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Predication and Paronymous Modifiers

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'Innocence regained' is an oxymoron. Having known sin with truth-value assignments and computational, extensional valuations, semantic virginity is not something we can return to. But even so, it is not the fall from simplicity which constitutes semantic sin. Quite to the contrary, simplicity lies in the computational truth-value semantics of Frege and Tarski rather than in the semantic innocence of Russell.

Despite simplistic "correspondence theories of truth", true judgements and what makes them true are not in a simple 1-to-1 correspondence. Indeed, it is just this which makes the Russellian appeal to facts (situations, states of affairs) nontrivial. It is this which ensures that "*the slingshot*" ([2], pp. 24–26), since valid, must be viewed as a *reductio* of one or more of its (philosophically contentious) premises.

On the other hand, despite Frege, the powerful computational simplicity of standard truth-value semantics is philosophically insufficient. It fails to accommodate adequately our nested attributions of psychical states one to another. It effaces subtle but common distinctions that are based upon our discrete positionings of modifiers. It is insensitive to reasonable entailments projected from our truncated and too often inconsistent bodies of knowledge and belief.

After the age of innocence, an adult semantics must accommodate the complexities inherent in the common species of ordinary predication. The task, of course, is to do so in a thoroughly computational way. We consider next some of these types of predication, ones with some philosophical bite. It is not obvious how best to accommodate them within a fact-based semantics in a fully computational way.

1 Predication and making true What an assertion states and what makes the assertion true are often quite different things. This is not, I gather, a very controversial claim. Evidently, it is not true in general that two assertions made

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true by the same fact state the same fact. This failure is trivially evident given certain cases of implication, logical and physical, between pairs of nonequivalent assertions. John's presence, for instance, may make it true that someone is here, but an assertion of that truth does not state anything about John.

There are other cases to similar effect as well. There are ones that do not turn on implications. John perhaps is hungry and says, "I'm hungry". You, addressing a friend nearby, say, "John's hungry". Your remark and John's are made true by the fact that John is hungry. But they are not equivalent assertions. And if assertions which imply different things are different assertions, and if different assertions assert different things, then your assertion does not state what John's states. For John's remark implies what yours does not, that the speaker is hungry.[1]

Nor is it even true that assertions of the same sentence necessarily make the same assertion. Two facing youngsters who, fists clenched, each say "I can beat you up" do not make the same claim. Further, it is common of course for assertions to be overdetermined by the facts. Many facts may individually ensure the truth of what is said. Standard truth valuations for the logical principles of Addition and Existential Generalization make this clear. Mary's fatal lassa fever and Mary's fatal cancer may each individually make true the sad assertion that Mary is terminally ill, that there's some fatal condition which she suffers.

It is pretty clear, then, and commonly recognized, that our assertions are not in a simple 1-to-1 correspondence with what makes them true. It is plausible to suppose that we shall need more than simple truth-value assignments to accommodate and untangle these many-one relationships. What is not so commonly remarked, however, is that not even true "atomic" sentences stand in a simple 1-to-1 relationship with the situations that make them true.

Standard logical theory has, in particular, been insensitive to the complexities of the predicates it deploys. These complexities divide into two main sorts. There is the structural complexity of predicates themselves, their own logical form, upon which their syntactical classification depends. And there is the complication of their content which results when we position and pile up modifiers at the elements of that structural complexity.

Even the simplest predicates of English are logically complex. They consist at least of a general term, an adjective or verb perhaps, together with certain verbal auxiliaries. The verbal auxiliaries express the mood of the predicate together, in English, with things like tense and gender. Within the indicative mood, for instance, their use gives expression to the *doing*, *having*, or *being* of what the general term connotes.

When piling up modifiers, some predicates have predicates as proper parts. We say, perhaps, "John vigorously applauded loudly". The natural language predicate, 'vigorously applauded loudly', contains in turn the predicates 'vigorously applauded', 'applauded loudly', and 'applauded'. Let us call a predicate that has no predicates as parts a 'core predicate'. Let us call an atomic sentence that contains only a core predicate a 'basic sentence'. The assertive use of a basic sentence is, accordingly, a basic assertion. The proposition which it is said to express is a basic proposition. Intuitively, basic assertions are the simplest assertions relative to a given language which are made true by the situation (fact, state of affairs) *they assert.*

Not only are nonatomic assertions not basic but neither are ones with modified predicates (like 'applauded loudly'). Presumably, too, there are assertions which are basic in grammatical form although they do not assert that which makes them true. Some philosophers have viewed the classifications we make and our attributions of dispositions and tendencies in this way. (The *nature* of a chemical element, its atomic number, makes true for instance our classification of the element, our statement of the *kind* of element it is.) No doubt, then, these philosophers will gloss some grammatically basic propositions of English as not logically so, analyzing away their apparent grammatical form.

Which predicates of a natural language are logically core predicates, determining thus which assertions are basic, is a substantive question that lies beyond our present discussion. We note, though, that views on this matter have particularly pointed implications for semantical theories of perception: do we, for instance, *see*, literally see and not infer, what kind of thing is before us? Do we see this in the way in which we see what the thing before us is doing? Can we in this way see, see and not infer, what the thing before us is about to do? We have after all no senses for the kinds and tendencies of things before us as we have for their colors and surface feel.

However that may be, the present point to be emphasized is this: not even the relation between basic assertions and that which makes them true is 1-to-1. For whatever it is that makes a basic assertion true will make true an indefinitely large number of logically atomic but nonbasic assertions as well. To each true basic assertion there are an indefinite number of further true assertions with varying numbers of modifiers positioned at the discrete structure elements of its predicate, often with discrete semantical effect. The situation that makes it true to say that John applauded may make true the further assertions that he did so vigorously, and loudly, in the concert hall. John will then have vigorously applauded loudly there. (And a scrupulous reader may wonder whether it is also therefore true that John loudly applauded vigorously there.)

Those assertions which, relative to some given language, are atomic and those which are basic are not then in simple correspondence with the situations which make them true. The fact is that what is the case outruns in its specificity our expressive resources for describing it and even our perceptual capacities for observing it. There are no "atomic *situations*," and accordingly no "molecular" or quantified ones either. Real things, unlike idealizations, are indefinitely describable. Situations in this respect are like particulars but unlike theoretical entities. Particulars are indefinitely describable in ever greater detail, but a reference to a particular need not be an infinitely long description. So, too, a fact may be asserted in statements of ever greater complexity, but a statement need not be highly complex to state a fact.

Piling up modifiers we can asymptotically approach, but not capture, the determinate, underlying situation. Positioning our modifiers, we can describe different underlying situations. To say that John rudely gestured there, in that concert hall, is not to say then that he gestured rudely there, a point emphasized by Austin some time ago [1]. We distinguish the characterization of the performance of an act from a characterization of the act performed. Equally, in piling up and positioning our modifiers, we distinguish the being in given states and the having of given traits, from those states and traits themselves.

The gross syntactical structure of even simple predicates—consisting as predicates do of some general term together with verbal auxiliaries or inflections which express mood and are modified by expressions of tense—makes available at least three possible points of modification. Grammatically, at least, modifiers occur governing the predicate as a whole ("pred-mods"). Others occur with a scope internal to the predicate. Of these, some govern its general term. Others govern the copula or verbal auxiliaries ("cop-mods").

2 Predication and the copula This simple but natural characterization of the predicate has been ignored in standard logical representations. Occasionally, it has been explicitly rejected by philosophers. Professor Geach, for instance, not so very long ago wrote this:

> We need not say anything so brutal about the poor copula as Frege did; that it means nothing at all. In many Greek sentences the copula may be indifferently inserted or omitted: this I think suggests that we should regard it not as meaningless but as a trivial predicable forming operator on predicables.... The 'is' operator is like adding zero or multiplying by one. [7], p. 182

Even if Geach means to restrict his comments quite literally just to the indicative copula of English, ignoring verbal auxiliaries in general, it is nonetheless quite clear that the copula is not after all just a trivial predicable forming operator on predicables. This is quite clear, for a predicable forming operator on predicables yields a predicable when applied to one. The result then is an expression to which the operator in turn also applies. But the 'is' operator of English is not like this. The 'is' operator does not iterate.

Further, the copula of English is not an expression whose presence adds nothing to the significance of a sentence in which it appears. This is clear because deleting the copula from an English sentence in which it correctly appears does not leave, as Geach's account suggests it should, an altered sentence of synonymous sense. It leaves no significant sentence at all.

Despite this, however, it is also true that the copula is primarily a vehicle for expressing the mood of what we say. Using our expressions for the moods, we do not state but rather display what it is that we, in the production of our utterance, do. We assert, request, or query whether this or that be thus or so. If the logical and semantical significance of the copula and verbal auxiliaries resides in the display of mood alone, then these devices may quite reasonably be thought to add nothing to a semantical representation of predication as a connection of concept and object. They may be thought to add nothing to a characterization of the predicate itself. If so, then relative to the semantical complexity of the predicate and predication, Geach had it right: the use of the copula is indeed "like adding zero or multiplying by one". So far as the underlying situation which makes true a given basic assertion is concerned, the copula in its primary function as an expression of mood is a transparent device, adding nothing of substance to the predication of a general term.

It is not, however, in its primary function as an expression of mood that the copula has specific semantical importance in the characterization of predi-

cation. It is, rather surprisingly, its secondary function as a discrete location for modifiers which provides clear evidence of its significance.

We represent the gross syntactical structure of simple predicates of English as a concatenation of certain general terms with certain copulas. For the indicative mood, adopting and then ignoring here the available apparatus for the expression of class membership and inclusion, we have in addition further predicative expressions. We have expressions of the generic forms: 'Does *A*', 'Has *T*', and 'Is *C*'.

'Does', 'Has', and 'Is' are syntactical variables for species of the indicative copula. ('Does', then, must be sharply distinguished here from the imperative copula, 'Do!'. The use of 'Do!' yields, not a statement with a truth-value, but a command whose semantic values are, perhaps, either satisfaction or legitimacy values.[2]) '*A*', '*T*', and '*C*' are syntactical variables for species of general terms, ones denoting acts, dispositions and tendencies, and characteristics.

Not every copula meaningfully concatenates with every general term. 'Does red' presumably is ill-formed. The "performance copula" is not defined over adjectives like the expressions for the color qualities. Copulas are partial functions which take general terms into predicates which in turn take singular terms into truth-values. Instances of 'Does *A*' are predicates expressing the performance of deeds, the commission (or forebearance) of certain acts. In, e.g., '*is* runn*ing*', '*is -ing*' is an expression for the copula which takes the general term, '*run*', into a complete predicate. If, on an occasion of an assertive use of the predicate,what John then is doing is a value for this instance of 'Does *A*', then John on that occasion "does run;" he commits, he performs, the act of running.

Similarly, if John is blond and has the nervous habit of cracking his knuckles, then what John is and has are particular values for instances of the predicate forms: 'Is *C*' and 'Has *T*'.

Since predicates are expressions of the form: (cop Term,) we have, as we remarked earlier, the theoretical possibility of deriving at least three distinct predicates from a given predicate by the positioning of an arbitrary modifier, *M*. We have of course "pred-mods", expressions of the form: *M*(cop Term). And we have of course modifications of the general terms we use, as when we say that something is *dark* red. We have expressions of the form: (cop (*M* Term)). What is not so clear is whether or not we have logically, as we have grammatically, occurrences of "cop-mods", expressions of the form: ((*M* cop) Term).

Certainly there is a familiar range of cases in which, grammatically at least, cop-mods occur. Our expressions of mood are, after all, modified in English by expressions or inflections for tense and gender. And we attach negative particles and modal modifiers to the copula as well. We say things like "John is *not now* running", or "John is *possibly* a candidate", or "John is *partly* to blame".

Some of these modifiers of mood are substantive, like negation and tense and modality. Some are structural, like inflections for agreement in number between subject and predicate. It has been standard logical practice to ignore the structural modifications as logically irrelevant or logically redundant. It has been frequent logical practice to express the substantive modifications of the copula, like tense and negation and modality, as exportable operators which when

prefixed to a sentence, yield a sentence. The sentence with modal cop-mod, 'John *is possibly* a candidate', as well as the sentence with a modally modified general term, 'John is *a possible* candidate', are each typically construed as 'It is possible that John is a candidate'. (It is interesting to compare these occurrences of 'possible' and their treatment when 'possible' is replaced for instance by 'likely'.)

So the general question arises: may it not be that all sentences with cop-mods collapse into logically equivalent ones with repositioned modifiers? If they universally and in principle do so, then it may reasonably be assumed that the copula has no interesting semantical or philosophical significance beyond the expression of mood.

If, however, sentences with cop-mods do not collapse into equivalent sentences with repositioned modifiers, then it may reasonably be thought that the copula has after all some substantive semantical contribution to make. In this case, the interesting next task would be to isolate and determine the contribution that occurrences of the distinct species of copula make to the significance of the sentences in which they appear.

In what follows, we argue that not all occurrences of cop-mods can in fact be repositioned to other sentential locations with equivalent effect.

There is an interesting complexity to the range of occurrences of cop-mods. There is no evident, simple algorithmic principle that underlies their possible repositionings. Not all, for instance, can in a simple way be uniformly construed as sentence modifiers. Nor as subject, term, or predicate modifiers. That the table is partly wood does not mean that it is partly the case that the table is wood. Evidently, if the table is partly wood, then it partly consists of wood. That is, part of the table is wood. On the other hand, if John is partly to blame, it must not be thought that it is partly the case that John is to blame. He either is or is not. But neither is it the case that part of John is to blame. The claim is rather that John (the person, all of him!) bears his share of the blame.

Facing the complex ways in which adverbs are deployed in English, it is natural to wonder whether their distinct grammatical positionings have logically discrete scope effects. Thinking of scope distinctions, it is natural to consider modal modifiers. This is natural for we know that applications of standard logical principles, like Existential Generalization, the Substitution of Identities and the Interchange of Equivalents, within modal contexts may fail to preserve truth.

We remarked earlier that modal cop-mods do appear in English; 'possibly' and 'likely' are familiar examples. What is neither clear nor uncontentious given the sense of such familiar English examples is whether or not sentences with *these* modal modifiers positioned at the copula really are equivalent, let alone co-significant, to other sentences with the corresponding modal modifier placed elsewhere in the sentence. Despite the fuzziness of our commonsense intuitions here, there is a fairly "firm" theoretical argument to show that in principle this cannot always be the case.[3]

Sentence, predicate, and term modal modifiers each govern one or more terms, singular or general, which lie within their scope. But the modal cop-mod is unique in not doing so. Basic sentences which come to be modified in this way are truly modal and not simply assertive. However, all occurrences of the terms, singular and general, appearing within them are quite transparent. They are quite

available to applications of standard logical principles, like Substitution. But of course this is not true of other sentences with the modal modifier positioned to govern the general term, predicate, or sentence as a whole. This being so, one would expect there to be differences in the implicative powers of assertions with modal modifiers of larger scope from those with modal modifiers of most restricted scope, the modal cop-mods. Not very surprisingly, there are. Something very much like this turns out to be demonstrably the case.[4]

The simple theoretical argument that spells this out (and that is appended to this paper) is, although firm, not compellingly hard. The distinctions of scope, which in any case remain, can at a certain price be allocated to standard modal occurrences other than the cop-mod. It is as though we systematically construed sentences like 'John is possibly a candidate' as sentences which, in perspicuous logical representation, read instead something like this: 'Of John and candidacy, it is possible that he's one'. (Or, 'of John and being a candidate, that's possibly what he is'; or some such.) So construed, the cop-mod now gives way to a standard sentential modal operator; the terms, singular and general, now nominalized and indexed to associated pronomial cross-references, retain however their original transparent occurrences.

The cost of all this lies rather more in the introduction of nominalized general terms than it does in the complication of syntactical form, increased semantical complexity, or linguistic unnaturalness. The overall price will, no doubt, seem prohibitive or bargain basement just as one views abstractive references a luxury or a philosophical necessity already purchased for independent reasons.

In any case there is, then, strong if not quite compelling evidence based on scope discriminations that cop-mods, and so the copula itself, have a substantive semantic integrity of their own. They make a discrete, independent semantic contribution to the sentences in which they occur. As we suggested earlier, this theoretical conclusion is supported as well by intuitive distinctions based on the positioning of modifiers across the gross grammatical structure of the English predicate. We try next to develop this earlier, intuitive, suggestion a bit.

3 Predication and paronymous modifiers

> "At the concert, John naively vigorously applauded loudly between movements."

What John did was applaud, and that, the applause he produced, was loud. John brought into being a bit of loud applause. It was of course what John brought into being and not John's bringing it into being that was loud. On the other hand, it was John's performance of the act and not the act itself that was vigorous. John's applause was loud but his applauding was vigorous. Perhaps, given social conventions, even moderately sophisticated concert goers hold their applause to the end of things. If so, it is naive to applaud between movements. Accordingly it was naive of John to applaud when he did. In particular, therefore, it was naive of him vigorously to applaud loudly when he did. John, relative to having done that which it is naive to do, was himself naive in that respect.

Evidently, given all this, an act performed is one thing, the performing of the act another, and the resultant action a third. Further, agents implementing

the occurrences or forebearances of certain acts, themselves take on certain characteristics depending in turn upon features of each of these three things.

(Contrary to actual fact, social convention might have tolerated applause when John produced it, but proscribed its being so loud, or its being done so vigorously. That is, John might have been thought naive, not for his action, but for characteristics of the act (it was too loud), or for the manner of its production (it was done too vigorously). Of course, it might have been that it was the act itself, not its timing, that was infelicitous. Foot stomping and whistling at any time, but not applause, might have been the accepted, conventional, audience response.)

The gross grammatical structure of the statement about John might then be captured in an expression like this:

[Naively{(vigorously Does) (loudly Applaud)}](John).

Here, the action is naive, the performance vigorous, and the act loud. An unstated implication is that agent of the act is, thus, naive as well.

All this is in turn an instance of an abstractive syntactical representation of these various categories of expression, one of which runs like this:

$[Mly\{(Mly^{*}\ Cop)(Mly^{**}\ GT)\}](st)$.

Our earlier example provides evident instances of the categories of expressions for adverbial modifiers, copulae, general and singular terms occurring here.

It is our present point that instances of the cop-mod, represented here by '*Mly**', do not in general collapse into related modifiers of some other category. They are not adverbial modifiers like the pred-mod, *Mly*, or the term modifier, *Mly***. They do not collapse into a correlated adjective modifying the singular term, or a correlated sentential operator. They can be held to do so only at the cost of confusing acts, actions, and performances. They do so only by effacing the grounds we have for characterizing the agent of an act, or the situation which then obtains, in the way we do.

It is easy to miss the importance of the positioning of modifiers since the same adverb may occur, apparently with indifferent effect, at various locations across the English predicate. An assertive use of the sentence, 'John vigorously applauded the virtuoso performance' seems to state pretty much just what 'John applauded the virtuoso performance vigorously' does.

Nonetheless, despite these appearances, a modifier's location both within modifiers stacked at some one position, and among modifiers scattered across the predicate, can, and often does, have discrete semantic relevance. Modifier position often determines scope domination with respect to the general term, the copula, or predicate as a whole. Accordingly, modifiers of distinct scope are used to effect semantically discrete characterizations of acts. Some, as in the earlier example, characterize the acts performed; some, the performance of acts; and some, the actions resulting from the performances of acts.

This being so, sentences differing only in occurrences of the same modifiers differently positioned, can be used to make nonequivalent statements sometimes with different or even no mutual implicative relationships. To say that John naively vigorously applauded loudly is, we have already seen, to say something that is highly inspecific. We do not know whether John's naiveté consisted

in his acting at all, or in the act chosen, or in the manner of its being done. Evidently, then, the inspecific statement about John does not imply, e.g., that John vigorously naively applauded on the given occasion.

A more specific statement like this last one, however, may well appear to imply the original, less determinate one. If John vigorously naively applauded loudly at the concert, then it follows it seems that he naively vigorously applauded loudly there. If, on the occasion, it is naive to applaud—the act is a naive one, then, on the occasion, the performance of such an act is necessarily it seems naive—the action is a naive one. Returning to our earlier jargon, we can represent the less determinate assertion with its modifier of dominant scope in this way:

(A) [Naively{(vigorously Does) (loudly Applaud)}] (john);

and the more determinate one with its internal modifier of smallest scope, positioned at the general term, in this way:

(B) [(vigorously Does) (loudly (naively Applaud))] (john).

It appears that (B) implies, but is not implied by, (A). Later we shall argue that appearances are deceptive, that it is not true in general that statements of the form (B) imply ones of the form (A). It is not true in general that statements made with sentences with pred-mods are implied by ones otherwise the same but with the pred-mod replaced by its matching act-mod.

Regardless of this, a certain amount of diffidence is anyway required. None of the above is to say or suggest that either (A) or (B) implies or is implied by the same assertion but with the modifier positioned at the copula as a performance modifier, as it is in (C):

(C) [(vigorously (naively Does)) (loudly applaud)] (john).

An assertive use of (C), if it occurred, would state that John vigorously applauds naively. This is a characterization of manner which outruns our, or at least my, categories for applauding. I do not understand how *to do* or fail to do it in *that way*. But the same general point can perhaps be made with a shift of example. To say that John naively gambled against the house professional is not to say that he gambled naively against him. And neither statement implies the other. On the one hand, John may for all we know have had an exaggerated sense of his talents and chances but have played a sophisticated game of poker. Or, on the other hand, John may for all we know have played quite naively and with total disregard for the odds but have done so for very sophisticated reasons. So far as the logic of it all is concerned either assertion might well be true and yet the other false.

It might seem that certain principles are suggested by examples like these. It might seem that sentences with act modifiers imply, but are not implied by, ones with modifiers of the corresponding action predicate. But sentences with "adverbs of manner", the cop-mods which qualify our expressions for performances of acts, neither imply nor are implied by matching ones with the modifier placed to govern the general term or predicate as a whole.

But even here, the suggestions require at least some qualification. It is not true, for instance, that act modifiers universally support the use of matching

pred-mods. it certainly is not true for those modifiers of act expressions which are in English only adjectival, rather than adverbial, in grammatical form. A brutal murder is a brutal murdering, an action brutally carried out. But a grisly murder is not a grisly murdering. It is a certain act and not an action so carried out. There is no matching adverbial predicate modifier and no matching adverb of manner. Not all modifiers of acts characterize the ways in which the acts are performed or the actions resulting from their performance.

Our earlier example makes available further points of positioning of a ubiquitous adverbial modifier like 'naively', each occurring with discrete effect. To (A)–(C) we add:

(D) [((naively vigorously) Does) (loudly Applaud)] (john),

which is to say that John naively vigorously loudly applauds, where this is understood in the sense that John does that loud act with naive vigor (perhaps to the consternation of anyone seated next to John, bumped by his churning arms). (D) is to be contrasted with

(E) [(vigorously Does) ((naively loudly) Applaud)] (john).

Here, John applauds with ungenteel loudness, inappropriate to the situation. A less determinate version of (E) is (F):

(F) [(vigorously Does) (naively (loudly Applaud))] (john),

where John's naiveté may, in contrast with (E), consist either in the act itself or its loudness. (F) is to (E) somewhat as (A) is to (B), a less specific characterization of an element in the situation. But whereas (B) appears to imply (A), with its external pred-mod, but does not, here the more specific internal characterization of the act, (E), does imply the less specific internal characterization, (F), but not conversely.

Assertions made by using sentences whose semantical structure is embodied in (A)–(F) assert different things and are made true by different situations. Some of these are pairwise unrelated logically, neither implying the other. Others stand in implicative relationships. But no one is equivalent to any other. It is, I think, pretty clear in practice that what one would theoretically anticipate anyway is in fact the case. Modifiers sprinkled across the gross structure of simple predicates occur with discrete effect, an effect not captured by repositioning them as sentence operators for instance or reducing them all, say, to pred-mods.

This is a point capable of generalization. It holds of all simple predications, even ones with different copulas, just as it holds of those predications whose verbal auxiliaries were represented here by the copula 'Does'.

Suppose, given the reading on his "breathalyzer test", that it is evident that John illegally is partially alcoholically impaired. If so, then in analogy to the predication of actions, we can now distinguish the *state* (of alcoholic impairment) which John is in, John's *being* (partially) *in* that state, and the (illegal) *circumstance* resulting from his being so. It is John's impairment, not its being alcoholic, which is partial. It is the circumstance of John's being in that state on that particular occasion which is illegal, not the state itself. It is the state of impairment which is alcoholic, not John's being in it.

The semantic scopes of these discrete elements and their modifiers can be

captured in the following canonical syntactical representation, which is the analogue for predications with the copula 'Be' of that which was introduced earlier for the predication of actions using the copula 'Does':

[Illegally{(partially Be) (alcoholically Impaired)}] (john).

Philosophers like Austin and Vendler have earlier on distinguished deeds from doings based upon the positioning of adverbial modifiers (see [1] and [9]). Vendler in doing so recently, noted a kind of process/product ambiguity in occurrences of nominalized expressions for actions [9]. These sometimes submit to a kind of "performance test". It may for instance both be said that vivesection is a wicked thing but also that it is a messy thing. That the former characterizes the action but the latter the doing of the act is suggested by the fact that we feel it quite correct to say that vivesection is messy *to do*, but feel it is at best marginally correct to add 'to do' to the statement that vivesection is wicked.

Whatever the force, finally, of the "to-do test" in capturing our linguistic intuitions about actions, it is shared equally by similar "tests" for predications involving the copulas 'Be' and 'Have'. Beauty, for instance, is both a hereditary trait and, in our culture at least, an overrated one. But it is *the having* of the trait, the being beautiful, which is overrated. It seems at best awkward to say that beauty is a hereditary trait to have. We distinguish the trait had from the having of it quite as much as we distinguish an act which is performed from a performance of the act.

Equally, we distinguish what one is, poor perhaps, from one's being so. Poverty, for instance, is both a deplorable thing and an economic thing. But while it seems all right perhaps to say "Poor, that is a deplorable thing to be", it seems at least awkward to say "Poor, that's an economic thing to be".

I do not know how much weight one can place on examples like these. They seem more suggestive than compelling. Our present interest lies more in the symmetry than in the force of the "to do", "to be", "to have" tests. The fact is that the different copulas make available a common pattern of similar distinctions, ones based upon the common form of predication and possibilities of modification which their use displays. The distinctions which seem so palpably evident in the characterization of actions are matched by comparable, if less evident, distinctions to be drawn in our attributions of characteristics, traits, and tendencies to things.

The underlying semantics common to these species of indicative predication, while less austere and less simple than that familiar from the age of innocence, is not difficult to sketch. To each general term there is associated a set of acts, traits, or states. "Standard"[5] general term modifiers are functions from such sets into subsets of them. The copulas are partial functions from the appropriate general term sets into sets of individuals. Intuitively, these are those individuals which perform the act, or have the trait, or are in the state. That is, the copulas, when attached to appropriate general terms, yield predicates. Copmods, as functions which themselves have copulative functions as arguments and functions of general term sets as values, similarly yield (complex) expressions which take general terms into predicates. To each pred-mod there is associated a function which takes the set of individuals associated with a predicate into a

subset. That is, pred-mods when attached to predicates, yield predicates. Finally, an atomic indicative sentence is assigned one of the values, Truth or Falsity, just as the entity assigned to its singular term belongs or not to the set associated with the predicate which occurs in the sentence.

The interest in the semantics underlying copulative predications lies not in its implementation so much as in its accommodation of the fact that the same modifier word may occur at different positions in a predicate. These occurrences of such a word accordingly are assigned to different semantical categories. These occurrences of the same word are not then occurrences of the same modifier. They are paronymous occurrences of different modifiers. The important question arises then: In what does the common lexical content of these paronymous modifiers, both adverbial and adjectival, consist? How, semantically, can we capture and represent that?

This is not, so far as I can see, a matter of logical form alone. It is not from modifier positioning alone that we can read off implicative consequences for the same modifier repositioned. We do so only with the help of substantive, perhaps defeasible, *ceteris paribus*, generalizations. John's action at that point of the concert was, if spontaneously done in ignorance of the social understandings which govern our behavior at these affairs, naive. It is not that it was an inappropriate act. It is not that the act was performed in an inappropriate manner. Rather, John, on the occasion, can be said to be naive for his action; and John's action can be said to be a naive one. Its occurrence indicates, other things equal, John's ignorance of the behavior appropriate to such occasions and displays the naivete of his action.

If this is true, if, for instance, the truth of sentences with adverbial act-mods does not alone guarantee thereby the truth of sentences otherwise the same but with the modifier repositioned as a pred-mod, then earlier appearances were indeed deceptive. Instances sharing the form of (A) are not implied by instances of (B). More generally, although modifiers in stacked occurrences piled up at some common position may do so, paronymous modifiers distributed across the structure of a predicate do not ensure without supporting linking generalizations any implications between the sentences in which they occur. A counterexample to the appearances to the contrary is the following instance of (B):

> "Sophisticatedly, the politician naively moralized professionally to his local constituency about abortion."

I contrast the politician's naively moralizing, a characterization of act he performed, from his moralizing naively. The latter, had it occurred, would have been a characterization of his performance of the act. His performance was, however, said to be a professional performance and his resultant action a sophisticated one. The predicate of the sentence has, in our earlier style of representation, the following form:

> [Sophisticatedly{(professionally Does) (naively Moralize)}).

This is not to characterize the politician's action as inconsistent. It is not at once both a naive and a sophisticated one, as by implication it would be if instances of (B) implied the matching instances of (A). Given the assertion, the politician may well be considered professionally smooth and oily, one who glibly mouths

a naive folk morality for his constituents. He ought not be considered inconsistent.

Given the logical discreteness and independence of differently positioned paronymous modifiers, the situations which make true statements of these sorts will be themselves distinct situations. An adequate situational semantics should capture this circumstance while accommodating the common lexical content of such modifiers of different semantical categories.

NOTES

1. See [4]. In developing what follows I lift both text and ideas directly from [4], [5] and [6].
2. Castañeda has independently developed and exploited over the years a unique syntactical and semantical characterization of the deontic copula in a number of important works with interesting philosophical applications. Hall, long ago in an important but neglected work [8], argued for a certain special characterization of "the normative copula."
3. A version of the argument, which was presented in [6], is appended below.
4. Ibid.
5. In the sense of [3], pp. 329ff.

APPENDIX

1 World-theory To accommodate formally the full range of cases and yet preserve the necessary distinctions of scope, we mark all terms, singular and general, simple (like proper names and adjectives) and complex (like definite descriptions and ascriptions), with explicit representations of their scope. In mimic of those that Russell introduced for definite descriptions, scope markers are silent prefixes. They indicate nothing of the nature of the expression whose scope they mark. They add nothing to the content of what is expressed. They function instead as a sort of punctuation device, making explicit what otherwise might be tacit in the use of a term.

Lower-case '*s*' will be our syntactical variable for any singular term, simple or complex. Bracket '[*s*]' is its associated scope-marker. Upper-case '*G*' is a syntactical variable for any general term, simple or complex. Bracket '[*G*]' is its associated scope-marker. As a representation, indifferently, of occurrences of the copula or its verbal surrogates, we introduce the special operator, 'cop'. 'Cop' flanked left and right by a general term and a singular term respectively, each carrying its associated scope-marker, enclosed in parentheses, constitutes a sentence.

For unmodified, extensional sentences the scope-markers of the terms may be brought forward in any order and equivalently prefixed to the sentence as a whole. But with the presence of modifiers a textured range of scope distinctions becomes available. This is particularly pointed with appearances of nonextensional modifiers, ones the presence of which renders the contexts which lie in their scope opaque to the application of certain standard logical rules.

Consider now some modal operator, *M*, sprinkled across sentences with terms of varying scope. Consider an example we mentioned earlier as an instance of this. There are grammatically distinct expressions of possibility like these:

(6) It is possible that John is a candidate.
(7) John is possibly a candidate.
(8) John is a possible candidate.

It is natural to view the modal operator of (6) as having largest scope. If so, its use yields an assertion *de dicto*. The singular term 'John' and the general term 'candidate' lie internal to the modal operator. (6), then, has the logical form:

(10) $M[s][G](G \text{ cop } s)$.

Equally, it is natural to view (8) as containing a "transparent" occurrence of its singular term; it is a *de re* sentence with respect to its subject, having the form:

(11) $[s](M[G]G \text{ cop } s)$.

(7) is a *de re* sentence with respect to both of its terms, singular and general, and has the form:

(12) $[s][G](G\ M(\text{cop})\ s)$.

Indeed, exploiting these scope distinctions, it is natural to add as well:

(9) With respect to being a candidate, it's possible John's one;

this last being an instance of

(13) $[G]M[s](G \text{ cop } s)$,

a sentence which is *de re* with respect to its general term only.

The effect of positioning modifiers with respect to scope markers is quite like that, e.g., of combining quantifiers with other operators. We recall Russell's definite descriptions in the presence of negation. We think of the Barcan formula and its converse, where modalities occur nested with quantifiers. It remains only to show that the scope relationships displayed in the different positionings of the modifiers relative to scope markers of the terms may have explicit, distinct semantical interpretations. These interpretations will show that possible distinct sentences stand logically in distinct inferential relationships. In particular, sentences with the modal cop-mod do not then collapse into equivalent sentences with the modal modifier positioned elsewhere.

We can establish these results by exploiting the familiar "possible worlds" interpretations of modal sentences. We do so for ease in making our case, quite without philosophical presumptions concerning the appropriateness of taking literally these interpretations of modality.

We think, then, of possibility as truth in some world "accessible" from our own. We embed this interpretation in a conservative extension of standard first-order logic. We think of the use of ordinary modal sentences as mundane assertions true or false of the actual world. To each mundane assertion of modality there exists a certain unique transcription which is a sentence of standard first-

order logic supplemented with some special predicates and constants and with some specific assumptions governing these. Mundane modal logical truths are those that have provable transcriptions in this extended first-order logic.

For these purposes we introduce the following special terms. '*TwA*' says that the proposition that *A* is true in the world *w*. '*Rww**' says that the world *w** is accessible from *w*. '*BwI*' expresses a membership relation. It says that an individual, *I*, singular or general, belongs to the world *w*.

Mundane truths are first relativized to the actual world, represented here by the special constant '*o*'. Where '*M*' is the modal operator expressing possibility, we have first '*TO*(*MA*)' for the mundane modal assertion of the possibility that *A*. The truth-in-a-world predicate, *T*, is then confined across formulas in accord with the following, familiar, stipulations:

$$Tw(MA) \quad \text{to} \quad (\mathsf{E}w^*)(Rww^* \,\&\, Tw^*A),$$

where '*M*' is the expression of dominant scope in *A*. The truth-in-a-world predicate is further confined across binary truth-functional operators, #, as follows:

$$Tw(A \,\#\, B) \quad \text{to} \quad (TwA) \,\#\, (TwB);$$

and across negation,

$$Tw - A \quad \text{to} \quad -TwA.$$

For the quantifiers, confinement proceeds thusly:

$$Tw(\mathsf{E}I)A \quad \text{to} \quad (\mathsf{E}I)(BwI \,\&\, TwA),$$

for individual variable, *I*, singular or general, and

$$Tw(I)A \quad \text{to} \quad (I)(BwI \text{ then } TwA).$$

Finally, the truth-in-a-world predicate is confined similarly across occurrences of scope markers:

$$Tw[I]A \quad \text{to} \quad (BwI \,\&\, TwA),$$

where '*I*' is a term constant, singular or general.

To each mundane modal assertion we have by these principles a matching world theory transcription in which each occurrence of the truth-in-a-world predicate is confined to atomic formulas. Depending upon assumptions laid down for the accessibility relation, *R*, various standard modal systems result. Their theorems have provable transcriptions in our extended first-order logic.

More relevant here, depending upon assumptions laid down concerning the membership relation, *B*, various distinct implicative relationships holding among sentences with the modal operator variously positioned have provable transcriptions as well. These assumptions are "population principles", principles distributing individuals and concepts across possible worlds.

On a certain population assumption, for instance, the mundane modal sentence with copula modifier implies, but is not implied by, an otherwise similar sentence but with just a general term modal modifier. And this sentence in turn, with its transparent, *de re* occurrence of the subject term, implies, but is not implied by, the matching *de dicto* sentence with its modal modifier of largest scope.

This is to say that sentences of the form (12), $[s][G](G\,M(\text{cop})s)$, imply but are not implied by those of the form (11), $[s]\ (M[G]G\ \text{cop}\ s)$. And this last implies but is not implied by those of the form (10), $M[s][G](G\ \text{cop}\ s)$, on this certain assumption about membership in possible worlds. This is so, for the transcriptions of these stand in these implicative relationships, on that assumption, in standard first-order logic.

For instance, the world-theory transcription of (12) above is

$$BOs\ \&\ BOG\ \&\ (\text{E}w)(ROw\ \&\ Tw(G\ \text{cop}\ s)).$$

The transcription of (11) above is

$$BOs\ \&\ (\text{E}w)(ROw\ \&\ BwG\ \&\ Tw(G\ \text{cop}\ s)).$$

The former transcription implies the latter on an assumption of "increasing population", the assumption that any individual, singular or general, which belongs to a given world also belongs to any world accessible from it. That is, the implication holds on the assumption that:

$$(w)(w^*)(I)(Rww^*\ \&\ BwI\ \text{then}\ Bw^*I).$$

The converse assumption of "decreasing population", the assumption that any individual, singular or general, which is a member of a world accessible from another is also a member of that other world, is an assumption sufficient to support the converses of the implications above. These population principles may well strike one as implausible; certainly, the principle of decreasing population seems wildly so.

The general point, regardless of the plausibility of the population assumptions, is this: the patterns of inferential relationships and failures show that sentences involving copula or verbal modal modifiers do not in general collapse into equivalent sentences with those modifiers repositioned. These formal consequences reinforce the informal and intuitive suggestions that the grammar of commonsense examples anyway provides.

The upshot then is that copula modifiers have an integrity of their own. They make an independent contribution to the significance of our sentences. The copula is not just a vehicle for expressing the mood of what we say, although it is also that. It is also a syntactical element upon which modifiers can be positioned with unique effect. The copula, in this secondary function, makes a necessary and substantive contribution to predication.

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