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CONDITIONAL AND HABITUAL ANALYSES OF DISPOSITION ASCRIPTIONS

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ABSTRACT. I argue that Michael Fara's so-called habitual analysis of disposition ascriptions is equivalent to a kind of *ceteris paribus* conditional analysis which has no evident advantage over the simpler *ceteris paribus* conditional analysis already considered in C. B. Martin's "Dispositions and Conditionals". In §I, I introduce Martin's challenge to conditional analyses of disposition ascriptions. In §II, I describe an unsatisfactory hypothetical response to Martin's challenge, explaining why it is lacking in just the same respect as the *ceteris paribus* conditional analysis already considered by Martin. In §III, I show that Fara's habitual analysis is equivalent to the hypothetical analysis described in §II. In §IV, I ask whether the feature of Fara's analysis that makes it equivalent to a *ceteris paribus* conditional analysis could be harmlessly excised, and I point out that without that very feature, Fara's analysis would be subject to familiar counterexamples to conditional analyses of disposition ascriptions.

I. THE REFUTATION OF THE SIMPLE CONDITIONAL ANALYSIS

Not long ago, most everyone thought that disposition ascriptions – claims of the form '*x* is disposed to *R* when *S*' – could be straightforwardly analyzed in terms of counterfactual conditionals, as follows.

The Simple Conditional Analysis (SCA)
x is disposed to R when $S \leftrightarrow (S(x) \mathrel{\Box\!\!\to} R(x))$

Now everyone knows that they can't. SCA was refuted by C. B. Martin,[1] using counterexamples of the following sort. (i) Suppose that vase *v* is fragile – *viz.*, disposed to break when struck – but that *v* is protected by a benevolent god who would make *v* lose its fragility just before being struck, were anything to strike it. *v*, then, would not break if it were struck, and yet *v* is fragile. (ii) Suppose that vase *v** is *not* fragile, but that a malevolent god ensures that, were anything to strike *v**, *v** would become fragile just before being struck, and would break upon being struck. Then *v** would break if struck, though *v** is not fragile. Cases like these – collectively known as *finks* – refute SCA in both directions. The natural response to finks is to amend SCA with a mention of the categorical bases of dispositions: if *x* is disposed to *R* when *S*, then *x* has some intrinsic property *P* in virtue of which the

[1] "Dispositions and Conditionals", *Philosophical Quarterly*, 44 (1994), pp. 1-8.

counterfactual $S(x) \mathrel{\Box\!\!\to} R(x)$ is true. One might suggest that x is disposed to R when S at a time t if and only if x has at t an intrinsic property P such that if S were the case at t and x retained P for some time after t, then x would R. This, in rough outline, is David Lewis's suggestion,[2] but it too is false, because dispositions can have *antidotes*. The paradigm example is a poison which is disposed to kill when ingested but which has, in the literal sense, an antidote. A lethal poison that is ingested together with an antidote will retain the categorical base of its disposition to kill when ingested, and along with it the disposition itself, but it will not kill though it *is* ingested.[3] Similarly, the manifestation of almost any other disposition can be prevented without removing the disposition's categorical base.

II. *CETERIS PARIBUS* SOLUTIONS

The problem could be described in the following, suggestive terms. The flaw in SCA is just that it has exceptions. So, in fact, SCA is correct – except for those exceptions! SCA is true in all but exceptional cases. Why not, then, qualify SCA by explicitly excluding the exceptional cases? This could be done by finding an operator '**C**' for which the following holds.

The Ceteris Paribus Conditional Analysis (CPCA)
x is disposed to R when $S \leftrightarrow \mathbf{C}(S(x) \mathrel{\Box\!\!\to} R(x))$.

Now suppose a philosopher proposes CPCA, adding the gloss: "'$\mathbf{C}\varphi$' is to be read as '*Ceteris paribus, φ*'". One might respond, as Martin did after anticipating this reply, that the *ceteris paribus* clause (*CP-clause*) in CPCA must be understood so that it excludes just those cases in which a fink (or an antidote, though Martin did not consider them) produces a counterexample to SCA. But then what do all possible finks and antidotes have in common? The answer seems to be: just that they make one side of the equivalence in SCA true while making the other false.[4]

Suppose that the philosopher who proposed CPCA responds by adding yet another operator to his analysis:

The Revised Ceteris Paribus Conditional Analysis (RCPCA)
x is disposed to R when $S \leftrightarrow \mathbf{I}_x\mathbf{C}(S(x) \mathrel{\Box\!\!\to} R(x))$.

And suppose he adds the gloss: " '$\mathbf{I}_x\varphi$' is to be read as 'x has an intrinsic property in virtue of which it is the case that φ' ". What should we say in response?

[2] "Finkish Dispositions", *Philosophical Quarterly*, 47 (1997), pp. 143-159. Lewis's analysis is a good deal subtler than this – and hence not suitable to be stated in full detail here – but no matter, it suffers from the same counterexamples: see A. Bird, cited below.

[3] A. Bird, "Dispositions and Antidotes", *Philosophical Quarterly*, 48 (l998), pp. 227-234, discusses a variety of examples.

[4] Martin, "Dispositions and Conditionals", pp. 5-6.

Here is one plausible reply.

'In virtue of' operators are *factive*: if φ is the case in virtue of something or other, then φ, period. So, RCPCA implies that if x is disposed to break (B) when struck (S), then, *ceteris paribus*, $S(x) \mathrel{\Box\!\!\rightarrow} B(x)$. But how are we to understand this '*ceteris paribus*'? What cases are to be excluded? What we want this phrase to exclude are the finks and the antidotes. But being told that the state of affairs that, *ceteris paribus*, $S(x) \mathrel{\Box\!\!\rightarrow} B(x)$, obtains in virtue of an intrinsic property of x's is not helpful here. What we want to know is what that state of affairs *is*. The detour via '$\mathbf{I}_x$' brought us right back to Martin's question about precisely which counterexamples to the conditional '$S(x) \mathrel{\Box\!\!\rightarrow} B(x)$' are to be understood as being excluded by the CP-clause in CPCA. RCPCA offers no advantage over CPCA, which, provided that the CP-clause is appropriately understood, already excludes finks and antidotes. The problem with CPCA is just that it seems to be impossible to say what an appropriate understanding of the CP-clause is without mentioning dispositions.

With a few substitutions, Martin's own conclusion regarding CPCA can be adapted to the present context:

> What the objection shows is that there is a conditional equivalent to (A) ['x is disposed to B when S'], viz., (B') ['*Ceteris paribus*, $S(x) \mathrel{\Box\!\!\rightarrow} B(x)$']. But one cannot reduce (A) to (B'), for (B') has to be construed so as to require the intelligibility of (A) prior to any reduction. Without understanding (A) we do not know what to do with the *ceteris paribus* clause. By contrast, (B) ['$S(x) \mathrel{\Box\!\!\rightarrow} B(x)$'] does not have to be so construed. But (A) and (B) are not equivalent. In conclusion, there can be no conditional which is both logically equivalent to a categorical power ascription and such as to support the reduction of power or dispositional predicates.[5]

I have gone into some detail in describing a hypothetical unsatisfactory solution to Martin's problem for conditional analyses of disposition ascriptions. I have done so because this unsatisfactory solution is logically equivalent to the most recent attempt at a conditional analysis of disposition ascriptions, which is due to Michael Fara.[6] Fara would not see matters this way, as he denies being in the conditional analysis business,[7] but the equivalence can be shown.

III. THE HABITUAL ANALYSIS

Fara proposes the following

The Habitual Analysis (HA)
x is disposed to R when $S \leftrightarrow \mathbf{I}_x$($x$ Rs when S),

[5] *Ibid*., p. 6. In the original, (A) is 'The wire is live', (B) is 'If the wire is touched by a conductor then electrical current flows from the wire to the conductor', and (B') is 'If the wire is touched by a conductor and other things are equal, then electrical current flows from the wire to the conductor'.

[6] "Dispositions and Habituals", *Noûs*, 39 (2005), pp. 43-82.

[7] *Ibid*., p. 65.

where the operator '$\mathbf{I}_x$' is to be read just as in RCPCA: 'x has an intrinsic property in virtue of which (it is the case that). . . '[8] But what is its operand? It might appear to be a conditional, or perhaps a conditional qualified by a quantificational adverb such as a CP-clause, but Fara says it is nothing of the sort. According to Fara, the operand of '$\mathbf{I}_x$' in HA is a special kind of sentence called a *habitual*, which is not logically equivalent to any conditional, or any quantificational adverb/conditional combination.

Habituals are sentences like:

(1) Mary smokes when she gets home from work.

(2) Peter sings when he's in the shower.

(3) Alfred builds houses.

(4) Mary handles the mail from Antarctica.[9]

These sentences report *habits*, and they cannot be analyzed as conditionals, if only because (3) and (4) only contain one clause each. (1) and (2), on the other hand, look like they might at least contain conditionals: (1) and (2) respectively suggest the conditionals:

(1 *) For all times *t*, if Mary gets home from work at *t*, then she smokes at *t* (or some time shortly after *t*).

(2*) For all times (intervals) *t*, if Peter is in the shower at *t*, then Peter sings at *t* (or some time during *t*).

(1) and (2) cannot, however, be logically equivalent to these – so it is said[10] – because (1) and (2) "tolerate exceptions". What this means is that (1) and (2) can both be true even if there are counterexamples to (l *) and (2*): Peter need not sing during every shower he takes for it to be the case that Peter sings when he's in the shower, etc. "A natural suggestion", Fara says, "is that habituals have something to do with what is normally, or typically, or generally

[8] *Ibid*., pp. 69-70. This section of Fara's paper is titled 'The semantics of DISP' ('DISP' is Fara's spelling for '**I**'), but instead of giving a semantics it only gives an English translation of '**I**'. No recursion clause for '**I**' usable in a truth definition can be recovered from his statement that '$\mathbf{I}_x\varphi$' is true iff x has an intrinsic property in virtue of which φ (p.70). The clause cannot be

'$\mathbf{I}_x\varphi$' is true iff x has an intrinsic property in virtue of which 'φ' is true,

since it being the case that φ in virtue of something and it being the case that 'φ' is true in virtue of something are two quite different conditions: one concerns a particular sentence, the other does not.

[9] These examples are from Fara, pp. 64-65.

[10] By Fara and many others; see L. K. Schubert and F. J. Pelletier, "Problems in the Representation of the Logical Forms of Generics, Plurals, and Mass Nouns" in E. Lepore, ed., *New Directions in Semantics* (New York: Academic Press, l987), pp. 385-451, for a (somewhat outdated) review of the literature.

the case". Indeed, Fara observes, if we insert 'normally', 'typically', or 'generally' before the main verb in any of (1)-(4), we get a sentence not appreciably different in meaning from the original one. Fara considers the proposal

(N) x Rs when $S \leftrightarrow$ normally, if S then x Rs,

"where the 'if … then' connective … is some kind of conditional connective, perhaps material or perhaps counterfactual".[11] He rejects (N) on the basis of alleged counterexamples. More importantly, however, Fara also rejects the analyses that result from (N) by replacing 'normally' with 'typically' and 'generally' – and, moreover, any analysis resulting from replacing 'normally' in (N) with any quantificational adverb. He says not only that "(*i*) 'normally' is (in some cases) the wrong quantificational adverb to use", but that "(*ii*) conditional sentences are the wrong sort of thing to be modified by whatever the right quantificational adverb might be".[12]

(*ii*) is a strong and surprising claim. It amounts to saying that there is no quantificational adverb '**A**' such that the following holds

Quantificational Adverb Analysis
x Rs when $S \leftrightarrow \mathbf{A}(S(x) \Rightarrow R(x))$,

where '$\Rightarrow$' is a material or some stronger kind of conditional. Right or wrong, this claim is at odds with the analysis Fara himself proposes for habituals, since his analysis is logically equivalent to a Quantificational Adverb Analysis, as will be shown below.

What are quantificational adverbs? Like Fara, I will assume Lewis's treatment of adverbs like 'always', 'normally', 'usually', etc. as quantifiers over cases.[13] For our purposes, the idea is accurately enough conveyed by the examples:[14]

[11] *Ibid*., p. 64.

[12] *Ibid*., p. 65.

[13] D. Lewis, "Adverbs of Quantification", in E. L. Keenan, ed., *Formal Semantics of Natural Language* (Cambridge University Press, l975), pp. 3-l5. See Fara, "Dispositions and Habituals", p. 80, note 34.

[14] In what follows I am not being entirely true to Lewis's analysis, which treats quantificational adverbs as unselective quantifiers, which bind all free variables (not only all occurrences of a particular variable) within their scope. Instead, I introduce a special case variable to be bound by ordinary quantifiers. This also seems to be how Fara means to speak of cases at pp. 66f.

Inevitably, I am riding roughshod over some subtle issues in the syntax and semantics of English. Lewis argued that the 'if' in the structure '$\mathbf{A}$(if φ, ψ)', with '**A**' a quantificational adverb, is not part of a conditional but of a restrictor clause 'if φ', and his argument might appear to support Fara's claim (*ii*). However, Lewis's argument is undermined by more recent work that treats the antecedents of conditionals themselves as restrictors: see the papers collected in A. Kratzer, *Modals and Conditionals* (Oxford University Press, forthcoming).

I always have Belgian beer with my cheese $\leftrightarrow$ for all cases c (such that I am having cheese in c), I have Belgian beer with my cheese in c.

Normally, I order a Trappist beer $\leftrightarrow$ for all normal cases c (such that I order a beer in c), I order a Trappist beer in c.

Usually, I buy my cheese at the Oxford Covered Market $\leftrightarrow$ for most cases c (such that I am buying cheese in c), I buy my cheese at the Oxford Covered Market in c.

Often, aside from explicit restrictions like 'normal', quantificational adverbs involve implicit restrictions supplied by context, such as the parenthesized clauses above.

To say that, normally, x would R if it were the case that S, then, is to say that for all normal cases c (perhaps satisfying some contextually supplied property P), x would R if it were the case that S. The case quantifier here needs a variable to bind, so let us posit in each predicate an additional argument place occupied by a case variable, so that '$S(x, c)$' and '$R(x, c)$' express the claims that the stimulus and response conditions of a schematic disposition hold in case c. Fara's (*ii*), then, concerns the following type of analysis of habituals.

(Q) $\quad x\ R$s when $S \leftrightarrow (Qc\text{: } A(c))\ (S(x, c) \Rightarrow R(x, c))$.

And (*ii*) can be restated thus: there is no case quantifier 'Q', no restriction 'A', and no conditional '$\Rightarrow$' for which (Q) holds.

Instead, Fara proposes what he calls an "exception-tolerating semantics" for habituals. It is:

Exception-Tolerating Semantics (ETS)
"A habitual is true iff every exception to the habitual is a permissible exception".[15]

I take it we can express the same idea without the truth predicate and quote marks, as: x Rs when S iff every case in which S but x does not R (viz., every "exception to the habitual") is a permissible exception. That is:

ETS*: $\quad x\ R$s when $S \leftrightarrow \forall c\ [(S(x, c) \wedge \neg R(x, c)) \rightarrow P(c)]$,[16]

where 'P' means *is a permissible exception*.[17] However, ETS* is equivalent to

[15] "Dispositions and Habituals", p. 66.

[16] I will use '$\rightarrow$' for the material conditional.

[17] A case may be a permissible exception to one habitual while failing to be a permissible exception to another, so how can this notion be expressed by a monadic predicate? Reply: I assume that "is a permissible exception" is a context-sensitive predicate: what it takes to satisfy it depends on the speaker's intentions, and these will be different for different generalizations. "*Ceteris paribus*" is context-sensitive in a similar way.

$x\ Rs$ when $S \leftrightarrow \forall c\ [\neg P(c) \rightarrow \neg(S(x, c) \wedge \neg R(x, c)]$,

which is equivalent to

$x\ R$s when $S \leftrightarrow (\forall c\text{: } \neg P(c))\ (S(x, c) \rightarrow R(x, c))$,

which is an instance of (Q), so if this is what Fara intends, he has given us a Quantificational Adverb Analysis.

But this isn't quite what Fara intends. His case quantifiers range over possible as well as actual cases. Fara notes that if our domain of quantification contained only actual cases, then all habituals whose 'when'-clause is false in every actual case would be true by ETS, but we don't want to say, e. g., that

(5) This toaster oven crushes oranges when it's switched on

is true just because the toaster oven is never switched on. Non-actual cases, too, must be considered. But which ones? Fara reasonably observes that it cannot be all possible cases, as that would make every habitual necessarily true if true at all (because it is not a contingent matter what the totality of possible cases is). Fara's solution: "we should consider only those exceptions, if there are any, in the possible worlds closest to the actual world in which the *when*-clause of a habitual is satisfied".[18] On this view, then, 'x Rs when S' is true iff every case c in which $\neg R(x, c)$ in every closest $S(x, c)$-world is a permissible exception." Since the actual world is the unique world closest to itself, for habituals whose S-clause is true in some actual case this amounts simply to the requirement that every actual case c in which $S(x, c)$ and $\neg R(x, c)$ be permissible. But in those cases in which the S-clause is not true in any actual case, our new analysis says we must inspect all worlds closest to the actual world at which $S(x, c)$ holds for some case c, and verify that each such case for which $\neg R(x, c)$ holds is a permissible exception, to be satisfied that 'R when S' is true. This gives the intuitively correct result for (12): in none of the closest worlds in which our toaster oven is switched on in some case c does it crush oranges in c, so (5) is false.

Fara's real analysis, then, is:

ETS†: x Rs when S $\leftrightarrow$ every case c in which $\neg R(x, c)$ in every $S(x, c)$-world closest to the actual world is a permissible exception.

That ETS† is a Quantificational Adverb Analysis is easy to see once it is given a more formal expression. Since we are now considering worlds as well as cases, let us add a world argument to 'R', so that '$R(x, c, w)$' says that x Rs in case c in world w, and let us abbreviate 'w is an $S(x, c)$-world closest to the actual world' as '$SC(x, c, w)$', and 'c is a permissible exception', again, as '$P(c)$'. Now ETS† becomes (a), which is equivalent to (b), which is equivalent to (c).

[18] *Ibid.*, p. 17.

(a) x Rs when S $\leftrightarrow \forall c \, \forall w \, [(SC(x, c, w) \wedge \neg R(x, c, w)) \rightarrow P(c)]$

(b) $\leftrightarrow \forall c \, \forall w \, [\neg P(c) \rightarrow (SC(x, c, w) \rightarrow R(x, c, w))]$

(c) $\leftrightarrow (\forall c \colon \neg P(c)) \, \forall w \, (SC(x, c, w) \rightarrow R(x, c, w))$

The right-hand side of (c) is interesting because – ignoring the case quantifier for now – it says that:

Every $S(x, c)$-world closest to the actual world is an $R(x, c)$-world.

This, of course, states the truth condition the standard, Lewis-style semantics for counterfactuals assigns to '$S(x, c) \mathrel{\Box\!\!\rightarrow} R(x, c)$'.[19] In other words (now including the case quantifier), ETS† is equivalent to:

(d) x Rs when $S \leftrightarrow (\forall c : \neg P(c)) \, (S(x, c) \mathrel{\Box\!\!\rightarrow} R(x, c))$

And (d) is an instance of (Q), wherefore ETS† is a Quantificational Adverb Analysis.

What is the quantificational adverb in (d)? To say that something φ holds in all cases except for some unspecified range of exceptions is to say very little. One says just as little – and just as much – by saying that φ is the case in all cases in which other things are equal, without specifying the respects in which they must be equal: that is, by saying, "*Ceteris paribus*, φ". (d), then, can also be written as:

x Rs when $S \leftrightarrow \mathbf{C}(S(x) \mathrel{\Box\!\!\rightarrow} R(x))$.

And when we plug this into Fara's HA, the result is

x is disposed to R when $S \leftrightarrow \mathbf{I}_x\mathbf{C}(S(x) \mathrel{\Box\!\!\rightarrow} R(x))$,

which is RCPCA, the analysis we found to be in need of further explanation in §II.

IV. HABITUALS AS PRIMITIVE?

Perhaps, it might be suggested, the real interest of Fara's analysis lies elsewhere. True, when we follow Fara's analysis all the way through, we end up with something equivalent to a *ceteris paribus* conditional analysis, but perhaps we can learn something by taking habituals as primitive: the reduction of disposition ascriptions to something as familiar as habituals (and the somewhat less familiar '**I**' operator) might be a step forward. But in fact the

[19] Nearly enough, anyway. I am making use of the illegitimate 'limit assumption' that for each proposition p and each world w, if p is true in any world, then there is a nearest world to w in which p is true; but then so is Fara. The equivalence would remain if Fara had taken the illegitimacy of the limit assumption into account in stating his (HA). See Lewis, *Counterfactuals* (Harvard UP, 1973), §1.4, for discussion.

plausibility of Fara's analysis of disposition ascriptions is entirely due to his analysis of habituals: without it, the analysis falls victim to finks and antidotes. For recall that the operator '**I**' in

$$x \text{ is disposed to } R \text{ when } S \leftrightarrow \mathbf{I}_x(x\ R\text{s when } S),$$

is factive, and consider an antidote scenario in which Mary is disposed to smoke when she gets home from work, but every time she gets home, her roommates confiscate her cigarettes, preventing her from smoking. Because '**I**' is factive, HA falsely implies that the habitual 'Mary smokes when she gets home from work' is true in this scenario. Next consider the finkishly protected vase from §I: it is disposed to break when struck but, thanks to the benevolent god, it does not break when struck. Yet HA falsely implies that the vase breaks when struck.