

Chris Fox

University of Essex

foxcj@essex.ac.uk

The Good Samaritan and the Hygienic Cook: a cautionary tale about linguistic data

Abstract: When developing formal theories of the meaning of language, it is appropriate to consider how apparent paradoxes and conundrums of language are best resolved. But if we base our analysis on a small sample of data then we may fail to take into account the influence of other aspects of meaning on our intuitions. Here we consider the so-called Good Samaritan Paradox (Prior, 1958), where we wish to avoid any implication that there is an obligation to rob someone from “*You must help a robbed man*”. We argue that before settling on a formal analysis of such sentences, we should consider examples of the same form, but with intuitively different entailments—such as “*You must use a clean knife*”—and also actively seek other examples that exhibit similar contrasts in meaning, even if they do not exemplify the phenomena that is under investigation. This can refine our intuitions and help us to attribute aspects of interpretation to the various facets of meaning.

1 Introduction

Deontic reasoning is concerned with sentences involving obligations and permissions (“*Ought*”, “*Can*”, etc.). The objectives include: identifying the nature of the inferences that should be supported which involve obligations and permissions; selecting appropriate formal machinery for formalising such entailments; and deciding how natural language obligations and permissions should be “translated” into such a formal system. Of course, we might question whether obligations and permissions lend themselves to such a formal analysis. But the issue we are concerned with is the problem of deciding which aspects of linguistic data, and any semantic theory dealing with that data, are genuinely and essentially deontic in nature, as opposed to falling within the remit of some other aspect of interpretation.

The concerns described in this paper arose in the context of a general research programme to find alternatives to possible worlds interpretations of

various semantic phenomena (Fox, 2009). In this case, the original objective was to consider whether it is possible to formulate a theory of deontic reasoning that addresses problems in Standard Deontic Logic (SDL) (von Wright, 1951; McNamara, 2006a,b) and which does not make explicit appeal to a possible-worlds interpretation. But in seeking to find a proof-theoretic account of deontic reasoning it turned out that there are certain difficulties when it comes to interpreting the data, in particular the question of deciding which aspects of the behaviour of deontic examples is genuinely deontic in nature.

One assumption that we make here is that a formal analysis of obligations should seek to account for obligations as expressed using natural language. In particular, we do not assume that the primary objective is to formalise some pure, abstract notion of obligations, and then attribute any difficulties to the imperfect nature of natural language.

2 The Good Samaritan

One problematic example for some accounts of deontic reasoning is due to Prior (1958). It seems reasonable to say the following.

“It is obligatory to help a man who has been robbed.”

“It is obligatory to help a robbed man.”

“It is obligatory that Arthur help Robert, who has been robbed by Benjamin.”

These can also be given a conditional formulation.¹

“If a man has been robbed, it is obligatory to help him.”

“If Robert_i has been robbed by Benjamin, is obligatory that Arthur help him_i.”

For much of this paper, we will focus on the non-conditional forms that use adjectives and relative clauses. These can be restated in more every-day

¹In connection with what we might call the “conjunctive” and the “conditional” variants of his example, it might be worth observing that some accounts of the semantics of natural language which use constructive type theory treat conditionals and conjunction in a very similar fashion (Ranta, 1994).

language as follows.

“You should help a man who has been robbed.”

“You should help a robbed man.”

There are at least two problems when it come to providing a formal analysis of these examples. First, the obligation may be expressed with singular indefinites (i.e. “...*help a robbed man*”), but presumably it is intended to express, or impose, some universal obligation (i.e. “...*help every robbed man*”). It could be argued that this is merely a particular example of the more general problem of analysing generic expressions (Carlson & Pelletier, 1995). It is important to be aware of this issue, but we are not seeking to provide a comprehensive solution to this problem here. Even so, it does exemplify the point we are making that our intuitions about a given phenomena may implicitly be coloured by other aspects of meaning. The second problem we will identify is of more central concern for deontic reasoning.

At this juncture it is worth giving some salient details of Standard Deontic Logic (SDL), which can be considered to be a paradigm treatment of obligations and permissions (McNamara, 2006a,b). In SDL, the operator O is applied to a proposition p to indicate that there is an obligation for p to be the case, or be “brought about”.²

SDL includes the following rule

If $\vdash (p \rightarrow q)$ then $\vdash (Op \rightarrow Oq)$

where “ \rightarrow ” is used to represent material implication and “ $\vdash p$ ” means that p is a theorem. SDL also supports the classical tautologies, including

$\vdash ((p \wedge q) \rightarrow p)$

$\vdash ((p \wedge q) \rightarrow q)$

where “ \wedge ” represents conjunction. Combining these yields the following.

$\vdash (O(p \wedge q) \rightarrow Oq)$

$\vdash (O(p \wedge q) \rightarrow Op)$

²We may question whether SDL is right to take the content p of an obligation $O(p)$ to be a regular proposition—a point raised by Castañeda (1981) and others—but such concerns will be put aside for the moment.

So in SDL, *obligation* distributes across conjunction: if we are told that $O(p \wedge q)$, we can infer Op and Oq . Now let us return to one of the Good Samaritan examples and see what happens when we try to analyse it within SDL.

If we assume that “*help*” can be represented as a predicate, and “*robbed*” is an intersective adjective, also represented by a predicate, then to a first approximation “*help a robbed man*” appears to involve an expression of the form

$$\dots \textit{help}'(x) \wedge \textit{man}'(x) \wedge \textit{robbed}'(x) \dots$$

This suggests that the formalisation of an obligation to help a robbed man should include something of the form

$$O(\textit{help}'(x) \wedge \textit{man}'(x) \wedge \textit{robbed}'(x))$$

or more simply

$$O(h \wedge m \wedge r)$$

If it is implicitly assumed that *m* is vacuously fulfilled, then this can be simplified to

$$O(h \wedge r)$$

But assuming this is broadly an appropriate interpretation (putting aside various details), then in SDL, we can then infer

$$O(r)$$

That is, there is an obligation to rob, which may be regarded as an undesirable conclusion.

Anyone versed in the complexities of the compositional analysis of natural language would feel compelled to point out that this simple, conjunctive interpretation ignores many issues, including the proper analysis of quantifiers, determiners, modifier expressions, relative clauses and conditionals. For this reason, we may argue that such a naïve interpretation is inappropriate and potentially misleading. It is conceivable that a more principled compositional analysis of the example might lead us to consider the issue

differently. As with the question of generic interpretations of obligations, this is an area where we need to look at broader issues in the interpretation of language to identify the true nature of any problem with a particular example. For the purpose of further discussion, we shall assume that the broad thrust of the problem remains. Regardless of our position on how best to provide a systematic translation of the examples into a formal language, there is no doubt that the problem of inappropriate distributive inferences in SDL and other deontic frameworks is considered a very real one in the literature.

Proposals to address this example include: having different kinds of obligations (Åqvist, 1967); using a conditional analysis (van Fraassen, 1972); exploiting distinctions in the categories of semantic expressions (Castañeda, 1981); or considering agency (Nowell-Smith & Lemmon, 1960). Other proposals that are relevant include denying that obligations distribute (Jackson, 1985; Jones & Pörn, 1985); and the use defeasible inference (Bonevac, 1998; Makinson & van der Torre, 2003). We will outline these in turn.

One approach is to have multiple levels of obligation, as in the logic DL_2 (Åqvist, 1967). In the case of the Good Samaritan, then on this account there is a “primary” obligation not to rob: $O_1(\neg r)$, where “ \neg ” represents negation. The statement of interest is a “reparational” obligation to help someone who has been robbed: $O_2(r \wedge h)$. In DL_2 , any reparational obligation will be vacuous when its propositional content describes a state-of-affairs that conflicts with a primary obligation. This means that even though we may derive $O_2(r)$ from $O_2(r \wedge h)$, the apparent obligation to rob—and indeed the entire reparational obligation—is rendered void by the existence of the primary obligation $O_1(\neg r)$.

There are a number of questions about this approach, including how we are to determine the levels of various potentially conflicting obligations in the general case. According to Åqvist, the approach needs to be generalised to arbitrary levels of obligation, giving a logic DL_ω . We may question whether there are principled methods for assigning obligations to different levels, and guaranteeing that there are no conflicting obligations at the same level. While it could be argued that a coherent system of rules should address potential conflicts and indicate the desired priorities, it is not so clear how

this can be achieved with more everyday obligations, or obligations that are imposed by different authorities. To say that all conflicts are to be resolved by imposing an ordering could be seen to be only a partial solution if we do not know how such an ordering is to be determined.³

van Fraassen (1972) concentrates on the analysis of the relative clause present in some of the problematic examples. He assumes we need to identify an individual i with “*the man who has been robbed*” (call this fact V). We cannot derive that “*a man has been robbed*” (r) without this identity fact V . Rather than $(h \wedge r)$, from which we can infer r , we have $(h \wedge V)$ from which we can infer r . In particular, V is not within the scope of the obligation. van Fraassen offers a conditional re-interpretation using the principle that if $\vdash (h \wedge V) \rightarrow r$, then $\vdash O(h/V) \rightarrow O((h \wedge r)/V)$, where $O(h/V)$ denotes an obligation for h to be the case in the event that V is the case. In essence, the obligation is to help a man (and the man has been robbed) on condition that the man is a man who has been robbed.

Putting the conditional framework to one side, this account hinges on a substitution fact. If substitutions are not required in the analysis of the Good Samaritan, then this fails to block the problematic inference. Something that undermines this analysis is that most contemporary accounts of the syntax-semantics interface do *not* rely on substitution facts being expressed in the logic.⁴

Castañeda (1981) notes there is often a grammatical distinction between propositional and “practives” expressions. In the current example, it appears to be possible to identify a grammatical distinction between a propositional character in “*robbed*” that is distinct from a practive character of “[*to*] *help*”. Castañeda uses this distinction to motivate the argument that normally only practive expressions are subject to the modal force of an obligation. Using subscripts *prop* and *pract* to distinguish between propositional and practive

³In its model-theoretic interpretation, the approach also raises questions about ideal worlds and extensions, in common with many possible worlds accounts, but we will not consider these issues here.

⁴Discourse Representation Theory (DRT) may provide a counter-example to this norm; in DRT nominal references are resolved using explicit identity statements in the representation (Kamp, 1981).

content, respectively, then on this account $O(r_{prop} \wedge h_{pract})$ is really equivalent to $r \wedge O(h)$. Thus there is no obligation to rob, as that has propositional rather than practive content.

Relevant to this account is an observation by (Åqvist, 1967) that highlights a problem with the analysis that robbing is outside the scope of obligation. Intuitively, it is consistent to say “*It ought to be that if Smith refrains from robbing Jones then the Samaritan does not help Jones*”. But now there are circumstances where $O(h)$ and $O(\neg h)$ can be derived (which is not permitted in SDL). Also, the linguistic evidence is not entirely clear-cut (at least in English). The sentence

“*It ought to be the case that **Peter sells his cat.***”

expresses an obligation, but even if it can be given a different analysis, the content of the obligation appears syntactically indistinguishable from the propositional sentence “*Peter sells his cat.*”. If we use the modal context to force some non-propositional reading of this clause, then the question arises as to what criteria are to be used to discriminate between practive and propositional clauses in the semantics.⁵

An alternative to SDL is to treat obligations as what you need to do to escape a sanction (S) (Prior, 1958). On this account, Op corresponds to $\neg p \rightarrow S$. That is, a failure to fulfil the obligation leads to the sanction. The Good Samaritan (as originally expressed) is that if the obligation to help is fulfilled, then the sanction S must apply, as someone must have been robbed. It is in the context of this account that this problem was first identified. Nowell-Smith & Lemmon (1960) seek to avoid this problem by extending Prior’s approach so the sanction is indexed by the person who is sanctioned. This enables them to make clear that the Samaritan is not subject to the sanction of the robber. For x to help y in the event y is robbed by

⁵In support of Castañeda (1981) it is worth noting that some simple present tense sentences such as “*You sell your cat*” can sound rather odd unless they are intended to be part of either an hypothetical discourse (a present subjunctive), or something bordering on an imperative. A diagnostic as to whether the subjunctive or indicative form is preferred would be the relative acceptability of “*be*” (subjunctive) and “*is*” (indicative) in “*It ought to be the case that **Peter be/is happy***”. In this case, there may also be an optative reading that expresses a desire rather than an obligation. As with other phenomena, grammatical distinctions are not always a reliable guide to semantic distinctions.

z avoids a sanction for x , but implies there is a sanction for z .

Nowell-Smith & Lemmon themselves identify a potential philosophical objection to this approach, namely that the reduction of obligation to the propositional realm may be a form of “naturalistic fallacy”. We will not go into this here, but merely note that there is another weakness in the account, namely that use of agency by itself is insufficiently fine-grained to account for the data on other forms of reparational obligation (Fox, 2009). This can be seen in the following example, where it is explicit that the agent of the obligations concerning stealing and reparation are the same.

“You ought not steal.”

“If you steal, you ought to make amends.”

A catch-all solution to the problem of inferring inappropriate obligations is to deny that obligations distribute down to the components of a sentence (Jackson, 1985; Jones & Pörn, 1985). To be specific, there is no general inference from $O(r \wedge h)$ to $O(r)$ and $O(h)$. The denial of distribution avoids inferring that there is an obligation to rob.

One problem with such a solution is that it blocks further analysis of what is actually required by the obligation. It could be argued that potentially useful inferences are blocked along with the problematic ones. Although it may be the case that obligation does not generally distribute across conjunction, it is still legitimate to consider the necessary and sufficient conditions for fulfilling complex obligations, rather than treating them as universally irreducible.

As an alternative to the complete rejection of distributive inferences, we might take there to be a general assumption that obligations do distribute across logical operators such as conjunction, but that such inferences are defeasible (Bonevac, 1998; Makinson & van der Torre, 2003). On such an account, we can normally infer that we are obliged to “rob” and “help”, but other contextual information may override such inferences. In particular, knowledge that there is a prior obligation not to rob overrides any inference that we should rob. This clearly has some appeal if we accept distributive inferences with obligations, and consider the main problem with the Good Samaritan to reside in the conflict between such inferences and other pre-

existing obligations. In some respects this may be considered a variant of the approach of Åqvist (1967), but formulated with more general-purpose machinery. Defeasible inference is a very powerful and general technique, and we may wonder whether there are any principles that govern when it is applicable. As with Åqvist's proposal it is also not clear how to determine the relative priority of different obligations.

One question we might ask ourselves is whether it is right to take a specific examples—such as the (conjunctive) Good Samaritan—and use it to motivate radical revisions to a formal theory. More specifically, we may wonder whether such specific examples provide enough evidence to support particular views on logic and language, including the behaviour of logical conjunction and implication, and the appropriate way of modelling natural language conjunction, modifier expressions and relative clauses. We might want to consider whether any conclusions drawn from the Good Samaritan carry over to less emotive examples.

To put this another way, is the Good Samaritan a “representative” example of an obligation involving intersective adjectives, and/or relative clauses? If we have an appropriate analysis of the Good Samaritan, do we have an appropriate analysis for all examples of the same form, (with or without potentially conflicting obligations)? Or is it actually the case that the problematic issues raised by the Good Samaritan example are a particular instance of a more general pattern of behaviour, that also arises in *non-deontic* contexts?

3 The Hygienic Cook

To explore this issue further, let us reflect on our intuitions when we substitute “use” for “help”; “clean” for “robbed”; “knife” for “man” in the sentences

“You should help a man who has been robbed.”

“You should help a robbed man.”

This gives the following.

“You should use a knife that has been cleaned.”

“You should use a clean knife.”

These may be glossed as

“Find a knife that has been cleaned, and use it.”

“If you wish/need/are obliged to use a knife, [you are under an obligation to] ensure that it has been cleaned.”

Or perhaps, in some contexts, the stronger

“You are obliged to clean and [also] use a knife.”

Some respondents say that the sentence appears to express a conditional obligation:

“You are permitted to use a knife only if it is clean.”

“You are permitted to use a knife provided that it is clean.”

Despite having the same form as the Good Samaritan example, the Clean Knife sentence almost certainly does *not* entail

“If a knife has been cleaned, you are under an obligation to use it.”

And, as we have seen, the Good Samaritan example almost certainly does *not* entail

“If you wish/need/are obliged to help someone who has been robbed, there is an obligation to rob that person.”

There is thus a disparity in the acceptable entailments.

We can consider how some of the proposed solutions to the Good Samaritan apply in this case. One difficulty is determining which reading of the Clean Knife example is actually the most appropriate in a neutral context. But we can still reflect on whether the proposals for the Good Samaritan say *something* that is relevant for the interpretation of the Clean Knife example.

It can be argued that the proposals concerning multi-level obligations (Åqvist, 1967) and agency (Nowell-Smith & Lemmon, 1960) do not really help us to understand what counts as an appropriate reading for the Clean Knife example.

An analysis expressed in terms of conditionality and relative clauses (van Fraassen, 1972) may be of some relevance, but would still require further

work to account for the radically different readings that are available. The same argument applies to an approach that distinguishes practives from indicatives (Castañeda, 1981).

In the case of defeasibility (Bonevac, 1998; Makinson & van der Torre, 2003), the argument could be made that there are a range of different inferences that are available, but different inferences take priority in different settings. We may question whether this is a principled account, or an *ad hoc* fix. If mutually inconsistent inference patterns need to be supported, how are we to determine which takes priority in any given scenario?

Again, denying that obligations distribute (Jackson, 1985; Jones & Pörn, 1985) is a catch-all solution which avoids any inference that there is an obligation to use a knife, or to clean it, but which appears somewhat unsatisfactory for the reasons given before: we have no means of deciding what exactly we are supposed to do when presented with a complex obligation.

One might seek to deflect the problem of accounting for the various patterns of acceptable inference by arguing that the differences in the interpretation are pragmatic rather than semantic. On such a view, *semantics* is that aspect of meaning that is based systematically on syntactic form, and *pragmatics* then explains contingent differences based upon lexical meaning, presuppositions, and focus and so on. But perhaps we can do better: perhaps we can go someway towards accounting for any such “pragmatic” differences in these examples.

Perhaps the disparity in the intuitive interpretations of these examples is not a problem of deontic representation and reasoning as such, but is something which is best conceived of as a specific example of a some other more general problem, or pattern of behaviour. Some candidates worth considering here include insights from pseudo-imperatives (Franke, 2005); topic/focus effects (Rooth, 1993), and the analysis of relative clauses and other modifier expressions (Arnold, 2007; Wyner, 2008).

It is instructive to seek out other cases where changing the words radically alters the nature of the supposed obligation. Consider conjunctive pseudo-imperatives (Franke, 2005)

“Take another drink and you will die.”

“Take another drink and you will be happy.”

For most readers, the first sentence will suggest you should not take another drink, whereas the second suggests that you should. Thus a small change in the described outcome radically alters the import of the sentence.

The difference lies in what is seen as a desirable outcome: dying versus being happy. Alternatively, it could be due to the relative costs/benefits of taking a drink versus dying/being happy. We may wonder whether this provides a potential solution, given that for most people, robbing is less desirable than cleaning.⁶

Another place to look is in the analysis of topic and focus. Consider the following example.

“A big female is usually the leader of a group” (Rooth, 1993)

This could mean

“When a female is big, she is usually the leader of a group.”

or

“When something is a group, the leader of it is usually a big female.”

The distinctions in the interpretation could be determined by reflecting on the question to which the sentence might provide an answer, for example, *“What does a big female usually do?”* as opposed to *“Who is the leader of a group?”*

The same approach may be relevant in determining an appropriate analysis of deontic statements; they might be considered to be providing answers to implicit questions of the form

“What should you do if you encounter someone who has been robbed?”

and

“What kind of knife should be used?”.

⁶In the case of these pseudo-imperative examples, it is worth noting that a substituting “or” for “and” also gives rise to a radical changes in meaning, as noted by Franke (2005) and others. The first sentence would take on the appearance of a threat *“Take another drink or you will die”*. The second sentence appears to become infelicitous *“Take another drink or you will be happy”*.

We might consider whether there are differences in the telicity and the focus (for example, on “*help*” and “*clean*”, respectively) that could explain the acceptable interpretations.

Wyner (2008) argues that the Good Samaritan paradox can be explained in terms of non-restrictive relative clauses (so we have “... *a man, who has been robbed ...*”). Such clauses can be taken to lie outside the scope of a given context (Arnold, 2007), which can include the deontic operator. But we may question whether this is actually the correct interpretation of the Good Samaritan: it presupposes that we know who needs help independently of any robbery facts. Even so, the idea of finding principled, independently motivated grounds for taking some material outside the scope of the deontic operator is appealing.

4 Summary of the Issues

The Good Samaritan example was originally used to illustrate a potential difficulty that needs to be considered in the formal analysis of deontic statements. It could be argued that focusing on that particular example may result in theories that “over-fit” the data, and that it is inappropriate to assume that the Good Samaritan is representative of obligations involving modifier expressions. For any problematic example, other factors may be at work which need to be considered, and which are the remit of some other aspect of interpretation.

Another general issue concerns the proper boundary between semantic and pragmatic analysis. There is a risk that attributing something to pragmatics is little more than a rhetorical device for ignoring those things that cannot (yet) be accounted for within a semantic framework. It would be better to have principled reasons for deciding when something is outside the scope of a semantic theory. It may also be appropriate to consider the “interfaces” between semantics and pragmatics, in particular how a pragmatic analysis may influence semantic interpretation and inference.

Similar issues arise more generally in determining the scope of the analysis of a given phenomena, and the demarcation between various aspects of

interpretation. How much should a theory of deontic expressions say about a given example, and how much can be relegated to other aspects of interpretation, such as generics, focus, and so on? When is it acceptable to decline to take responsibility for the behaviour of a given example?

5 Conclusions

If we only consider a limited selection of examples, it may *appear* that “pragmatic” effects make it intrinsically difficult to formalise a logical account of obligations and permissions. But there may actually be principled accounts of these effects, where problematic aspects of the behaviour of “deontic” examples are in reality specific examples of essentially non-deontic phenomena. To go beyond toy examples, it is important to try to identify principled accounts of other phenomena that may provide an alternative explanation for the behaviour of the examples. This may clarify our intuitions about the meaning of obligations and permissions as such, and simplify the formalisation of their essential character. These arguments may generalise to other aspects of formal semantics and philosophical logic: when using natural language examples to motivate an analysis, we must take the linguistics seriously.

Acknowledgements

Thanks are due to Doug Arnold and other members of the Language and Computation Group at Essex University for their comments on earlier presentations of this work.

References:

- Arnold, Doug J. (2007), Non-restrictive relatives are not orphans, *Journal of Linguistics* 43(2):272–309.
- Bonevac, Daniel (1998), Against conditional obligation, *Noûs* 32(1):37–53.
- Carlson, Gregory N. & Francis Jeffrey Pelletier (eds.) (1995), *The Generic Book*, The University of Chicago Press, ISBN 0–226–09291–7 (cloth) 0–226–09292–5.

- Castañeda, Hector Neri (1981), The paradoxes of deontic logic: The simplest solution to all of them in one fell swoop, Reidel, Dordrecht, ISBN 9027713464, 9789027713469, (37–85).
- Fox, Chris (2009), Obligations, permissions and transgressions: an alternative approach to deontic reasoning, in *Proceedings of the Tenth Symposium on Logic and Language*, Balatonszemes, Hungary.
- van Fraassen, Bas (1972), The logic of conditional obligation, *Journal of Philosophical Logic* 1(3/4):417–438, ISSN: 0022-3611 LC: BC51 .J68.
- Franke, Michael (2005), How and how not to employ discourse relations to account for pseudo-imperatives, in Paul Dekker & Michael Franke (eds.), *Proceedings of the Amsterdam Colloquium*, ILLC/Department of Philosophy, University of Amsterdam, Amsterdam, (83–88).
- Jackson, Frank (1985), On the semantics and logic of obligation, *Mind* 94:177–195.
- Jones, Andrew & Ingmar Pörn (1985), Ideality, sub-ideality and deontic logic, *Synthese* 65:275–290.
- Kamp, Hans (1981), Theory of truth and semantic representation, in J. A. K. Groenendijk, T. M. V. Janssen, & M. B. J. Stokhof (eds.), *Formal Methods in the Study of Language*, Amsterdam, Mathematical Centre Tracts 135, (277–322).
- Makinson, David C. & Leendert van der Torre (2003), What is input/output logic?, in *Foundations of the Formal Sciences II: Applications of Mathematical Logic in Philosophy and Linguistics*, Kluwer Academic Publishers, Dordrecht, volume 17 of *Trends in Logic series*, (163–174).
- McNamara, Paul (2006a), Deontic logic, in Dov Gabbay & John Woods (eds.), *The Handbook of the History of Logic*, Elsevier Press, Amsterdam, volume 7, Logic and the Modalities in the Twentieth Century.
- McNamara, Paul (2006b), Deontic logic, in *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/logic-deontic/>.
- Nowell-Smith, P. H. & E. J. Lemmon (1960), Escapism: The logical basis of ethics, *Mind* 69(275):289–300.
- Prior, Arthur N. (1958), Escapism: The logical basis of ethics, in A.I. Melden (ed.), *Essays In Moral Philosophy*, University of Washington Press, Seattle, (135–146).
- Ranta, Arne (1994), *Type Theoretic Grammar*, Oxford University Press, Oxford.
- Rooth, Mats (1993), A theory of focus interpretation, *Natural Language Semantics* 1:75–116.
- von Wright, Georg Henrik (1951), Deontic logic, *Mind* LX(237):1–15.
- Wyner, Adam Zachary (2008), *Violations and Fulfillments in the Formal Representation of Contracts*, Ph.D. thesis, King's College London.
- Åqvist, Lennart (1967), Good samaritans, contrary-to-duty imperatives, and epistemic obligations, *Noûs* 1(4):361–379.

Keywords: deontic logic, obligations, permissions, paradoxes, focus, semantics, pragmatics