should not cause undue harm to their patient.

What of dynamic situations where circumstances and obligations change over time? What if the obligation is to administer 8-12mg of morphine over the next 24 hours. Assume a full dose of 10mg is administered, in the 1^{st} hour, but the patient experiences severe pain in the 18^{th} hour, and the doctor finds himself required to immediately administer a further 10mg. If he does

this he *violates* his original obligation as he is overdosing. But whether his action is *sanctionable* often depends on a retrospective evaluation of (both the actual and anticipable) benefits and harm of his action. In the non-ideal world (a.k.a. reality), the norm-giver can seldom be certain in advance which precise norms are fair for the uncertain future. Acceptance thresholds may give some leeway for error, but even so, might not be appropriate for all circumstances. This means that not only must an agent choose which to *violate*, but the norm-giver must decide which violations to *forgive*.

In the postal scenario above, we dealt only with active interference. Developing the approach along similar lines for expectation of action futility is beset with extra complexity and remains for future work. Assume that an agent is obliged to mail a letter and is aware that the mailing service is unreliable. Failing to mail the letter would certainly violate the obligation. Mailing the letter through the unreliable service would possibly result in violation (of the prohibition against taking possibly futile action) in the unfortunate event that the letter doesn't arrive. The 'contract' to mail may or may not entail an obligation to use a courier service in case the mail service is unreliable. But what if there is no alternative means: what if mailing was the only permissible, or available, means? This is what might be called the *bummer* scenario. The agent is in violation if he doesn't mail, and in violation if he does. A forgiving norm system might excuse mailing if it was the only option available to him. But equally well it might not. The agent may have no way of avoiding some violation, and may have no way of avoiding sanction. Bummer.

5 Discussion and Conclusion

Standard deontic logics are about what obtains in deontically ideal worlds. Deontic reasoning from the perspective of event semantics and the disquotation theory, as described here, is about individual obligations, permissions, etc. in this, admittedly non-ideal world. Standard deontic logics are beset with a number of puzzling paradoxes and anomalies. Our suggestion here is that at least some of these problems can be dispelled if we take the perspective of event semantics and disquotation with regard to deontic reasoning. To that end, we treated Ross's paradox of deontic disjunction from the disquotation (event semantics plus disquotation theory) perspective and argued that the resulting interpretation was considerably less problematic. Our intuitions, at least, are more comfortable with the disquotational handling of deontic disjunction, and we have not been able to locate new sources

of paradox.

We also discussed action conjunction in a deontic context, and the problem we call *arson's reduction.* Here our point is not that some embarrassing paradox can be removed. In fact we are sympathetic to the general discussion in the extant literature. Instead, our point has been that the intuitions motivating that literature can be served as well with the disquotational perspective.

Other, more thorough, investigations are surely needed in order to come to a considered judgment on the merits of the disquotational approach to deontic reasoning. We are encouraged by the findings we report here. More fundamentally, we find attractive the switch in metaphysical perspective inherent in the disquotational approach. Deontic reasoning, if it is to be of practical value, will surely have to be undertaken within a deontically non-ideal world. Norms themselves may conflict and the disquotation theory accounts for this quite naturally. P may violate obligation e_1, while $\neg P$ violates obligation e_2. This is expressible without anomaly with the disquotation theory. A virtue and a promising one, we think, but that is another story.

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