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Source: *Philosophical Perspectives*, Vol. 8, Logic and Language (1994), pp. 389-414

Published by: Ridgeview Publishing Company

Stable URL: <https://www.jstor.org/stable/2214179>

Accessed: 12-06-2019 15:34 UTC

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## **HECTOR MEETS 3-D: A DIAPHILOSOPHICAL EPIC**

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“I would very much like to see other theories of deontic logic that deal with *all* the so-called deontic paradoxes and illuminate at least as much diversity of ordinary deontic reasonings as my logic illuminates.” Hector-Neri Castañeda [11], 448.

### **Introduction**

Hector-Neri Castañeda’s philosophical legacy is varied and significant. One of his most important contributions is his work on deontic and practical reasoning. Over the last three decades he developed a system of deontic logic which he claimed is capable of representing our ordinary deontic and practical reasoning and which is immune from the paradoxes which bedevil standard approaches to deontic logic. Castañeda always was aware that there may be more than one approach to a philosophical issue and often urged philosophers to engage in what he called “dia-philosophical dialogue.” Such dialogue involves comparing approaches on a wide variety of fronts. That is what we intend to do in this paper. We will describe a system of deontic reasoning which is in many respects closer to standard approaches and show that it is at least as paradox free as his and is capable of handling a wider variety of deontic statements and reasoning. Further, we avoid certain foundational problems encountered by Castañeda’s system. Thus our discussion participates in the dia-philosophical dialogue that Castañeda so fervently urged.

### **I. Castañeda’s Deontic Logic**

Smith’s children were playing baseball when one broke her ankle sliding

into second base. For this reason

Smith ought to rush the child who broke her ankle to the hospital.

Now there is a relatively clear distinction between the “circumstances” of Smith’s obligation, that one of his children has broken her ankle, and what he ought to do, rush that child to the hospital. Castañeda’s deontic logic is based upon this distinction between what he calls deontic circumstances and deontic focus.

The distinction between an action considered as a circumstance and an action considered as a deontic focus is the most primitive and fundamental distinction in the syntax and semantics of the deontic segment of English. [10], 51.

The injury is the circumstances, or condition, of the obligation and the rushing is the focus, or what is obligatory. This distinction is highlighted by supposing that Smith himself broke her ankle when he slid into second base, so that

Smith ought to rush that child whose ankle he broke to the hospital.

His breaking her ankle describes an action of his, perhaps an action that he ought not have done, but in this statement it serves as the circumstance of obligatoriness for another action of his (the rushing) which is in focus. Here is another example:

1. John ought to bring the bat if Mary brings the ball.
2. Mary ought to bring the ball if John brings the bat.

These statements are conditionals. 1 says that if the circumstance are ones in which Mary brings the ball then John ought to bring the bat. In 2 John’s bringing the bat provides the hypothetical circumstances for the deontic focus involving Mary’s action. Castañeda notices that there is an important difference between the ways in which phrases expressing deontic circumstances and those expressing deontic focus interact with “ought” (and related words like “intend,” “want,” etc.) In particular, 1 apparently says the same thing as

3. If Mary brings the ball then John ought to bring the bat.

Apparently phrases expressing deontic circumstance can be moved outside the scope of “ought to” without affecting the content of the statement.<sup>1</sup> This is an important “datum” that Castañeda wants to accommodate within his system.

Castañeda captures the distinction between circumstance and focus in his deontic logic by virtue of his distinction between **propositions** and **Practitions (the “p/P” distinction)**. The distinction can be initially explained syntactically by way of the kinds of phrases typically used to express propositions and practitions. Propositions are usually expressed by indicative sentences. Practitions are usually expressed by infinitival phrases; e.g. “John to

bring the bat.” The basic idea for capturing the circumstance-focus distinction is to have circumstances expressed by propositions while focus is expressed by practitions. So in 1 and 3 the circumstances are expressed by the proposition “Mary brings the ball” while the deontic focus is expressed by the practition “John to bring the bat.” The deontic operator applies only to the latter so it makes no difference whether or not the proposition is within or without its scope.

The semantic values of propositions are True and False. The semantic values of practitions are Legitimate and Illegitimate.<sup>2</sup> Exactly what it is for a practition to be legitimate will be discussed later. For now it is sufficient to record that in formal semantics legitimacy will play the same role for practitions that truth plays for propositions. There are connections between propositions and practitions. The most important is that every practition has a “performance” proposition associated with it which asserts that the practition has been complied with. For example, corresponding to “Mary to bring the ball” is “Mary brings the ball.” But not every proposition has a corresponding practition e.g. those whose subjects are not agents.

### *1.1 The Logic*

Castañeda’s deontic logic formalizes statements of the “overriding ought” represented by “ $O_1$ ” as well as statements expressing the obligations of normative systems  $i$ , represented by “ $O_i$ .”  $O_i$  is used to express the norms or requirements of a specific normative system, say the norms which result from some promises or from accepting a particular position.  $O_1$  is intended to correspond to ought relative to the balance of all normative considerations and so overrides the norms of specific systems. (All this obviously is a bit vague and we return to it later.) The logic is basically an extension of SDL (standard deontic logic) that incorporates the p/P distinction. Let lower-case letters represent propositional expressions, and upper-case letters practitional expressions; and let  $q$  express the performance proposition of  $Q$ . Each of the issues we discuss depends only upon the p/P logic without quantifiers, so we discuss only the “propositional (practitional)” fragment of the deontic logic. Let starred variables  $p^*$  range over expressions of both propositions and practitions. We assume given sets of atomic expressions of propositions and practitions.  $\sim p^*$  is well-formed if  $p^*$  is well formed, and  $p^* \& q^*$  is well-formed if both  $p^*$  and  $q^*$  are well-formed, and similarly for the other connectives. A sentence like  $P\&Q$  containing only practitions and logical connectives is a “pure” practition, whereas sentences like  $p\&Q$  containing both propositions and practitions Castañeda calls “mixed” practitions. Finally,  $O_i Q$  is a well-formed proposition if  $Q$  is a well-formed practition (pure or mixed); i.e. the deontic operator  $O_i$  takes a practition  $Q$  as argument to form the proposition  $O_i Q$ . The index “ $i$ ” refers to a normative system represented by a set  $P_i^*$  of practitions. The proposition  $O_1 Q$

says that  $Q$  is required by the “overriding” normative system.

Semantics for this language is given in terms of both truth and legitimacy. Legitimacy is for practitions what truth is for propositions. A model<sup>3</sup> for this language is a 5-tuple  $\langle w^*, W, N, \$, I \rangle$  where  $W$  is a set of what Castañeda calls practical worlds (these differ from the ordinary worlds of modal logic in a sense to be explained shortly) of which  $w^*$ , the actual world, is a member.  $N$  is a set of normative systems and  $\$$  is a function that assigns to each  $i \in N$  a subset  $\$_i$  of  $W$ ;  $\$_i$  is the set of deontic alternatives for  $i$  at  $w^*$ . A practical world determines not only the truth value of every proposition but also the legitimacy value (legitimate or illegitimate) of every practition. By stipulation each member of  $\$_i$  assigns to every proposition the same truth value as does  $w^*$ , that is,

if  $w \in \$_i$  then for any proposition  $p$ ,  $I(p, w) = I(p, w^*)$ .

Let  $\$_i$  be nonempty for each  $i$  in  $N$ .  $I$  assigns to each  $p^*$  and world  $u$  a value 1 or 0, as follows:

$I(p^*, v) = 1$  or 0 if  $p^*$  is atomic. If  $p^*$  is a proposition  $I(p^*, v) = 1$  means that  $p^*$  is true at  $v$  whereas if  $p^*$  is a practition  $I(p^*, v) = 1$  means that  $p^*$  is legitimate at  $v$ .

$I(\sim p^*, v) = 1$  iff  $I(p^*, v) = 0$ ; otherwise  $I(\sim p^*, v) = 0$ .

$I(p^* \& q^*, v) = 1$  iff both  $I(p^*, v) = 1$  and  $I(q^*, v) = 1$ ; otherwise  $I(p^* \& q^*, v) = 0$ .

$I(O_i Q, w^*) = 1$  iff for each world  $v$  in  $\$_i$ ,  $I(Q, v) = 1$ .

A sentence is valid iff it receives value 1 in all interpretations. We also want to guarantee that  $O_1 A$  is true at  $w^*$  only if  $A$  is legitimate at  $w^*$ , thus we require that

$w^* \in \$_1$ .

The official name for this logic is  $D_c i^{**}$  ([10], 76) but finding this name unpronounceable we refer to it affectionately as “Hector.” Castañeda also characterizes his system in terms of the following axioms and rules ([10], 78). It is easily seen that the theorems provable from these axioms by the rules are valid in Hector.

Axioms:

A1.  $p^*$ , if  $p^*$  has the form of a truth-table tautology

A11.  $O_i Q \rightarrow \sim O_i \sim Q$

A11a.  $O_i Q \rightarrow Q$

Rules:

R1.  $p^*, p^* \rightarrow q^* \vdash q^*$

R11. if  $(p \& A \& \dots \& A_n) \rightarrow B$  is derivable without using A11a so also is  $(p \& O_i A \& \dots \& O_i A_n) \rightarrow O_i B$ .<sup>4</sup>

Some theorems and a derived rule of Hector include

- Th.1  $(O_i Q \ \& \ O_i P) \equiv O_i(Q \ \& \ P)$ .  
 Th.2  $O_i(Q \rightarrow P) \rightarrow (O_i Q \rightarrow O_i P)$ .  
 Th.3  $p \ \& \ O_i Q \equiv O_i(p \ \& \ Q)$ .  
 Th.4  $O_i(Q \rightarrow p) \equiv \sim O_i \sim Q \rightarrow p$ .  
 Th.5  $O_i(p \rightarrow Q) \equiv p \rightarrow O_i Q$ .  
 DR11.1 If  $\vdash Q \rightarrow P$  then  $\vdash O_i Q \rightarrow O_i P$ .

Theorems 3-5 express a kind of extensionality of deontic contexts with respect to propositions. Their validity results from the fact that in considering deontic alternatives to the actual world when evaluating  $O_{ip}$ \* we consider only worlds which are identical to the actual world with respect to the truth or falsity of propositions. The consequence is that propositions can be moved inside or outside the scope of deontic operators without changing truth value (as in Theorems 3-5). The strength of this extensionality feature can be seen by noting that if Castañeda allowed  $O_{ip}$  to be well formed then  $p \equiv O_{ip}$  would be a theorem.

Notice that the overriding ought,  $O_1$ , is distinguished from the  $O_i$  only by the validity of  $a_{11}$ .  $a_{11}$  holds because the actual world is included among the deontic alternatives for  $O_1$ . So if  $O_1 A$  holds then  $A$  is legitimate. If we understand the practicion  $A$  as something like a command (or mandate) then  $a_{11}$  connects the truth of a deontic proposition with the legitimacy of a command. In contrast  $O_i A$  does not entail that  $A$  is legitimate. So we can have, for example,  $O_1 A$  and  $O_i \sim A$  for various systems  $i$ . This captures the idea that  $O_1 A$  is overriding since it can override the obligations of other systems. Notice also that there is no logical connection between  $O_i$  statements and  $O_1$  statements. So reasoning which involves balancing the demands of various deontic systems to yield an overriding deontic judgement is not reflected in any of the valid principles of Hector.

The  $p/P$  distinction is absent from standard approaches to deontic logic. In SDL (standard deontic logic) deontic operators apply to propositions. The truth condition in possible world semantics for SDL is  $O_i p$  is true at  $w$  iff  $p$  is true at all the  $i$  deontic alternatives to  $w$ . There are a couple of striking differences between Hector and SDL which are worth noting at the outset. First, the syntax of Hector seems closer to ordinary English. It is more natural to say "John ought to visit his mother" than "It ought to be that John visits his mother." Second, SDL allows for iteration of deontic operators while Hector does not. For example,

$$O_i(O_i p \rightarrow p)$$

is well formed in SDL but not in Hector. Third, in the semantics for SDL deontic alternatives to  $w$  will typically differ in the truth of certain propositions

(these are propositions which describe permissible but not obligatory or forbidden states of affairs). In Hector, deontic alternatives to w agree on the truth of propositions but may differ on the legitimacy of practitions. As we will see, this difference has far reaching consequences.

### 1.2 Deontic Focus

Castañeda's system neatly distinguishes circumstances from deontic focus. For example, 1 and 2 are symbolized by

- 1\*.  $m \rightarrow O_i J$
- 2\*.  $j \rightarrow O_i M$

(where J and M are the practitions John to bring the bat and Mary to bring the ball and j and m are the corresponding performance propositions). Fairly complicated prescriptions can be represented in Hector so that deontic circumstance and deontic focus are clearly marked. An example of his is

- (4) Alchourron is obligated by his work agreement with Bulygin to do the following: RE-WRITE the footnotes, if and only if he mislays them. ([10], 42)

Castañeda claims that (4) does not imply

- (5) Alchourron is obligated by his work agreement with Bulygin to do the following: MISLAY the footnotes, if and only if he re-writes them

and offers this explanation:

The action of Alchourron's mislaying the footnotes is simply a circumstance, and is not deontically considered. On the other hand, Alchourron re-writing the footnotes is deontically considered, and not considered as a circumstance or condition. ([10], 42).

Castañeda claims that the p/P distinction must be made in order to handle this data about focussing.<sup>5</sup> It is true that "standard deontic logic" (SDL) would have to represent (4) and (5) in just the same way, i.e.,

- (4')  $O_i(r \equiv m)$

with the result that (4) does entail (5). By making the p/P distinction Castañeda can represent (4) and (5) as

- (4\*)  $O_i(R \equiv m)$
- (5\*)  $O_i(M \equiv r)$

and of course (5\*) is not entailed by (4\*).

### 1.3 Paradoxes

Castañeda also discusses a number of the paradoxes of deontic logic and argues that they do not arise in his system. The paradoxes typically involve a particular system of deontic logic, usually SDL, and involve showing that the natural paraphrases of consistent deontic sentences are inconsistent. Thus they show the inadequacy of the particular paraphrases. They show the inadequacy of the particular system of deontic logic if no consistent correct paraphrases of the sentences can be found.

One of the most troubling class of deontic paradoxes are the “Good Samaritan” paradoxes. Recall that in the first example of the paper Smith ought to bring his child who has broken his ankle to the doctor. Suppose that we let  $s$  stand for “Smith brings his child whose ankle he has broken to the doctor.” In SDL we can symbolize this simply by  $O_i s$ . But  $s$  implies  $b$ , where  $b$  stands for Smith has broken his child’s ankle. It is a theorem of SDL that

(IMP) if  $p$  implies  $q$  then  $O_i p$  implies  $O_i q$

So it follows that  $O_i b$ ; that is, that Smith ought to have broken his child’s ankle. This certainly seems to be unsatisfactory.

A related paradox is the “Paradox of the Knower.” Suppose that if Smith has broken his child’s ankle the doctor ought to know it. The paraphrase of this in SDL is

$b \rightarrow O_i k$

(where  $k$  is the doctor knows that Smith has broken the child’s ankle). Since  $b$  is true it follows that

$O_i k$

But since  $k$  implies  $b$  it follows from IMP that

$O_i b$

the same unsatisfactory conclusion we previously obtained. It is one of the most interesting features of Hector that these good samaritan type paradoxes do not arise in it. The reason is the same in both cases so we will discuss only the knower paradox. In Hector the appropriate formalizations are

$b \rightarrow O_i K$

where  $K$  is the proposition “Smith to know that he (Smith) has broken his child’s ankle.” This proposition implies the proposition that Smith has broken his child’s ankle but it does not imply the proposition Smith to break his child’s ankle. So the unwelcome conclusion  $O_i B$  simply is not forthcoming. The formal apparatus of the  $p/P$  distinction is able to distinguish what Smith ought to do (take his



child to the doctor) from the circumstances of the obligation (Smith has broken his child's ankle) and not include the latter in what Smith (or anyone) ought to do.

#### 1.4 Chisholm's Contrary-to-Duty Paradox

One of the most infamous paradoxes for SDL is Chisholm's "contrary-to-duty" paradox in which we have a set of sentences like the following to represent:

6. Sally should go help her neighbor.
7. Sally should call to say that she is coming if she goes to help her neighbor.
8. If Sally doesn't go to help her neighbor, she should not call to say that she is coming.
9. Sally does not go to help her neighbor.

SDL falls into trouble with this story by representing 6-9 as  $O_i g$ ,  $O_i(g \rightarrow c)$ ,  $\sim g \rightarrow O_i \sim c$ , and  $\sim g$  from which both  $O_i c$  and  $O_i \sim c$  can be detached, a contradiction in SDL. Other ways of paraphrasing 6-9 in SDL are equally unsatisfactory (cf. [22]).

Castañeda would represent 6-9 as:

- 6\*.  $O_i G$
- 7\*.  $O_i(g \rightarrow C)$ .
- 8\*.  $\sim g \rightarrow O_i \sim C$ .
- 9\*.  $\sim g$ .

From 8\* and 9\* Castañeda can detach  $O_i \sim C$  but 6\* and 7\* do not entail  $O_i C$  and no contradiction follows from this representation of the story. We can see how Castañeda's solution exploits the p/P distinction by noting that models of 6\*-9\* are ones in which  $G$  and  $\sim C$  are legitimate at all  $i$  deontic alternatives while  $\sim g$  is true at all these alternatives.

Tomberlin has criticized this account, arguing that

- 10\*.  $O_i(G \rightarrow C)$

also should be regarded as holding in this story since 7 does (cf. [31]). And, as he points out, if both 6\* and 10\* are true, so also is  $O_i C$ , a contradictory result since  $O_i \sim C$  and  $O_i C$  cannot both hold (due to A11). Castañeda, replying to Tomberlin, denies that there is any English conditional that expresses (10\*). Granting this, Tomberlin's point can be put in a different way. (10\*) is equivalent to

- (10\*\*)  $O_i(\sim G \vee C)$

which evidently would be expressed by

(10) Sally should-i either not go or call.

So even if there is no English conditional that expresses (10\*) there does seem to be an English sentence that Tomberlin could claim is true (or can be consistently added to 6-9) if 7 is true and which, when formalized in Castañeda's system, renews the paradox. Now Castañeda also holds, however, that if (10\*) were implied by or added to the Chisholm premises 6-9 then the result is a contradictory set and "Chisholm would have not created a problem for any deontic calculus" ([11], 447).

Perhaps Castañeda is right about this but his maneuvering is to no avail. Even if in Chisholm's story it is false that Sally ought to call there are similar stories which are consistent but which are not consistently (and adequately) representable in Hector. Consider the following.

### *1.5 The Sally/Penrose Example*

Suppose that we make the following promises to Lynne:

- A) that we would not tell either Sally or Penrose a certain secret
- B) but that if we told one of them then we would tell the other as well.

Let "i" refer to the deontic system generated by our promises to Lynne. It certainly seems that these promises are compatible and give rise to the obligations expressed by

- (11) We ought not tell either Sally or Penrose the secret
- (12) But if we do tell Sally then we ought to tell Penrose and if we tell Penrose then we ought to tell Sally.

How should we represent 11 and 12 in Hector? The most obvious suggestion is as

- (11\*)  $O_i(\sim S \& \sim P)$
- (12\*)  $O_i(s \rightarrow P) \& O_i(p \rightarrow S)$

There are a number of problems with this representation. The first (in analogy with Chisholm's paradox) is that the truth of p (our telling Penrose) is compatible with (11) and (12). But p is inconsistent with (11\*) and (12\*) since (12\*) entails

(13\*)  $p \rightarrow O_i S$

which with p entails  $O_i S$  and, by Axiom All, (11\*) entails

(14\*)  $\sim O_i S$ .

The difference between this paradox and Chisholm's is that we have made  $O_i \sim S$  explicitly part of the story.

There is a second problem. Since  $p$  and  $O_i \sim S$  are true so are

(15\*)  $\sim p \rightarrow O_i S$

and

(16\*)  $p \rightarrow O_i \sim S$ .

These respectively express that if we don't tell Penrose then we ought to tell Sally and if we tell Penrose then we ought not tell Sally. But surely these prescriptions are not part of the story and, indeed, seem incompatible with the story.<sup>6</sup>

It might be suggested instead that (11) should be paraphrased by

(11\*\*)  $O_i(\sim p \rightarrow \sim S) \ \& \ O_i(\sim s \rightarrow \sim P)$ .<sup>7</sup>

This paraphrase has the advantage that (11\*\*), (12\*) and  $p$  are consistent. Presumably, the idea behind this suggestion is that when we make both promises 1 and 2 we are committing ourselves not to tell Sally (Penrose) only if we don't tell Penrose (Sally). But this doesn't seem right. On the representation (11\*\*) we can get out of our promise (i.e. violate no obligations) by telling both Sally and Penrose. But our promise is not to tell either Sally or Penrose. If we tell both we don't fulfill our promise; we violate it! So (11\*\*) is not an adequate representation. We conclude that Hector cannot adequately represent the obligations which result from our promises.

We have seen that Hector runs into trouble with certain conditional ought statements. We think that part of the problem is that certain obligations (and the ought statements which express them) are defeasible and defeasible obligations are not representable in Hector. This is particularly clear in the following slightly more complicated example:

We promise to visit Sally, Penrose, and Alfred respectively on Monday, Tuesday, and Wednesday and only on those days.

We promise that if we fail to visit Sally on Monday we won't visit either Penrose or Alfred.

We promise that if we fail to visit Sally on Monday but visit Penrose anyway on Tuesday then we will visit Alfred on Wednesday.

These promises apparently give rise to obligations expressed by

(17) We ought to visit Sally, Penrose, and Alfred on Monday, Tuesday, and Wednesday respectively and only on those days.

(18) If we fail to visit Sally on Monday (thus breaking the first

promise) then we ought not visit Penrose or Alfred.

- (19) If we fail to visit Sally on Monday and nevertheless visit Penrose on Tuesday (thus breaking the first two promises) then we ought to visit Alfred on Wednesday.

The representation of 18 in Hector is (18\*)  $O_i(\sim s \rightarrow \sim P \& \sim A)$ . But 18\* entails (20\*)  $O_i(\sim s \& p \rightarrow \sim A)$  which is the paraphrase of

- (20) If we don't visit Sally on Monday but visit Penrose on Tuesday then we ought not to visit Alfred on Wednesday.

This is incompatible with (19) which requires visiting Alfred on Wednesday if we don't visit Sally on Monday but visit Penrose on Tuesday. But there is no incompatibility among our promises or the obligations that result from them.<sup>8</sup>

In this example the original obligation to visit Alfred on Wednesday is "defeated" if and when we violate the obligation to visit Sally on Monday. And that obligation is in turn defeated if we visit Penrose on Tuesday. The same kind of situation prevailed in the original Sally/Penrose story. There the original obligation not to tell Sally is defeated by our telling Penrose. It is clear that material conditionals are incapable of representing defeasible obligations since  $p \rightarrow O_i A$  entails  $p \& q \rightarrow O_i A$ . Our diagnosis of Chisholm's paradox and the Sally/Penrose story is that their adequate representation requires introducing a special kind of conditional which allows for defeasibility. We will show how to do that later.

Castañeda is not unaware of the examples which seem to support the need for defeasible conditionals, but he tries to show how to accommodate such stories without introducing any kind of conditional over and above the material conditional. As noted earlier Castañeda indexes deontic operators to normative systems; apparent defeasibility, he suggests, is due to what he calls the "cancellability" of those systems. Any normative system  $i$  has a set  $C_i$  of "necessary or 'cancellation' conditions for 'ought-i'-ness" ([10], 77). If one of the necessary conditions for  $i$  fails to obtain, then there exist no obligations at all relative to that system. (I.e., if there is some proposition  $p$  in  $C_i$  such that  $\sim p$  is true, then  $\sim O_i S$  for all  $S$ .)<sup>9</sup>

How is this applicable to the Sally/Penrose example? The strategy would be to suppose that there is more than one "system" involved in the story. For instance, the indices for the deontic operator in (11)  $O_i \sim S$  and (12)  $O_i \sim P$  may be regarded as different from those in (13)-(14), e.g.

(13')  $O_j(p \rightarrow S)$

(14')  $O_j(s \rightarrow P)$ .

Representing the story by 11, 12, 13', and 14' we can detach  $O_j S$  if  $p$  is true.  $O_j S$  doesn't conflict logically with  $O_i \sim S$ . If following Castañeda we represent the defeasibility of  $O_i \sim S$  by saying that  $\sim p$  is a necessary condition for  $O_i \sim S$ , it

follows that  $O_i \sim S$  is false given the truth of  $p$ . This dual-indexing strategy has an ad hoc and arbitrary flavor—it certainly looks as though only one normative system is involved in our story and Castañeda doesn't provide any individuating criteria for normative systems. A more serious problem concerns the representation of 11 being defeated. On Castañeda's account if  $p$  is true then there is no representation at all of the obligation not to tell Sally the secret (as noted, because  $p$  is true system  $i$  is "cancelled" and  $O_i \sim S$  is simply false). So once again his representation of the story leaves out the crucial feature that telling Sally the secret is forbidden.<sup>10</sup>

Even were one to accept the multiple-indexing strategy, however, one still could not represent the reasoning in the example. Hector can represent reasoning only "within" systems and there are no logical principles that connect system  $i$  with an alternative system  $j$  (or with the overriding system 1). Thus Raz' general complaint against deontic logic applies squarely to Hector:

Much of the work in deontic logic, useful as it is, is of marginal interest to those concerned with practical reasoning because it is altogether oblivious to the problem presented by conflicts of reasons. It can be regarded as the logic of conclusive reasons...But the main task of a theory of practical reason is to establish what one has (*prima facie*) reason for doing and how to resolve conflicts of reason and establish that which one should do all things considered. ([28], 21)

Even if Castañeda were able to represent our examples by means of multiple-indexing, his deontic logic contains no means for *reasoning* to conclusions about what one should do all-things-considered.

In the next section we will describe an alternative system of deontic logic that can represent defeasible rules in a natural way (without Castañeda's proliferation of "systems") and can be used to formalize practical reasoning a la Raz.

## II. Deontic Logic 3-D

In "Dyadic Deontic Detachment" (DDD) we introduced a deontic system called 3-D which allows for the representation of defeasible ought statements and all things considered ought statements and rules connecting the two. The language of 3-D adds to propositional logic a dyadic deontic operator  $O_i(q/p)$  and a temporally indexed monadic operator  $!_t q$ . Intuitively,  $O_i(q/p)$  means that according to normative system  $i$   $p$  is a reason requiring  $q$ . We will later argue that certain conditionals, in particular some of those that occur in the Sally/Penrose story, are best understood by using this operator.  $!_t q$  means that, at time  $t$ ,  $q$  is required tout court by system  $i$ . We assume that what is required tout court by  $i$  at  $t$  is determined by two things: a) the norms  $O_i(q/p)$  and b) the reasons which actually obtain and are available for consideration at  $t$ . Thus  $!_t q$  can also be understood as "all things considered at  $t$ ,  $i$  requires that  $q$ ." We will

use  $S_t p$  to mean that  $p$  is available for consideration at  $t$ . This needn't mean that these reasons are epistemically available to anyone. In DDD we interpreted  $S_t p$  to mean that  $p$  is settled true at  $t$  (i.e. is entailed by propositions characterizing the history up to  $t$ , the laws, metaphysical and logical truths). A different idea is to relativise the facts available to consideration to an agent (or agents) to be those facts which obtain independently of the agent's control at  $t$ .<sup>11</sup> On this interpretation if I will go to Paris and you will go to Paris and we each have no control over the other's going then among the facts considered settled for me is your going to Paris (but not my going) and among the facts considered settled for you is my going (but not your going). Much of what we will say about 3-D applies to either understanding of  $S_t p$ .

The central semantical apparatus for interpreting the expressions of 3-D are a function  $\$$  which assigns to normative systems  $i$  a ranking on possible worlds and a function  $\Sigma$  that assigns to a time  $t$  and world  $h$  the set of worlds that are accessible at  $t$  at  $h$ . We assume that each  $\$i$  is a weak ordering of worlds; the most highly ranked worlds in  $\$i$  are worlds at which no norm or standard of system  $i$  is violated, and as one descends the ranking more and/or more serious violations occur. On the assumption that  $p$  is eligible for consideration only if  $p$  is settled, we place the following condition on  $\Sigma$ : if  $t \leq t^*$  then  $\Sigma(t^*, h) \subseteq \Sigma(t, h)$ . The key truth clauses read as follows:

- i)  $O_i(q/p)$  is true at  $h$  iff each of the most highly ranked worlds in  $\$i$  at which  $p$  is true are worlds at which  $q$  also is true.<sup>12</sup>
- ii)  $S_t p$  is true at  $h$  iff  $p$  is true at each world in  $\Sigma(t, h)$ .
- iii)  $U_{it}(q, p)$  is true at  $h$  iff there is no  $r$  such that  $S_t r$  and  $\sim O_i(q/p \& r)$ .
- iv)  $!_{it} q$  is true at  $h$  iff  $q$  is true at each of the worlds in  $\Sigma(t, h)$  that are most highly ranked in  $\$i$ .

$U_{it}(q, p)$  means that the defeasible  $O_i(q/p)$  is not "defeated" at  $t$ . Given the usual definition of validity the following inference scheme is valid:

(Key)  $O_i(q/p)$   
 $S_t p$   
 $U_{it}(q, p)$   
 So  $!_{it} q$

Key connects statements that say that one has some reason <sub>$i$</sub>  to bring about a certain state of affairs with conclusions about what one ought <sub>$i$</sub>  to do all things considered.<sup>13</sup>

There are a number of deontic notions that can be expressed easily in 3-D. One is the idea of a norm or obligation being defeated. We will say that  $O_i(p/q)$  is defeated by  $r$  at time  $t$  just in case  $S_t r$  and  $\sim O_i(p/q \& r)$ . The idea is that the fact that  $r$  makes  $O_i(p/q)$  irrelevant to drawing  $!_{it} p$  conclusions. There is a natural way to represent "other things being equal" statements in 3-D; for example, "you

ought to visit Sally, other things being equal.” By using “other things being equal” we are indicating that while there is a reason for visiting Sally this reason may be overridden by competing norms and settled facts. Such statements seem apt for expressing so called “prima facie obligations.” Thus, “you have a prima facie obligation to visit Sally” ( $PF_{it}s$ ) is true at  $h$  iff there is a condition  $p$  true at all worlds in  $\Sigma(t,h)$  such that  $O_i(s/p)$ . This captures the idea one has prima facie reason for  $s$  just in case there is some reason $_i$  that is eligible for consideration at  $t$  and requires  $s$ .<sup>14</sup> On this characterization  $PF_{it}q$  is compatible with there being other eligible conditions which override  $O_i(s/p)$  so that  $\sim!_{it}q$  is also true.<sup>15</sup>

### II.1 The Sally/Penrose examples in 3-D

We can see how 3-D works by representing the Sally/Penrose example in it. The norms 11-14 are represented by

- (11#)  $O_i\sim s$
- (12#)  $O_i\sim p$
- (13#)  $O_i(p/s)$
- (14#)  $O_i(s/p)$ .

where  $O_iq$  abbreviates  $O_i(q/\text{tautology})$ .  $O_iq$  may be read informally as saying that ideally (relative to  $i$ )  $q$  would be true. (11#-14#) are consistent and also are consistent with the truth of  $p$  so no analogue of the Chisholm paradox arises. Let's let  $t$  be the time at which the promise is made and  $t'$  a later time immediately after we have told Penrose. We will assume that at  $t$  only the tautology is available for consideration while at  $t'$   $p$  is also available. Then in accordance with KEY  $!_{it}\sim s$  and  $!_{it}\sim p$  and  $!_{it}s$  are detachable.<sup>16</sup> Notice that when we tell Penrose we violate our tout court obligation at  $t$  not to tell Penrose. But also if we tell him 11# is defeated and 14# becomes relevant to detaching the tout court obligation at  $t'$  to tell Sally,  $!_{it}s$ . Notice that 11#  $O_i\sim s$  while defeated nonetheless remains true and is consistent with  $!_{it}s$ . This contrasts with Castañeda's account which, it may be recalled, had problems representing the story in a way which treated our telling Sally the secret as a violation. Another contrast is that whereas in Hector  $\sim p$  entails the paraphrase of “if we tell Penrose we ought not tell Sally” (and other “non-genuine” ought statements) no such problem arises in 3-D since  $\sim p$  is logically independent of  $O_i(\sim s/p)$ .

It should be clear that 3-D has no difficulty representing the kind of defeasibility we found in the more complex Sally/Penrose/Alfred example. The obligations generated by our promises can be represented by  $O_i(s\&p\&a)$ ,  $O_i(\sim p\&\sim a/\sim s)$ , and  $O_i(a/\sim s\&p)$ . These are defeasible in that each can be defeated by facts and in the example the first two are defeated at times after both our not visiting Sally and our visiting Penrose are settled.

## II.2 Transposition and 3-D

Castañeda has argued that a defeasible conditional like  $O(-/-)$  cannot be used successfully to represent conditionals that specify “contrary to duty” obligations like (13) and (14), cf. [10], 71. His example taken from Powers is the following:

(21) John Doe ought to marry Suzy Mae if he impregnated her.

According to Castañeda such conditionals are governed by transposition, so that 21 entails

If it is not the case that John Doe ought to marry Suzy Mae then he did not impregnate her.

Castañeda also claims that 21 implies

Either John did not impregnate Suzy Mae, or he ought to marry her.

The defeasible conditional of 3-D, however, does not validate transposition, i.e.  $O_i(q/p)$  does not entail  $O_i(\sim p/\sim q)$ ; and  $O_i(q/p)$  does not imply  $\sim p \vee O_i q$  (or  $\sim p \vee !_i q$ ).

This looks like a serious objection but, as we will see, Castañeda’s examples actually support the use of a defeasible conditional to paraphrase (21). First, note that a restricted transposition rule is valid in 3-D:

$$O_i(q/p) \ \& \ \sim O_i(q/p \vee \sim q). \ \rightarrow \ O_i(\sim p/\sim q)^{17}$$

from which it follows that

$$O_i(q/p) \ \& \ \sim O_i q \ \rightarrow \ O_i(\sim p/\sim q)$$

also is valid. And it is plausible to suppose in the Suzy Mae example that  $\sim O_i q$  (for there is no rule unconditionally requiring John Doe to marry Suzy Mae); and so 3-D can account for the transposition in this example. Second, contra Castañeda, transposition is not unrestrictedly valid. Consider, the following two conditional promises: We promise to invite Sally if we invite Penrose and we promise to invite Penrose if we don't invite Sally. The two promises give rise to the conditional obligations expressed by

We ought to invite Sally if we invite Penrose.

We ought to invite Penrose if we don't invite Sally.

While it might be odd to make these two promises there is nothing inconsistent in them (or the obligations that result from them) as can be seen by noting that if we invite Sally we don't break either promise and don't violate either obligation (whether we invite Penrose or not). This example, of course, is a counter-example to transposition. Furthermore, a little thought reveals that the *only* way not to break the promises (violate the obligations) is to invite Sally.



Interestingly enough  $O_i(s/p) \& O_i(p/\sim s)$  implies  $O_i s$  in 3-D.

Up to this point we believe that we have shown how an important part of our deontic and practical reasoning, reasoning from defeasible deontic rules and principles to all things considered obligations, can be represented in 3-D and that such reasoning cannot be represented in Hector. Furthermore, we showed how Chisholm's and kindred paradoxes are dealt with in 3-D and argued that they are not satisfactorily treated in Hector. Perhaps this is not surprising since Hector contains no provision for defeasible conditionals and does not temporally index deontic operators. Both of these features could be added to Hector (though we don't mean to suggest that Castañeda would have welcomed their addition). The result would be a system with these features and the proposition/Practition distinction. But we will now argue that 3-D can get along perfectly well without the p/P distinction. In fact we will show that Castañeda's distinction between circumstances and deontic focus, which we think embodies a valuable insight, is better captured in 3-D than in Hector.

### *II.3 The Ought-to-do in 3-D*

It might be thought that there are deontic claims that can be expressed in Hector but not in 3-D since the syntactic/semantic structures are different. In Hector  $O_i$  is an operator on practitions whereas in 3-D it is an operator on propositions. It must be admitted that syntactically "ought" (and other deontic expressions) applies to infinitival phrases as well as to indicative sentences. The issue is whether a deontic sentence in which "ought" applies to an infinitival phrase can be paraphrased by a formal sentence which contains a deontic operator which applies to an indicative sentence, that is, whether "X ought to do A" can be paraphrased by a sentence meaning "it ought to be that p" where p is some proposition. We do not see that Castañeda has made a persuasive case for a negative verdict. The simplest suggestion is Chisholm's that "X ought to do A" be paraphrased by  $O_i(X \text{ does } A)$  where "X does A" is a sentence which expresses the performance proposition for the practition "X to do A" (cf. [13]). Indeed, we could introduce into Hector a deontic operator  $O_i^*$  such that  $O_i^*p$  is true iff  $O_iP$  is true; where p is the performance proposition for P. The logic of  $O_i^*$  might be a bit non-standard since e.g.  $O_i^*p$  needn't imply  $O_i^*q$  even when p implies q (since there may be no practition corresponding to q) but that doesn't show that  $O_i^*$  is in any way improper. This doesn't show that practitions are unnecessary (they may be needed to explain  $O_i^*$ ) but it does show that the issue of whether we can express our deontic judgements with an ought that applies to indicative sentences or to infinitival expressions is a red herring.<sup>18</sup>

It has been argued by a number of authors (including Castañeda) that there is an important difference between "ought to be" and "ought to do." An example from Harman [16] is: it ought to be that (seven year old) Sally doesn't work in the factory but it is not the case that Sally ought not work in the factory. But

this shows only that the ought involved in “ought to be” and the ought involved in “ought to do” can differ. It doesn’t establish that the object of ought to do is not propositional. In fact, within 3-D there is a nice way to distinguish ought to be from ought to do. We may suppose that in determining what ought to be at  $t$  we consider those facts which are settled at  $t$ , while to determine what  $X$  ought to do at  $t$  we consider those facts which are not within  $X$ ’s power at  $t$  (even if not yet settled at  $t$ ).<sup>19</sup> These include those settled at  $t$  and also facts which, while not settled at  $t$ , are out of  $X$ ’s control.

#### *II.4 Deontic Focus in 3-D*

As we remarked above in part I, complex prescriptions can be represented in Hector so that deontic circumstance and deontic focus are clearly marked. We considered the example

- (4) Alchourron is obligated by his work agreement with Bulygin to do the following: RE-WRITE the footnotes, if and only if he mislays them ([10], 42)

and noted Castañeda’s claim that the proposition/practition distinction must be made in order to handle this data about focussing. By making the p/P distinction Castañeda can represent (4) and (5) as

- (4\*)  $O_i(R \equiv m)$   
 (5\*)  $O_i(M \equiv r)$

and of course (5\*) is not entailed by (4\*), a desirable result given the reality of focussing.

Although the p/P distinction accounts nicely for the focusing in example (4), focusing is more general a phenomenon than can be captured by Castañeda’s distinction between circumstances and actions-deontically-considered. Focussing also occurs in examples like the following in which that which contrasts with the “circumstance” is *not* an action (or practition) but rather is a proposition or state of affairs.

- (22) It ought to be the case that the picnic is cancelled if and only if it rains.  
 (23) Penrose should be invited if and only if Rachel is not.  
 (24) The plaintiff should win the case if and only if the rails were broken.  
 (25) Smith ought to be punished if and only if he has violated a rule of law.

Each of these sentences has the form “it ought to be that  $p$  iff  $r$ ,” where  $p$  and  $r$  are propositions (e.g. “the picnic is cancelled,” “it rains”). Apparently there is focussing in (22)-(25) if there is focussing in (4), but here the circumstance (“it

rains”) contrasts with a focus (“the picnic is cancelled”) that does not express or describe an action or action-type. Therefore the distinction between circumstance and focus does not parallel the p/P distinction but also appears in exclusively propositional settings; and Castañeda’s treatment of focussing does not provide a general account of it.

Let’s re-think the distinction between circumstances and foci. The basic idea is that we sometimes consider certain propositions as candidates for deontic consideration and others as forming the background in which the deontic judgements are made. For example, in “Smith ought to rush that child whose ankle he broke to the hospital” the circumstances are that Smith broke the child’s ankle and the proposition up for deontic consideration is his rushing the child to the hospital. In “John ought to bring the bat if Mary brings the ball” the circumstances are hypothetical and the proposition in focus is that John brings the bat.

In the first (non-hypothetical) kind of example the distinction is accommodated in 3-D by the distinction between facts that are settled (or not within the power of the agent) and those which are not settled (or within the power of the agent). The former comprise the circumstances and the latter are the objects of deontic focus. Thus in the example it is a settled fact that Smith broke the child’s ankle. For this reason it is not up for deontic judgement (in this context. Of course in other contexts, e.g. when it was not yet settled, it was obligatory for John not to break the child’s ankle.) This treatment nicely handles Castañeda’s example ([10], 39):

- (26) It is obligatory that Carrio pay \$1000 to the owner of the apartment he is renting.
- (27) The apartment Carrio is renting is precisely the residence with the famous portrait of Kelsen.
- (28) It is obligatory that Carrio pay \$1000 to the owner of the residence with the famous portrait of Kelsen.

Castañeda claims that 26 and 27 entail 28. Assuming that tout court obligation is involved the paraphrases of 26, 27 and 28 in (the natural first order extension of) 3-D are

- (26#)  $!_{it}P(r)$
- (27#)  $r=k$
- (28#)  $!_{it}P(k)$

(P is the predicate “Carrio pays \$1000 to”, r is the term “the owner of the apartment...” and k is the term “the owner of the residence...”) Now in 3-D 26# and 27# do *not* entail 28# but 26# and  $S_1(r=k)$  *do* entail 28#. And it is certainly an assumption in this example that  $r=k$  is settled (or out of the power of the agent).<sup>20</sup>

In conditional sentences the distinction between circumstances and deontic

focus is captured in a different way. For example, (4) can be represented as

$$(4\#) O_i(r/m) \ \& \ O_i(\sim r/\sim m).$$

Since  $O_i(r/m)$  does not entail  $O_i(\sim m/\sim r)$ , due to the failure of transposition for defeasible conditionals, the distinction between antecedent and consequent provides a focussing mechanism—the antecedent of the conditional obligation is the “condition or circumstance” and the consequent can express the “action deontically considered as the focus of obligation.” The explanation of focusing in terms of defeasible conditionality also accounts for the new examples (22)-(25) involving only propositions since each can be represented by

$$O_k(p/r) \ \& \ O_k(\sim p/\sim r)$$

where it is the consequent in each case that is in focus.

### *II.5 The Good Samaritan and Knower paradoxes*

Earlier we saw that Castañeda’s distinction between circumstance and focus, as it is embodied in his p/P distinction, enables him to provide plausible solutions to the paradoxes of the good samaritan and the knower. In the knower for instance  $b \rightarrow O_iK$  expresses that if Smith’s child’s ankle is broken then the doctor ought to know it. Detaching  $O_iK$  given  $b$ , it follows that Smith broke the ankle but not that Smith ought to break it. In 3-D the rule would be represented by  $O_i(k/b)$ , where  $k$  is the performance proposition of  $K$ . If  $b$  is settled at  $t$  and nothing else is relevant then we can detach  $!_{it}k$ . But since  $k$  implies  $b$ , it follows in 3-D that  $!_{it}b$ . So it appears that 3-D has the same unpalatable result as SDL.

But notice that the situation is not quite as bad as in SDL. First, it may be assumed that the story also contains the rule  $O_i\sim b$  and its implication  $O_i\sim k$ . If  $t_0$  is a time prior to  $b$ 's being settled then  $!_{it_0}\sim b$  and  $!_{it_0}\sim k$  are true. So in 3-D (though not in SDL) we can express the fact that  $b$  is not obligatory tout court until it becomes settled. Indeed, the reason that  $!_{it}b$  holds is just that  $S_t b$  is true. The distinction between circumstances and foci suggests a slight emendation of 3-D which completely removes the paradox. If  $S_t b$  then it is reasonable to regard  $b$  as part of the circumstances at  $t$  since  $b$  is not within any agent’s power. We can reflect this by altering the definition of  $!_{it}$  so that  $!_{it}p$  requires that  $p$  is not settled at  $t$ . Only those propositions which are unsettled at  $t$  are in deontic focus at  $t$ . The result is that  $!_{it}b$  is never true in the story. This change complicates the logic of  $!_{it}$  and requires some changes in the semantics but these are all straightforward.<sup>21</sup> In any case, the important point is that 3-D contains the wherewithal to represent the fact that  $!_{it}b$  holds in this story only because  $b$  is settled at  $t$  and that is sufficient to defuse the paradox.

### III. The Semantics of Practitions

In this final section we want to raise some puzzles about the nature of practitions and specifically about what it means for a practition to be legitimate. Recall that model-theoretic semantics for the deontic statements of Castañeda's language presupposes "value-laden" worlds at which each practition is either legitimate or illegitimate. The truth condition for deontic statements is explained in terms of a practition's being legitimate, the crucial clauses being

$O_i A$  is true iff  $A$  is legitimate at every  $i$ -deontic alternative to the actual world,

and

$O_1 A$  is true iff  $A$  is legitimate at every 1-deontic alternative to the actual world.

Our understanding of this truth condition is only as good as our understanding of legitimacy. But what is it for a practition to be legitimate (or legitimate at a world)? Castañeda has a good deal to say about legitimacy and we will only provide a rough outline here. It will turn out that this is sufficient for us to raise certain problems for his deontic logic.

Castañeda characterizes the legitimacy of a practition relative to "an absolute context" in terms of the (non-blind) wants and goals of agents. To determine whether a practition  $A$  is legitimate at a world one first harmonizes the wants and goals of the agent so that it is possible for them to be realized. In affecting this harmonization an agent's more important goals are given greater weight and (presumably) certain goals are discounted e.g.  $X$ 's desire to frustrate  $Y$ 's desires. Castañeda's account of legitimacy is (roughly) that  $A$  is legitimate (relative to the absolute context and the set of agents) if (i) performing  $A$  is necessary for achieving the harmonized goal; or if (i) doesn't obtain then (ii) if some agent wants to do  $A$  and doing  $A$  doesn't interfere with any other agent's goals; or if neither (i) nor (ii) obtain and (iii) the performance proposition corresponding to  $A$  is true.<sup>22</sup>

There are various questions one might ask of this account. It is far from clear exactly how agent's goals are to be harmonized or that there always exists a harmonization or that if there is one that it is unique. But at this point we want to focus not on problems with the details of the account but rather on one of its features which it must share with any plausible similar account. The feature is that it validates the following supervenience principle:

**Supervenience:** Whether or not  $A$  is legitimate at world  $w$  supervenes on facts that hold at that world; facts concerning agent's wants and goals and what actions they perform and perhaps certain further facts.

Supervenience is a very plausible condition, and clearly one that Castañeda

accepts. Indeed if the legitimacy value of a practition did not supervene on facts concerning agent's wants, goals, etc. then it is hard to see how we could have any understanding of it.

However, it turns out that the semantics for Hector entail that either supervenience fails or a principle we call "deontic imperialism" holds, that is, for every practition A either  $O_i A$  or  $O_i \sim A$  (for every  $O_i$  including  $O_1$ ). It is easy to see that either supervenience fails or deontic imperialism holds. If  $P_i A$  and  $P_i \sim A$  hold at  $w$  then there are  $i$ -deontic alternatives  $u$  and  $v$  to  $w$  such that  $A$  is legitimate at  $u$  and  $\sim A$  is legitimate at  $v$ . But if  $u$  and  $v$  are  $i$ -deontic alternatives to  $w$  then the same facts obtain at all three worlds. It follows that Supervenience fails. So Castañeda is faced with the following alternatives: (a) give up Supervenience, (b) accept deontic imperialism, or (c) give up the semantical condition that deontic alternatives to  $w^*$  agree with  $w^*$  on the facts. He cannot take alternative (c) since that is the condition which he claims captures the distinction between circumstance and focus.<sup>23</sup> Deontic imperialism is enormously implausible. Even if it held for some  $O_i$  it shouldn't be a consequence of our deontic logic. Alternative (a) seems to sever any grip that we may have on the notion of a practition's being legitimate. If supervenience fails then we could image God creating a world first by fixing the facts, including facts about what agents want, intend, etc. and then deciding the legitimacy values of practitions. But what then would it be for a practition to be legitimate?

There are a couple of other consequences of Castañeda's particular account which are troubling. If a practition A is legitimate at  $w$  in virtue of condition (ii) then the mere fact that an agent wants to A (and this doesn't interfere with the satisfaction of other agents' wants) at  $w$  makes A legitimate at  $w$ . Since  $i$ -deontic alternatives to  $w$  agree with  $w$  on the facts (including the fact that the agent wants to A) it follows that A is legitimate at each  $i$ -deontic alternative. So  $O_i A$ . But it doesn't seem right that someone's merely wanting to A (when satisfaction of this want doesn't interfere with other agents' satisfactions) is enough to make it obligatory for that person to A. The situation is even worse when A is legitimate at  $w$  in virtue of condition (iii).

Finally there is a problem encountered in generalizing Castañeda's semantics. Castañeda has claimed that a whole family of attitude verbs including "wants to", "intends to", and "hopes to" take practitions as objects. On the assumption that the semantic values of practitions are legitimate/illegitimate the natural generalization of Castañeda's semantics to, for example, "hopes to" is that "John hopes to A" is true iff in a certain class of worlds (John's "hope" alternatives) A is legitimate. But suppose that John hopes to commit a mass murder. It follows that in John's hope alternatives \*John to commit a mass murder\* is legitimate. Now it is a troubling thought that this practition could turn out to be legitimate at any world and on Castañeda's account of legitimacy given by (i), (ii), and (iii) it is hard to see how it could be. But even worse these hope alternatives will be factually identical to the actual world. So if

Supervenience obtains \*John to commit a mass murder\* is legitimate at the actual world. Since this world is a deontic alternative for the overriding ought it follows that  $P_1(\text{John to commit a mass murder})$ . And since all of John's  $O_1$  alternatives are factually identical to the actual world it follows from Supervenience that John overridingly ought to commit a mass murder. We can all agree that this is an absurd result.<sup>24</sup>

One way out of this presumably would be to deny that the object of "hopes to" etc. is a praction or to deny that the semantic value of the praction in "hopes to" contexts is a legitimacy value. The first choice undermines some of Castañeda's arguments for practionions. Whatever evidence we have for thinking that the object of "ought" is a practionion is also evidence that the object of "intends" etc. is a practionion. The second alternative is a reason for holding that legitimacy values are not semantic values. Another way out is to deny Supervenience. But, as we have mentioned, to do that is to leave us in the dark about what it is for a practionion to be legitimate.

## Notes

1. Later in this paper however we will provide reasons to modify this claim.
2. Actually, Castañeda discusses two kinds of legitimacy, legitimacy-*i* relative to a code *i* and absolute legitimacy. The former concerns whether or not a practionion is legitimate at a world given a particular code or source of obligation. The latter concerns whether or not a practionion is overridingly legitimate.
3. Castañeda provided a possible worlds semantics for his language in [9] and [10] and an informal semantics in [12]. We offer a possible worlds semantics much like that in [10], with the differences pertaining to Castañeda's conditions R5a and R5b ([10], 81) which guarantee that

if  $O_1A$  then  $O_iA$ .

(Proof. Suppose  $O_1A$  is true at  $W_0$ . Then by R5b, A is legitimate at each world in W, which means of course that A is legitimate at each world in W other than  $W_0$ . So by R5a,  $O_iA$  is true at  $W_0$ .) This result is unsatisfactory because it may be that  $O_1A$  is true but there is some system *i* for which  $\sim O_iA$  or  $O_i\sim A$  (as Castañeda himself points out, [10], 78). Our semantics avoids this difficulty while, we believe, preserving the interpretation Castañeda intended for his language.

4. The restriction against using A11a is necessary because even if B is derived by A11a from O1B we may not want to be able to conclude  $O_iB$ , since O1B can be true even though there is some *i* such that  $O_iB$  is not true.
5. Castañeda says that this example shows that "any useful deontic calculus must contain two types of sentences and well-formed formulas, even at the purely sentential level...This basic structural duality is fundamental for an understanding of the syntactical structure of our deontic language" ([10], 41).
6. A similar point is made by Tomberlin [31]. Castañeda responds to this by arguing that even though  $\sim p \rightarrow O_iS$  is true it doesn't express a "genuine obligation." His idea is that what makes it true is not the promises but rather the mere falsity of *p*. He suggests that we mark the difference by introducing a "genuineness operator", G, into Hector. His idea is that  $G(p \rightarrow O_iS)$  holds while  $G(\sim p \rightarrow O_iS)$  and  $G(p \rightarrow O_i\sim S)$  don't hold. Castañeda doesn't provide semantics for this new operator but given a minimal requirement on it it is easy enough to see that it won't do the work he requires of it. See footnote 8.
7. In this story there is a symmetry between the obligation to tell Penrose if we tell

Sally and the obligation to tell Sally if we tell Penrose. So we must paraphrase these two conditional promises in the same way. This makes this story a bit different from Chisholm's in which one alternative was to paraphrase the obligation to go as an unconditional statement and the obligation to call as conditional on going.

8. Notice that the conflict here is independent of the truth of  $\sim s \& p$ . Notice further that Castañeda's introduction of what he calls "a genuineness operator" doesn't help him. On Castañeda's account of genuineness if  $Op^*$  entails  $Oq^*$  then  $GOp^*$  entails  $GOq^*$ . Since  $18^*$  is genuine and entails  $20^*$  it follows that the latter is genuine as well.
9. The idea of the necessary conditions for a normative system is a useful one. If from the moral point of view God's existing is a necessary condition for morality, then if God is dead everything is permitted. If our not having hard shells like turtles is a necessary condition for our legal system, then if everyone had shells we would not have any legal obligations. (While Hart does not go so far as to suggest that our having turtle-like shells would cancel all legal obligations, but he does suggest that they might cancel some significant ones:

There are species of animals whose physical structure (including exoskeletons or a carapace) renders them virtually immune from attack by other members of their species and animals who have no organs enabling them to attack. If men were to lose their vulnerability to each other there would vanish one obvious reason for the most characteristic provision of law and morals: *Thou shalt not kill.* (*The Concept of Law*, p. 190.)

Our semantics for Castañeda's logic can be extended to incorporate the "cancellability" axiom (let  $C_i^*$  express the conjunction of the members of  $C_i$ ):

$$A0. O_i A \rightarrow C_i^*$$

by adding to the models a function  $M$  with domain  $N$  that assigns to each normative system  $i \in N$  the set  $M_i$  of worlds that are possible relative to  $i$  (this set is the proposition expressed by  $C_i^*$ ); and by revising the truth condition for  $O_i Q$ , as follows:

$$I(O_i Q, w^*) = 1 \text{ iff } w^* \in M_i \text{ and for } u \in \mathcal{S}_i, I(Q, u) = 1.$$

10. Castañeda fails to distinguish between the cancellability of normative systems and the defeasibility of individual principles within normative systems. Yet this distinction is important. For instance, the moral obligation not to steal is defeasible, for there are circumstances in which it is not morally obligatory not to steal; but this does not mean that all of morality is cancelled in such circumstances. Rather, the obligation not to steal is overridden by other *morally* relevant considerations, and there usually are residual *moral* obligations (e.g. to apologize and make reparations) in such cases. (Thus the distinction between overriding and cancelling an obligation; if an obligation is cancelled there can be no residue resulting from failure to conform to it.) Therefore we would object to Castañeda's treatment of rule-defeasibility by means of system-cancellability as being too coarse-grained even if it were useful in representing the examples.
11. Fred Feldman considers the facts available for consideration at  $t$  to be those which are "unalterable" by an agent  $x$  at  $t$  (in this way Feldman characterizes a notion of the "ought to do" for agent  $x$  at  $t$ ), cf. [14], 22ff. Intuitively the class of unalterable propositions for  $x$  at  $t$  is supposed to be that class of truths that would hold independently of what actions  $x$  chooses at  $t$  or later.
12. Cf. Lewis, [18]. Our semantics for  $O_i(-/0)$  is based on his. Although the semantics employs a ranking of worlds it would be a mistake to assume that it is committed to a utilitarian conception of ought. See Lewis [20] and Goldman [15].
13. In comparing 3D with HECTOR it is important to keep in mind that HECTOR posits simply an "all things considered"-system ought  $O_1$  to represent the norms



of the most highly ranked normative system in a hierarchy of systems. 3D of course can represent this posited most highly ranked system with  $O_1(-/-)$ ,  $!_{it}$ , etc., but it also can represent a second system-relative notion of “all things considered” that is useful as a “horizontal” distinction *within* each system in the hierarchy. 3D does so by means of the system-relative “all things considered” ought operator  $!_i$ .

14. In saying that it is *prima facie* obligatory that  $p$  we are not saying that we have some reason for believing that  $p$  is obligatory (an epistemic reading of “*prima facie*”) but rather that there is a reason requiring  $p$  which may be overridden. This is the sense in which Ross uses the term. Cf. [24].
15. We can also characterize an interesting notion of “absolute” obligation. These are obligations that can never be overridden. Cf. [22].
16. This example illustrates how “all things considered” ought’s can vary with time; here, for instance, we have both  $!_{it}\sim s$  and  $\sim!_{it}\sim s$ . This time relativity represents an important difference from Castañeda, who has insisted that each  $O_i$  is “eternal,” i.e., true relative to one situation in the actual world only if true at all. While some uses of ‘ought’ may seem eternal (that is, relative to all the facts about the actual world whether or not those facts are settled) if it is not yet settled that we violate an obligation to do something in the future, the mere fact that we will violate that obligation clearly should not be eligible now in the determination of what we ought to do. Given his insistence that  $O_i$  is eternal ([10], 60-61) it is surprising that Castañeda in his informal action theory argues *for* temporal relativity when he stresses the role of the “Future Zone of Indeterminacy” and its relationship to legitimacy- $i$  (and hence to the truth of deontic propositions in his theory). For refutation of the doctrine that “ought” is eternal we need look no further than Castañeda’s own informal action theory! We cannot pursue the exegetical issues here, but see [9], 135-137. Also cf. Bratman [6], 155, and Castañeda’s Reply to Bratman, [12], 399-401.
17. Proof. Assume the antecedent: all most highly ranked  $p$  worlds are  $q$  worlds, and some most highly ranked ( $p \vee \sim q$ ) world is a  $\sim q$  world. Suppose (for reductio) that the consequent is false: some best  $\sim q$  world  $k$  is a  $p$  world. Now since  $k$  is a best  $\sim q$  world and since some best ( $p \vee \sim q$ ) world is a  $\sim q$  world, we also know that  $k$  is a best ( $p \vee \sim q$ ) world. Since  $k$  also is a  $p$  world, this means that  $k$  also is a best  $p$  world. So some best  $p$  world is a  $\sim q$  world, hence not a  $q$  world, which contradicts the assumption that all most highly ranked  $p$  worlds are  $q$  worlds. QED.
18. In fact it seems to us plausible that sentences of the form “ $X$  ought to do  $A$ ” are usually paraphrased by sentences employing our tout court deontic operator as  $!_i p$  where  $p$  expresses the proposition that  $X$  brings it about that she does  $A$ . The temporal parameter which is implicit in English ought statements is made explicit in 3-D.
19. Cf. our [23]. For a similar idea, cf. Feldman [14].
20. But in other examples where  $r=k$  is not settled the inference from sentences represented by 26# and 27# to the sentence of which 28# is a paraphrase can be shown to be invalid (*pace* Castañeda). Suppose for instance that Sally promises her friends never to bungee-jump off the Brooklyn Bridge and also promises a sports promoter to congratulate the first person to bungee-jump off the Brooklyn Bridge. And suppose that (despite the first promise) in 1997 Sally becomes the first person to bungee-jump off the Brooklyn Bridge, but this is not yet settled (and it is still within her power to avoid doing it). So if  $P_x$  says “Sally congratulates  $x$ ,” and  $r$  is the term “the first person to bungee-jump off of the Brooklyn Bridge,” and  $k$  refers to Sally, and  $t$  is now, both 26# (Sally ought tout court at  $t$  to congratulate the first BB bungee jumper) and 27# (Sally is the first BB bungee jumper) are true, but 28# is false (i.e. it is false that Sally ought tout court at  $t$  to congratulate herself; this is false because of the first promise she ought tout court at  $t$  not be the person to whom the congratulations are due, i.e.  $!_{it}\sim(r=k)$ ). 27# is true at the actual world of the story because it will later become settled that  $r=k$  even though it is not settled now. So the inference from 26# and

- 27# to 28# is invalid; and while the inference from 26# and  $S_i(r=k)$  to 28# is valid,  $S_i(r=k)$  is false. So even though both 26# and 27# are true in the story there is no sound inference to 28#.
21. We discuss good Samaritan paradoxes at length in [23]. There we also consider the “gentle murder paradox” which Castañeda called “the deepest paradox of deontic logic” and which cannot be dissolved by the p/P distinction. However it succumbs to the treatment that we sketched for the knower.
  22. Clauses (ii) and (iii) are intended to guarantee that every practicion is either legitimate or illegitimate. Castañeda polished this account in various ways (cf. [12]) but the refinements do not affect the main problems which we raise for the account.
  23. One way which might get Castañeda out of the trilemma is to modify the semantical condition so that deontic alternatives to  $w^*$  need agree with  $w^*$  only with respect to certain facts. But exactly how this idea can be implemented while still capturing the circumstances/focus condition is not easy to see.
  24. If this isn't bad enough it also follows that John cannot e.g. wish to A while he intends to  $\sim A$ . Castañedeian semantics and Supervenience and John's hope require that A is legitimate while these and John's wish require that  $\sim A$  is legitimate. But that is contradictory.

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