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Linearism, Universalism and Scope Ambiguities

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ABSTRACT

In this paper, I distinguish two possible families of semantics of the open future: Linearism, according to which future tense sentences are evaluated with respect to a unique possible future history, and Universalism, according to which future tense sentences are evaluated universally quantifying on the histories passing through the moment of evaluation. An argument in favour of Linearism is based on the fact future tense does not exhibit scope interactions with negation. Todd (2020, 2021) defends Universalism against this argument proposing an error theory, according to which the speakers engaged in non-philosophical conversations implicitly assume a linearist semantics of the future. In this paper, I show that an error theory is not needed for defending Universalism and that the scopelessness of negation can have another explanation. The absence of a wide-scope reading of negation characterises many other linguistic constructions: counterfactuals, vague predicates, generics and plural definite descriptions. My main thesis is that, their considerable differences aside, these constructions have something in common: they are true when the predicate applies to the members of a set, false when the predicate does not apply to the members of the set and indeterminate in the intermediate cases. When negation interacts with such constructions tends to take the narrow scope reading only. I review two types of explanations for this behaviour, one semantic and the other pragmatic. Since this explanation for the scopelessness of negation is at least as good as that of Linearism, I conclude that the argument against Universalism is ineffective.

1 | Linearism and Universalism About the Future

If the future is closed, there is only one possible history of the world. The semantics of future tense sentences is not problematic in this case. For instance, the sentence 'Ann will go to the party' is true if in the sole history to which the instant of evaluation belongs, there is a time subsequent to that instant, at which Ann is at the party.

However, if the future is open, the instant of evaluation can belong to many different histories. In this case, things become more complicated: how should we evaluate 'Ann will go to the party'? Which moments are relevant? Here, I will distinguish between two large families of semantics theories, which I call *linearist* and *universalist*. According to the former, even though many histories stem from the instant of evaluation, the evaluation of future tense sentences is relative to just one history. The theories that postulate a Thin Red Line (TRL) (see, for instance, Øhrstrøm 1981, 2009; Malpass and Wawer 2012; Wawer 2014; Wawer and Malpass 2020) and those that postulate the existence of a privileged future history even though it is indeterminate which it is (see Cariani and Santorio 2018; Cariani 2021) are part of this family. According to TRL-Linearists, future contingents are true or false depending on whether they are true or false with respect to the TRL.

In contrast, according to Universalists, we should evaluate future tense sentences by universally quantifying on the histories passing through the instant of evaluation (or on a salient subset of these histories). One member of the universalist family is the theory that I call *Aristotelian*, according to which 'Ann will go to the party' is true if in every history departing from the present instant, there is a future time at which Ann goes to the party, false if in every history, there is not a

future time at which Ann goes to the party, and indeterminate otherwise (for a semantics of the future along these lines, cf. Copley 2009). Peircean semantics is also universalist; according to this semantics, 'Ann will go to the party' is true if in every history departing from the present instant there is a future time at which Ann goes to the party, and false otherwise (see, for instance, Todd 2016, 2021). For Universalists, future contingents are either all false or have an indeterminate truth value.

Many arguments can be advanced in favour of one or the other semantics. Here, I will consider one of them, based on the interaction between future tense and negation in natural languages. Natural language negated future tense sentences do not exhibit the scope interaction we should expect if they universally quantify on histories. Let us consider:

(1) It will not rain tomorrow

(2) It is not the case that it will rain tomorrow

On Universalism, (1) and (2) should have the following truth conditions:

(1U) $\mathbf{Fn}\neg\varphi = 1$ iff in every history h passing through the evaluation instant t, there is a future time t' that is n time units distant from t, such that $\varphi = 0$ at t'

(2U) $\neg\mathbf{Fn}\varphi = 1$ iff not in every history h passing through the evaluation instant t, there is a future time t' that is n time units distant from t, such that $\varphi = 1$ at t'

However, only reading (1U), where the universal quantifier scopes above the negation, seems possible. Even in cases such as (2), the narrow scope reading is the only possible reading.

Universalists seem to have no explanation for the lack of the wide-scope reading, especially because other operators that universally quantify on possible worlds exhibit scope ambiguities with respect to negation.[1]

In contrast, Linearists can easily explain this fact; because the evaluation is relative to just one history, (1) and (2) have the following truth conditions:

(1L) $\mathbf{Fn}\neg\varphi = 1$ iff in the sole history we need to consider, there is a future time t' that is n time units distant from the instant of evaluation t, such that $\varphi = 0$ at t'

(2L) $\neg\mathbf{Fn}\varphi = 1$ iff in the sole history we need to consider, there is not a future time t' that is n time units distant from the instant of evaluation t, such that $\varphi = 1$ at t'

Plainly, (1L) and (2L) are equivalent.[2] As a consequence, Linearism, unlike Universalism, predicts the equivalence of (1) and (2). This is a point in favour of Linearism.[3]

In this paper, I will defend Universalism by showing that the non-ambiguity with respect to negation (hereafter NAN) does not characterise only the future tense but also a wide range of linguistic constructions This weakens the linearist argument against Universalism because NAN is a general phenomenon.

This line of defense is not completely new, but it is adumbrated in Copley (2009, 21–2), even though Copley's main aim is not to reply to this objection but to defend the principle of excluded middle for futurates. Copley's defense is very brief and rather stipulative. Here, I discuss a wider range of linguistic phenomena, such as counterfactuals, generics, some modals, plural definite descriptions and vague predicates. Especially, the latter have received little attention in the literature on NAN. Furthermore, Copley is silent on the reasons why these linguistic constructions are characterised by NAN and by the homogeneity presupposition. In this essay, I try to remedy to this deficiency in the last part of this paper, where I will offer some explanations for NAN.

The rest of this paper is organised as follows: in Section 2, I review Todd's defence of Universalism based on the thesis that *will* is a neg-raiser. In Section 3, I show that counterfactuals are also affected by NAN. In Section 4, other similarities between *will* and *would* are highlighted. In Section 5, I consider some other linguistic constructions affected by NAN: generics and plural definite descriptions. In Section 6, I advance the hypothesis that negation tends to take narrow scope in these constructions because they allow truth value gaps. This is supported by the behaviour of vague predicates with respect to negation. Section 7 advances two possible explanations for why gappy constructions are affected by NAN. In Section 8, I face some criticisms advanced by Fabrizio Cariani to the idea that it is possible to explain the interactions between future tense and negation appealing to other linguistic constructions. In Section 9, I return to the issue of neg-raising in light of the theory advanced in the previous sections. Section 10 concludes the paper.

2 | Todd's Defence

Patrick Todd (2020, 2021) defends Universalism against the lack of the wide-scope reading argument by appealing to a sort of error theory. Usually, in everyday life, we mistakenly assume that 'there is a unique course of the history'. Since this is our implicit metaphysics, we do not hear the difference between (1) and (2) and we give equivalent truth conditions to these sentences. Only in philosophical contexts, we can consider a different metaphysics in which no history is privileged over the others. Assuming such philosophical position, (1) and (2) are no longer equivalent.

According to Todd, the case of *will* is similar to that of neg-raising modals. 'Neg-raising' refers to a semantic phenomenon for which the wide-scope negation of a modal is treated as if were a narrow scope negation. For instance, (3) is usually read as (4) and (5) as (6):

(3) I do not believe that John is suitable for the position

(4) I believe that John is not suitable for the position

(5) Ann does not want for her daughter to come to the party

(6) Ann wants for her daughter not to come to the party

Todd accepts Laurence Horn's theory of neg-raising. According to Horn (1975, 1978, 1989, 2015), Believe (p) and Believe ($\neg p$), on one hand, and Want (p) and Want ($\neg p$) are contrary because they can be both false but cannot be both true. However, there is a general tendency to ignore intermediate cases between believing that p and believing that $\neg p$ and between wanting p and wanting $\neg p$. Agnostic and hesitant attitudes tend not to be considered. This tendency is called *MaxContrary* by Horn (2015) and results in the presupposition of an Excluding Middle Principle:

> Polar contraries p and q are treated as mutually exhaustive as well as mutually inconsistent; when we can eliminate all values but p and q, we obtain the disjunction in (9a), which—despite its formal contrariety—functions as an instance of (9b), that is, the Law of Excluded Middle (LEM).

(9a) $p \vee q$

(9b) $p \vee \neg p$

> LEM applies where it 'shouldn't', based on the possibility of establishing such pragmatic disjunctions between semantic contraries in a given context
>
> (246).

The presuppositions of the principles $\mathbf{B}(p) \vee \mathbf{B}(\neg p)$ and $\mathbf{W}(p) \vee \mathbf{W}(\neg p)$ explain why (3) is usually read as (4) and (5) as (6). For example, for belief attitudes, we obtain the following result:

(7)	(A) $\mathbf{B}(p) \vee \mathbf{B}(\neg p)$	[Presupposed]
	(B) $\neg \mathbf{B}(p)$	[Affirmed]
	(C) $\mathbf{B}(\neg p)$	[From (A) and (B)]

This pragmatically explains the tendency of reading the wide-scope negation of many modals as an internal negation.[4]

According to Todd, *will* is also a neg-raiser even though of a particular type. Speakers usually presuppose that there is a unique course of events. The trivial consequence of this presupposition is that they take for granted that $\mathbf{Fn}(p) \vee \mathbf{Fn}(\neg p)$ because in the unique course of events p or $\neg p$ will be true in n units of times. Therefore, the deduction precedes as above:

(8)	(A) $\mathbf{Fn}(p) \vee \mathbf{Fn}(\neg p)$	[Presupposed]
	(B) $\neg \mathbf{Fn}(p)$	[Affirmed]
	(C) $\mathbf{Fn}(\neg p)$	[From (A) and (B)]

However, Todd states there is an important difference between neg-raisers and *will*.

> [In the case of belief] it is, for most of us, relatively easy to forgo or cancel th[e] assumption [that Jones has a definite belief on the matter]; all of us are familiar with the situation of withholding belief (or being agnostic). Thus, when such an option is made salient, we are able to consider *Jones does not think that p* as true and *Jones thinks that p* as false. He's an agnostic on this matter, so the inference that usually holds good does not hold good
>
> (Todd, 2021, 61).

By contrast, in the case of *will*, the difference between $\neg \mathbf{Fn}$ and $\mathbf{Fn} \neg$ emerges only in philosophical contexts, in which different models of the open future are considered. Only if we assume a model in which none of the future branches is privileged over the others, we can appreciate the different scopes of negation with respect to the future operators. However, 'Only philosophers (broadly conceived) are concerned with 'models of the undetermined future', and only philosophers would contend that, as far as we know, *indeterminism with no actual future branch* is the correct such model' (*ibidem*).

Here, I would like to advance a defence of Universalism that does not relies on an error theory. In the literature, many linguistic phenomena involving a universal quantifier have put forth, in which wide-scope constructions $\neg \forall$ are actually read as if negation took narrow scope $\forall \neg$. I will show what these phenomena have in common and why there is a tendency towards the narrow scope reading. This is also more in line with the interpretation of neg-raising constructions given by Horn. In fact, even though the deductions (7) and (8) seem to be similar, they are actually quite different. (7A) is presupposed because, although there are *many* worlds compatible with the subject's beliefs, it is presupposed that *all* these worlds are p-worlds or *all* these worlds are $\neg p$-worlds. The possibility that some of these worlds are p-worlds and some are $\neg p$-worlds is ignored. (8A) is presupposed for another reason: there is just *one* world in which $\mathbf{Fn}p$ is evaluated, and *this* world is a p-world or a $\neg p$ world. No intermediate possibility is ignored. The theory I will propose for *will* and for other linguistic phenomena supposes that intermediate possibilities are ignored, not that there is only one possibility as in Todd's interpretation.

3 | From Will to Would

The first linguistic constructions that I will consider are counterfactuals. These are also taken into account by Todd (2021, ch. 4), who advances an error theory similar to that regarding *will*. Even though I think that this theory is reasonable, I will show that it has some problems.

It has been noticed that *would* exhibits a behaviour similar to that of *will* with respect to negation:

(9) If you came to the party, you would not enjoy it

(10) It is not the case that if you came to the party, you would enjoy it

(9) and (10) seem to have the same meaning. Considering similar examples, David Lewis remarked that 'we do not distinguish,

in ordinary language, the external negation of the whole conditional $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi)$ and the internal negation of the consequent $\varphi \mathrel{\square\!\!\rightarrow} \neg\psi$' (Lewis, 1973, 79).

This can be a problem for Lewis's semantics, which universally quantifies on possible worlds. Let us assume, for the sake of simplicity, the following semantics for counterfactuals:

(11) $\varphi \mathrel{\square\!\!\rightarrow} \psi = 1$ iff in every closest world in which $\varphi = 1, \psi = 1$; $\varphi \mathrel{\square\!\!\rightarrow} \psi = 0$ otherwise.

Clearly, $\varphi \mathrel{\square\!\!\rightarrow} \neg\psi$ and $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi)$ have different truth conditions in this semantics:

(12U′) $\varphi \mathrel{\square\!\!\rightarrow} \neg\psi = 1$ iff in every closest world in which $\varphi = 1, \psi = 0$; $\varphi \mathrel{\square\!\!\rightarrow} \neg\psi = 0$ otherwise.

(12U″) $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi) = 1$ iff not in every closest world in which $\varphi = 1, \psi = 1$; $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi) = 0$ otherwise.

As in the case of *will*, however, only reading (12U′) seems to be possible in natural languages, and this also happens in the contexts most favourable to the wide-scope reading of negation, such as (10). The advocate of Lewis's semantics should explain why the ambiguity does not appear.

There are alternative semantics of counterfactuals in which the evaluation concerns only one world and that do not run into this problem. According to Stalnaker (1968), the evaluation of counterfactuals is relative to the most similar world in which the antecedent is true and there is a unique most similar world. This renders $\varphi \mathrel{\square\!\!\rightarrow} \neg\psi$ and $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi)$ equivalent. We have the following truth conditions:

(12L′) $\varphi \mathrel{\square\!\!\rightarrow} \neg\psi = 1$ iff in the most similar world in which $\varphi = 1, \psi = 0$

(12L″) $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi) = 1$ iff it is false that in the most similar world in which $\varphi = 1, \psi = 1$

(12L′) and (12L″) are clearly equivalent. Therefore, Stalnaker's semantics and other forms of Linearism about counterfactuals do not have problems in explaining why NAN characterises counterfactuals. This seems to be a point in favour of Stalnaker's linearist semantics over Lewis's universalist semantics.

Timothy Williamson defended Lewis's position by claiming that we tend to prefer the narrow scope reading of the negation because negation attaches to the verb in English:

> [we] can explain why we should tend to confuse $-(P \mathrel{\square\!\!\rightarrow} Q)$ with $P \mathrel{\square\!\!\rightarrow} -Q$. It is not just that human beings have a well-documented general tendency to make scope confusions; in this particular case, something more interesting can be said. The natural English negation ('not') attaches to a verb; since the main connective of a conditional in English ('if … then –') does not contain a verb, we naturally attach the 'not' to the main verb of the consequent, thereby making the confusion to be explained
>
> (Williamson 1988, 411).

However, as noticed above, as much as one tries to bring out the wide-scope reading (e.g., by not attaching negation to the verb but by using the formula 'it is not the case that …' at the beginning of the sentence, as in (10)), this reading does not appear. The problem does not appear just because of the position of the negation. The 'confusion' remains unexplained.

4 | Counterfactual Contingents

There are some other similarities between future tense and counterfactuals. One is what we might call counterfactual contingents. Suppose that there is not a unique closest world in which the antecedent is true. The following are typical examples:

(13) If I had flipped the coin, it would have landed heads

(14) If I had flipped the coin, it would have landed tails

(15) If Bizet and Verdi had been compatriots, Bizet would have been Italian

(16) If Bizet and Verdi had been compatriots, Bizet would have been French

A world in which the coin lands heads seems to be as close to the actual world as a world in which the coin lands tails. A world in which Bizet and Verdi are both French seems to be as close to the actual world as a world in which both composers are Italian. It seems arbitrary to state that (13) is true and (14) is false, or vice versa, and the same can be said of (15) and (16).

According to Lewis, (13)–(16) are all false because a counterfactual such as $\varphi \mathrel{\square\!\!\rightarrow} \psi$ is true if in *every* closest world in which φ is true, ψ is also true, and false otherwise. This clearly parallels Peircean semantics of future contingents. Todd, who is a Peircean regarding both *will* and *would*, agrees with Lewis.

Like TRL-theorists, Linearists about counterfactuals can argue that one of the two worlds is privileged with respect to the other and, thus, closer to the actual world than the other. This can be carried out in various ways. For instance, Hawthorne (2005) and Stefánsson (2018) hold that, although if I flipped the coin, it might land heads or tails, as a matter of fact, it would land in a certain way. Thus, one of the two counterfactuals (13) and (14) is true and the other is false. Of course, we cannot know which one is true, but nevertheless one is.

In philosophy of religion, a similar proposal has been advanced about counterfactuals of freedom, that is, sentences such as: 'If agent x had been in circumstances C, she would have freely chosen to perform action a'. The basic idea is that, although x is free in libertarian sense—and therefore has many alternatives among which to choose—as a matter of fact x would choose to perform a or not.[5]

Arguably, Lewis's theory is more intuitive here. However, Lewis has a problem with the negation of (13)–(16). Consider:

(17) If Bizet and Verdi had been compatriots, Bizet would not have been Italian

(18) If Bizet and Verdi had been compatriots, Bizet would not have been French

(19) It is not the case that if Bizet and Verdi had been compatriots, Bizet would have been Italian

(20) It is not the case that if Bizet and Verdi had been compatriots, Bizet would have been French

(17) and (18) are false according to Lewis's semantics because not in every closest world in which Bizet and Verdi are compatriots, Bizet is not Italian or is not French. On the contrary, (19) and (20) are true according to Lewis's semantics, because not in every closest world in which Bizet and Verdi are compatriots, Bizet is Italian or French. These truth conditions are obviously similar to those that Peirceans give to formulas $\mathbf{Fn}\neg\varphi$ and $\neg\mathbf{Fn}\varphi$.

However, as seen above, we tend to consider (17) and (18) equivalent to (19) and (20). Lewis takes the following sentence into consideration:

(21) It is not the case that if Bizet and Verdi were compatriots, Bizet would be Italian; and it is not the case that if Bizet and Verdi were compatriots, Bizet would not be Italian; nevertheless, if Bizet and Verdi were compatriots, Bizet either would or would not be Italian

This can be formalised by (22):

(22) $\neg(\varphi \mathrel{\square\!\!\rightarrow} \psi) \wedge \neg(\varphi \mathrel{\square\!\!\rightarrow} \neg\psi) \wedge \varphi \mathrel{\square\!\!\rightarrow} (\psi \vee \neg\psi)$

Lewis remarks:

> I want to say this, and think it is probably true; my own theory was designed to make it true. But offhand, I must admit, it does sound like a contradiction. Stalnaker's theory does, and mine does not, respect the opinion of any ordinary language speaker who cares to insist that it is a contradiction
>
> (Lewis 1973, 80).

As Lewis acknowledges, there seems to be no meaning difference between 'If Bizet and Verdi had been compatriots, Bizet would not have been Italian' and 'If Bizet and Verdi had been compatriots, Bizet would not have been Italian'. So, both Linearism and Lewis's Universalism have their own problems with counterfactual contingents.

Defending Lewis's semantics, Todd proposes an error theory: even though there is a tie between the world in which Bizet is French and the world in which he is Italian, ordinary thought and talk presuppose that one of these worlds is privileged over the other and that the evolution of counterfactuals must concern this privileged world. Thus, ordinary thought and talk would be implicitly linearist.[6]

This explains why ordinary people do not feel any difference between (17) and (18) and between (19) and (20). Supposing that there is a unique closest world the truth conditions of these sentences become the same, as shown in (12L′) and (12L″). According to Todd, even though Lewis's theory is correct from a philosophical and metaphysical point of view, it is not the theory implicitly assumed in ordinary speech and this accounts for the seeming contradiction of (22).

There is another resemblance between future tense and counterfactuals: the Excluded Middle Principles. Both Universalists and Linearists about the future are ready to accept the following principle:

(23) $\mathbf{Fn}(\varphi \vee \neg\varphi)$

However, the principle of Will Excluded Middle (WEM) is more controversial:

(WEM) $\mathbf{Fn}\varphi \vee \mathbf{Fn}\neg\varphi$

In general, Linearists will accept WEM. Indeed, in the privileged history, φ or $\neg\varphi$ is true at the moment distant n units of time from now. By contrast, Universalists generally reject WEM: if $\mathbf{Fn}\varphi$ is a future contingent, for Peirceans both $\mathbf{Fn}\varphi$ and $\mathbf{Fn}\neg\varphi$ are false; for Aristotelians, both are indeterminate.

Something similar can be observed about counterfactuals. Everybody is prepared to accept the following principle:

(24) $\varphi \mathrel{\square\!\!\rightarrow} (\psi \vee \neg\psi)$

However, the principle of Counterfactual Excluded Middle (CEM) is more controversial:

(CEM) $(\varphi \mathrel{\square\!\!\rightarrow} \psi) \vee (\varphi \mathrel{\square\!\!\rightarrow} \neg\psi)$

In general, Linearists will accept CEM: in the closest φ-world either ψ or $\neg\psi$ is true. Universalists will reject CEM. For instance, for Lewis, if in some closest φ-world ψ is true and in some others it is false, both disjuncts of CEM are false.

Linearists appeal to the fact that sentences such as the following are intuitively true:

(25) Tomorrow, it will rain or tomorrow it will not rain

(26) If I had flipped the coin, it would have landed heads or if I had flipped the coin, it would have landed tails

Universalists might reply that, in judging (25) and (26) as true, subjects tend to confuse sentences that have the form of WEM

or CEM with sentences that have the form of (23) and (24), respectively. However, the fact that Universalists have to appeal to a sort of error theory to explain why (25) and (26) are intuitively true is a point in favour of Linearists.

The scopelessness of *would* with respect to negation and CEM are obviously connected each other. It is possible to show that from $(\varphi \mathrel{\square\!\!\rightarrow} \neg\psi) \leftrightarrow \neg(\varphi \mathrel{\square\!\!\rightarrow} \psi)$, one can infer CEM: $(\varphi \mathrel{\square\!\!\rightarrow} \psi) \vee (\varphi \mathrel{\square\!\!\rightarrow} \neg\psi)$ because the two principles are equivalent.[7]

5 | Generics and Plural Definite Descriptions

Counterfactuals are difficult linguistic constructions. However, NAN characterises other linguistic constructions and for at least some of them a linearist explanation is not available.

The first linguistic construction that I consider is generics:

(27) Mammals lay eggs

(28) Mammals do not lay eggs

As Carlson (1980, 49–51) points out, the negation of a generic is still a generic: (28) means that generally mammals do not lay eggs, and there is no reading along the lines of 'it is not true that *in general* mammals lay eggs, only *some* of them do'. If we suppose that the generic reading depends on the presence of a quasi-universal quantifier **Gn** on individuals (or cases or situations), then the only possible reading of (28) is that in which negation takes narrow scope (**Gn** ¬); the wide-scope reading (¬ **Gn**) is impossible.

Obviously, one might deny that generics involve a quantification on individuals and treat them as referring to a kind. However, this is not the most popular view.[8] Therefore, the advocates of the quantificationical view must find an explanation for NAN here.

Another linguistic construction that exhibits the same behaviour is plural definite descriptions[9]:

(29) Mary didn't read the books on the reading list

(29) is true if Mary read no or nearly no books on the reading list, but it is false if Mary read the vast majority of books on the reading list. In other words, (29) cannot mean that Mary did not read every book on the reading list.[10]

Again, the only possible reading is that in which the negation takes narrow scope; no wide-scope reading is possible. Also in this case, it is possible to interpret plural definite descriptions as referring to a single homogeneous plural individual, thus explaining the non-ambiguity of (29). However, again, this is not the most popular view.[11] Therefore, the advocates of the majority position according to which plural definite descriptions have quantificational force must find an explanation for NAN.

What do future tense, counterfactuals, generics and plural definite descriptions have in common? They are different linguistic constructions. However, there is a common element: they can be all interpreted as constructions that are true when all elements of a set *A* have a certain property, false when all elements of *A* do not have that property and indeterminate otherwise.[12] I assume that the linguistic constructions having this semantics scope over negation. In particular, in the literature on homogeneity, hypotheses like the following have been formulated:

(H) When a linguistic phenomenon is such that a sentence is true when all elements of a set *A* have a certain property *P*, false when all elements of *A* do not have *P* and indeterminate otherwise, then the negation of that sentence does not mean that not every element of *A* has *P* but that every element of *A* does not have *P*.

In the next section, I will argue that vague predicates offer an important support for (H). Moreover, assuming (H) and a semantics of future tense, counterfactuals, generics, plural definite descriptions that allow truth value gaps, their behaviour with respect to negation is easily accounted for.

6 | Vague Predicates and Gappy Linguistic Constructions

Vague predicates are the paradigmatic case of predicates that provide an intermediate area between their extension and anti-extension. I will assume that vague predicates do not have any truth value in intermediate cases, in which we can ascribe an object neither to their extension nor to their anti-extension. For instance, following Soames (1999), let us suppose that the semantics of 'bald' gives sufficient conditions to apply the predicate to an object and sufficient conditions not to apply the predicate to an object, but that no set of conditions which are individually necessary and jointly sufficient for the predicate to apply is provided. Obviously, this semantics is not uncontroversial but it is sufficiently plausible for our aims. Vague predicates are characterised by NAN.

(30) Mary is not bald

(30) has only one possible interpretation; that is, it means that Mary belongs to the anti-extension of *bald*. It cannot mean that Mary is in the intermediate area between extension and anti-extension.[13] In other words, the negation of vague predicates ascribes the object to the anti-extension. It does not just deny that the predicate belongs to the extension, leaving the fact that the object belongs to the anti-extension or to the area between extension and anti-extension indeterminate. The behaviour of vague predicates provides a support for (H) because, in the paradigmatic case of predicates having a borderline area, negation behaves as (H) predicts.

Alternative interpretations of the behaviour of negation of vague predicates can be provided. For instance, according to supervaluationism (cf., for example, Fine 1975), a negation of a vague

predicate simply stating that the object does not belong to the extension of the predicate, while leaving open whether it belongs to the anti-extension or to the intermediate zone between extension and anti-extension, does not exist. $\neg P(a)$, where P is vague, can only mean that a belongs to the anti-extension of P. This stems from the truth value clauses of supervaluationism, according to which $\neg P(a)$ is (super)-true only if it is true in all precisifications. This is equivalent to saying that $P(a)$ must be false in all precisifications, meaning that it belongs to the anti-extension of P.

However, this solution presents several issues. A primary concern pertains to the existential quantifier. As Fine himself notes, 'it will be true to say that there is a last bald man, one who is preceded by men who are bald and succeeded by men who are not bald. For under any acceptable way of making the predicate 'bald' completely precise, we must draw a line between the men who are bald and those who are not bald' (Fine, 2020, 22). Yet, this seems a direct denial of the vagueness of the predicate 'bald'. Regarding future tense, particularly, this translates into the failure to distinguish between $\exists x\mathbf{Fn}P(x)$ and $\mathbf{Fn}\exists xP(x)$, which are equivalent under the supervaluationist approach.

Consider:

(31) A ticket will win in the lottery

(31) has two readings: it can mean that there is a specific ticket that will win (and, thus, the lottery is not fair) or that one ticket or another will win (and, thus, the lottery is fair). We can express the two readings in the following way, where $T(x)$ is the predicate of being a ticket, $W(x)$ is the predicate of winning:

(31′) $\exists x(T(x) \wedge \mathbf{Fn}W(x))$

(31″) $\mathbf{Fn}\exists x(T(x) \wedge W(x))$

Assuming supervaluationism and the fact that the number of tickets does not change over time, (31′) and (31″) are equivalent because the two sentences are equivalent in every history.[14]

There is another problem for the supervaluationist, which I consider more serious than the previous one. According to supervaluationism, the interpretation of the negation of a vague predicate that merely excludes the object from being part of the extension is not only non-preferred but impossible. This seems too drastic. For example, it seems perfectly acceptable to say:

(32) Mary is neither bald nor not bald. She has few hairs

According to supervaluationism, (32) should be contradictory. However, (32) seems in order, and in this sentence, negation indeed has that interpretation which the supervaluationist excludes as impossible. The same diagnosis arises when adding the truth predicate:

(33) It is not true that Paul is bald. But it is also not true that he is not bald. He is in between being bald and not being so

Cases like these lead to a preference for a pragmatic explanation of the phenomenon, where one reading of negation is strongly favoured over the other. The other reading is disfavoured but not impossible and emerges in specific contexts. We will provide an explanation of (H) along these lines in Section 7.

The same remarks apply to Fine's (2020) global approach to vagueness. Beyond the merits and demerits of such an approach (for a powerful critique, see Williamson 2022), Fine's view once again excludes the possibility of simply denying that an object belongs to the extension of a vague predicate: 'The broader concept of not-being-true, as opposed to not being the case, is an illusion—we can form no conception of an object having some alternative status to being F beyond its not being F' (47). However, again, this seems too drastic, as demonstrated by the fact that in specific contexts, the wide-scope reading of negation seems to emerge.[15]

As for generics, Fintel (1997) proposes the following truth conditions for $\mathbf{Gn}(p)(q)$:

(34) *Truth conditions for generics*

- $\mathbf{Gn}(p)(q) = 1$ if $\forall x \in p$: $q(x)$
- $\mathbf{Gn}(p)(q) = 0$ if $\forall x \in p$: $\neg q(x)$
- Indeterminate otherwise

Therefore, (27), repeated here, is true if all or nearly all mammals lay eggs, false if no or nearly no mammals lay eggs and neither true nor false in the remaining cases.

(27) Mammals lay eggs

The negation of (27), that is (28), repeated here, can only mean that it is false that mammals lay eggs—that is, it can only mean that all or nearly all mammals do not lay eggs—not that it is false or indeterminate that mammals lay eggs—that is, there are several mammals that do not lay eggs. This behaviour of negation is explained by (H).

(28) Mammals do not lay eggs

The semantics proposed by Križ and Spector (2021) for interpreting plural definite descriptions is complex, but, for our aims it suffices to say that a sentence such as:

(35) Mary read the books on the reading list

(29) Mary didn't read the books on the reading list

is true if Mary read all or nearly all the books on the reading list, false if Mary read no or nearly no books on the reading list and indeterminate in the intermediate cases. (29), repeated here, has only one interpretation: Mary read none or nearly none of the books on the reading list. It cannot mean that Mary did not ready every book on the reading list.

Again, the only possible reading is that Mary belongs to the anti-extension of the predicate *read the books*. We have no reading that simply denies that Mary belongs to the extension, leaving open the possibility that Mary is in the intermediate area between extension and anti-extension. Therefore, assuming the semantics proposed by Križ and Spector (2021), plural definite descriptions also conform to (H). The addition of 'all' to the plural definite description involves the disappearance of both the intermediate area between true and false cases and NAN, suggesting that these two phenomena are strictly connected.

The extension to counterfactuals and future tense is plain. Instead of adopting a 'Peircean' semantics of counterfactuals, one can accept an 'Aristotelian' semantics. According to this semantics, counterfactuals universally quantify on the closest worlds in which the antecedent is true—contra Stalnaker and his semantics in which only one closest world is selected—but bivalence is not valid—contra Lewis. The following truth conditions can be proposed:

(36) *Truth conditions for counterfactuals*

- $\varphi \boxrightarrow \psi = 1$ if in every closest world in which $\varphi = 1$, $\psi = 1$
- $\varphi \boxrightarrow \psi = 0$ if in every closest world in which $\varphi = 1$, $\psi = 0$
- Indeterminate otherwise

Consequently, sentences (13)–(16), repeated here, are indeterminate and not false, as in Lewis's semantics.

(13) If I had flipped the coin, it would have landed heads

(14) If I had flipped the coin, it would have landed tails

(15) If Bizet and Verdi had been compatriots, Bizet would have been Italian

(16) If Bizet and Verdi had been compatriots, Bizet would have been French[16]

Assuming (H), these truth conditions account for the behaviour of counterfactuals with respect to negation.

Finally, Aristotelian semantics can also be adopted for the future operator **Fn** as well:

(37) *Truth conditions for* **Fn**

- $\mathbf{Fn}\varphi = 1$ if for every history h to which the instant of evaluation t belongs, there is a future instant t' that is n units of time distant from t, such that φ is true at t'
- $\mathbf{Fn}\varphi = 0$ if for every history h to which the instant of evaluation t belongs, there is no future instant t' that is n units of time distant from t, such that φ is true at t'
- Indeterminate otherwise

Assuming (37) and assuming (H), the only possible reading of the negation of $\mathbf{Fn}\varphi$ is the narrow scope reading $\mathbf{Fn}\neg\varphi$. In other words, the interpretation of the negation for which $\mathbf{Fn}\varphi$ is untrue, where *untrue* means either false or indeterminate, is impossible. We have an explanation of the behaviour of negation with respect to *will* in a universalist framework that does not appeal to an error theory. Moreover, this explanation is not relative to future tense only, but relates the behaviour of *will* to that of other linguistic constructions.[17] I argue that this explanation for NAN is at least as good as that offered by linearists. Therefore, NAN is not a serious problem for Universalism.

(H) explains several linguistic phenomena. They considerably differ from each other, but my hypothesis is that they share a property: the existence of intermediate cases between truth and falsity. How can we explain (H)? In the next section, I will consider two different explanations for (H).

7 | Explanations for (H) and the Excluded Middle Principles

The first explanation for (H) is provided by Fintel (1997). He formulates this explanation about generics, but it is extendible to the other linguistic constructions we are concerned with here. Von Fintel assumes the Homogeneity principle, which states that truth conditions are defined only if every element of set A is P or every element of A is not P. If some elements of A are P and some others are not P, then we have a presupposition failure and an indefinite semantic value. According to von Fintel, the negation of a linguistic construction is true only if the corresponding affirmative is false. Therefore, the negated sentence affirms that every element of A is not P.[18] Von Fintel maintains that $\neg(\mathbf{Gn}(p)(q))$ is true if $\mathbf{Gn}(p)(q)$ is false, from which $\neg(\mathbf{Gn}(p)(q)) \leftrightarrow \mathbf{Gn}(p)\neg(q)$ follows.

Given the equivalence between wide and narrow scope readings, von Fintel can hold that the Principle of Excluded Middle is valid for generics: $\mathbf{Gn}(p)(q) \vee \mathbf{Gn}(p)\neg(q)$. He therefore accounts for our tendency to accept the Excluded Middle Principles even in presence of intermediate cases. These considerations can easily be extended to WEM and CEM.

A second explanation for (H) does not appeal to semantic but to pragmatic principles. For instance, Krifka (1996) appeals to the so-called 'R-based Implicatures' of Horn (1989), according to which in certain circumstances, an addressee should derive the strongest possible interpretation that is consistent with what is said. The principle of quantity of Grice and other principles that prescribe to maximise the informativity of what we say are on the same track. These principles imply that, among the various interpretations that a sentence can have, speakers and addressees should choose the strongest and most informative one. These pragmatic principles provide an explanation for (H): if a sentence is true if every element of A is P, false if no element of A is P and indeterminate otherwise, the wide-scope reading of negation is true if at least one element of A is not P; in contrast, the narrow scope reading is true if every element of A is not P. Hence, the latter interpretation is stronger and more informative.

Added to this is the tendency to avoid indeterminate cases and to prefer those in which sentences have determinate truth conditions. As we have seen in Section 2, this tendency

is called *MaxContrary* by Horn (2015) and leads to maximise the contraries by not considering the intermediate cases. Commenting the fact that *not good* means evil, Horn notes: 'if everything is either good or evil, and something isn't good, what else can it be? If *evil* expands to cover the territory of "not good," *not good* is essentially reduced to "evil"'. (247). In this framework, the tendency to accept the Excluded Middle Principles is accounted for pragmatically. Intermediate cases are ignored, and only the extreme cases are considered. If contraries are considered as mutually exhaustive, the contraries are treated as were contradictories. The disjunction between contraries $p \vee q$ functions as an instance of the law of excluded middle: $p \vee \neg p$.

This pragmatic explanation is more flexible than the semantic one. First, the pragmatic theory explains why in certain particular contexts the wide-scope reading of negation can emerge. For instance,

(38) Paul is neither bald nor not bald. He is in the middle.

(39) Mary did not read THE books on the reading list. She read only some of them.

(40) Generally, cats neither love dogs, nor hate them. It depends on case to case.

(41) It is not true that it will rain tomorrow. Weather forecasts are still uncertain. It could be a nice day.

In (38)–(41), the wide-scope reading is forced by contextual factors.

Second, Horn states that certain pragmatic processes can be semantised over time (for instance, *unfriendly* can only mean 'hostile'; it cannot mean 'neither friend nor enemy'). In such cases, the narrow scope reading of negation is not only preferred, but the only viable one. Therefore, the pragmatic theory can be considered more general than the semantic theory and, in a sense, can incorporate it.

8 | Cariani's Criticism

Cariani (2021, sec. 4.6) puts forth a series of criticisms against a defense of universalism very similar to the one advocated here. Specifically, Cariani contends that, although this defense has much to recommend, the juxtaposition of *will* and definite plural descriptions is unjustified. I believe Cariani's criticisms are substantive, yet not conclusive. In this section, I will attempt to address them.

His initial critique is grounded in this assertion: 'the claim that *will* involves a homogeneity presupposition is highly stipulative. There is no specific test for presupposition that makes it plausible that predictive modals presuppose that the future is homogeneous with respect to their prejacents' (71). However, it is worth noting that the pragmatic explanation provided for (H) in the preceding section is not based on a presupposition of homogeneity but rather on pragmatic principles acting on linguistic constructions of a certain type. This is considerably less stipulative than merely asserting that *will* has a particular type of presupposition.

Cariani's second criticism is based on the concept of *credence*. Suppose that the coin I have in hand, which I am about to flip, is fair. It is reasonable to think that my credence in the following propositions:

(42) Heads will come up

(43) Heads will not come up

(44) Mary read the books on the reading list

(45) Mary did not read the books on the reading list

is neither 1 nor 0; presumably, it will be 1/2 for both. However, if Mary has read some but not all the books on the reading list, then our credence in the following propositions:

will presumably be 0 or indeterminate. This represents a significant difference between *will* and plural definites.

In response, it can be observed that cases in which we can assign probability and, consequently, credence to future events are the exception rather than the rule. In most cases, we have no idea how things will unfold. Consider these propositions, for example:

(46) On 5 February 3024, it will rain in London

(47) On 5 February 3024, it will not rain in London

What is our credence in these propositions? In these cases, we would probably say that we cannot know whether it will rain or not in London in a thousand years. We would then state that we believe neither (46) nor (47), and our confidence in the truth of these propositions is *indeterminate*. This is likely what we would say in Mary's case as well. We can say neither that Mary has read the books on the reading list or nor that Mary has not read the books on the reading list. We do not believe either one, and thus, our credence in both propositions is indeterminate. Both in cases such as (44) and (45) and cases such as (46) and (47), we are in a situation where we cannot say that the affirmative proposition is true, nor that it is false (because if it were false, its negation would be true), and the same goes for the negative proposition. In these cases, suspending belief is a natural attitude.

Cariani states that if Mary read some but not all the books on the reading list our credence in (44) is 0 or indeterminate. Of course, an indeterminate credence is not equivalent to credence 0. In fact, I believe that our credence in (44) cannot be 0 and must be *indeterminate*. Indeed, it follows from the standard axioms of probability that if our belief in a proposition p is 0, our belief in $\neg p$ should be 1. Consequently, we should believe that Maria has not read the books on the reading list. But in reality, we do not believe this because if we did, we should believe that Maria has not read any of the books on the reading list. Therefore, we must assert that in this case our

credence is indeterminate. The same holds true for (46) and (47). Our credence in (46) cannot be 0; otherwise, we should assign a value of 1 to its negation, that is, (47). Therefore, it has an indeterminate value. The same reasoning applies to (47): our credence in this proposition cannot be 0 (otherwise we should believe (46)). Again, suspending belief is the most natural reaction.[19]

Note that similar reactions occur naturally also in cases of vagueness. Let us suppose that x is coloured in the transition zone between red and pink. We would probably not accept any of the following propositions:

(48) x is red

(49) x is not red

(50) x is pink

(51) x is not pink

For each of these, we would refuse to assign a specific level of credence.

Obviously, there is a distinction between the future case on one hand and cases of vagueness or plural definites on the other. The indeterminacy in the case of the future will be *resolved* one way or another, whereas in the other two cases it will not. In certain instances, this may lead us to hypothesise about how it will be resolved and with what probabilities. However, when these hypotheses are not feasible, then the future case becomes very similar to that of definite plural descriptions or vague predicates. We are in a zone of indeterminacy where we are neither able to affirm nor deny something and therefore have no confidence in the truth of either proposition. Therefore, the case of *will* is much less dissimilar from that of plural definite than Cariani contends.

Finally, Cariani compares the following two propositions:

(52) It is possible that Riya will study medicine, and it is possible that she will study architecture.

(53) It is possible that the girls are at camp, and it is possible that the girls are on vacation.

He argues that 'claims like (52) are precisely meant to express the fact that the relevant worlds are not homogeneous with respect to what Riya will study. But it is not clear how this might be captured by the homogeneity account' (72). Indeed, our reactions to the two types of examples are very different.

However, in this case as well, I believe that the differences are far less than Cariani suggests. He does not specify whether the reading of *possible* in the two cases is metaphysical or epistemic. I believe the most natural—perhaps the only possible—reading of (53) is epistemic. Assuming this reading, (53) means that there is a representation of the world, compatible with our knowledge, in which all the girls are at camp, and another representation of the world, also compatible with our knowledge, in which all the girls are on vacation. But why should a parallel reading not be possible for (52) as well? There is a representation of the world, compatible with our knowledge, in which in all possible future histories, Riya studies medicine, and there is another representation of the world, also compatible with our knowledge, in which in all possible future histories Riya studies architecture. There is thus an epistemically possible world in which in all futures branching from the present, Riya does certain things, and another epistemically possible world in which in all futures branching from the present, Riya does other things. From this perspective, there is no difference between the semantics of the two propositions—an epistemic possibility operator precedes a universal quantification in both cases.

However, Cariani seems to have in mind a metaphysical rather than an epistemic reading of (52). This complicates the comparison between (52) and (53) because a metaphysical reading of *possible* in (53) is very hard to hear. Moreover, interactions between metaphysical possibility operators and *will* are challenging to handle. For instance, even in standard linearist TRL semantics, the **F** operator does not compositionally combine with $\diamond$, and expressions like 'it is possible that it will be the case that' are treated as a single operator (cf. for instance Wawer 2014). There are multiple possible solutions both within universalism and linearism, and it remains to be seen if one solution is better than the others.[20] In this case as well, Cariani's criticism proves to be resistible.

9 | Neg-Raising Again

Can (H) be also extended to neg-raisers? In principle, yes. With regard to neg-raisers such as *believe* and *want*, Horn points out:

> [T]he members of a set A either homogeneously exhibit a property (…) or homogeneously exhibit the opposed property (…); the possibility that there might be an $a \in A$ in one camp and a $b \in A$ in the opposite camp is excluded from consideration. The Law of Excluded Middle, in the form of the all-or-none, homogeneity, or indivisibility, strengthens apparent wide-scope sentential negation (...) into a contrary of the positive (...) by virtue of the nature of the implicitly quantified terms with which negation interacts, or rather fails to interact
>
> (Horn 2015, 254).

This is exactly what (H) prescribes for *will*, *would*, *the*, generics and vague predicates. However, we have some additional problems here. First, it is not clear whether an 'Aristotelian' semantics can be applied to neg-raisers. Suppose that Ann is agnostic about p. Is 'Ann believes p' false or devoid of truth value? Without denying that the latter alternative can be defended, I believe that it is less plausible than in the cases we have seen above. Second, neg-raising is a lexical specific phenomenon and even modals with very similar semantics behave differently with respect to negation. For instance, *want* is neg-raiser in English but *desire* is not. Therefore, a general pragmatic

explanation of the phenomenon, such as that of Bartsch (1973), is not successful. Third, it has been observed that the presupposition $\forall x P(x) \vee \forall x \neg P(x)$ does not project when neg-raisers are embedded in questions, antecedents of conditionals and other modals (Gajewski 2007; Romoli 2013). Consider:

(54) If John does not think Mary has left, he will do nothing impertinent

(54) is interpretable as: if John thinks that Mary has left or if John has no opinion about Mary's departure, he will do nothing impertinent. Negation does not necessarily raise when *think* is embedded in the antecedents of conditionals.

These differences have led some scholars to propose a different theory of neg-raisers. For example, Romoli (2013) believes that neg-raisers do not presuppose $\forall x P(x) \vee \forall x \neg P(x)$. Rather, neg-raiser inferences would be scalar implicatures. In the view defended here, the differences between neg-raisers on one hand and *will*, *would*, *the*, etc., on the other hand are based on the fact that neg-raisers do not likely have gappy truth conditions and thus do not conform to (H).

In fact, there are accounts of neg-raising that maintains that they presuppose $\forall x P(x) \vee \forall x \neg P(x)$ (for instance, Gajewski 2007). These accounts try to explain data such as (54) appealing to the fact that the presuppositions of neg-raisers are soft and, thus, easily cancellable in many contexts such as conditionals and questions.[21] This theory has received criticisms. In any case, if it is correct and if neg-raisers are presupposition triggers, then their behaviour is similar to that of those linguistic constructions that comply with (H): they are universal quantifiers on worlds that presuppose that all the worlds are P or all the worlds are $\neg P$: intermediate cases are ignored. They do not presuppose that there is a unique world in which, necessarily, $P \vee \neg P$. Their semantics and pragmatics is therefore similar to that I proposed for *will*. Perhaps, they are an intermediate stage between the linguistic constructions such as *will*, *would*, *the*, vague predicates, etc., and the universal quantifiers that do not comply with (H). In any case, (H) seems to be more apt to explain their behaviour rather than an error theory in which the existence of only one world is presupposed.

10 | Conclusion

One of the arguments in favour of the linearist semantic of the future is the fact that negated future tense sentences are characterised by NAN. However, NAN characterises many other linguistic phenomena: counterfactuals, vague predicates, generics and plural definite descriptions. Their considerable differences aside, these constructions have something in common: they are true when the predicate applies to the members of a set, false when the predicate does not apply to the members of the set and indeterminate in the intermediate cases. The negation of these constructions has the truth conditions prescribed by (H): it means that none of the members has the predicate—and not that at least some members do not have the predicate. I have reviewed two types of explanation for (H), one semantic and the other pragmatic. These explanations might not be real alternatives: there might exist lexicalisation processes of what is only a pragmatic mechanism at the beginning.

If I am on the right track, the interactions between negation and future tense are not a problem for Aristotelian Universalism. Aristotelian Universalists have an explanation of this phenomenon that is at least as good as that offered by linearists. Future tense is not a unique linguistic construction involving a universal quantifier which is affected by NAN and there are general semantic and pragmatic principles that can account for this phenomenon. Instead, Peircean Universalism has troubles in accounting for NAN because, being bivalent, it cannot appeal to (H) and to the similarity with other linguistic constructions whose negation conforms to (H).[22]

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Conflicts of Interest

The author declares no conflicts of interest.

Endnotes

[1] For instance,

i. It is not necessary that you come
ii. It is necessary that you do not come
iii. It is not the case that you should come
iv. You should not come

[2] I used the metric future instead of the non-metric one because the use of the metric future highlights that Universalists postulate ambiguities that Linearists do not postulate. In fact, $\mathbf{F}\neg\varphi$ and $\neg\mathbf{F}\varphi$ also have different truth conditions for Linearists because negation can take narrow or wide scope with respect to the existential quantifier over times. However, this ambiguity is also present in the universalist semantics of the non-metric future and is, thus, independent of that I am focusing on here.

[3] The distinction between Universalism and Linearism I am trying to outline here is at the semantic level. Therefore, I classify Thomason's (1970) supervaluationism or Cariani and Santorio's (2018) view as linearist because at the semantic level the evaluation of sentences within these theories involves just one history. It is precisely because the evaluation is linear and considers just one history that (1L) and (2L) are equivalent within these frameworks. These theories also have a post-semantic layer (supervaluation for supervaluationism, truth at a context for Cariani and Santorio 2018), which has a universalist flavour because at this layer all the histories passing through the evaluation moment are taken into consideration. However, here I ignore this level and I focus only on the semantic level because it is at this level that the scopelessness of negation is explained.

[4] For an explanation along similar lines, see Bartsch (1973); Gajewski (2007).

[5] Cf. Plantinga (1977, 45–8). Plantinga's example is as follows: 'If Curley had been offered $20,000 dollars, then he would have freely accepted the bribe'. Assuming libertarian free will, for which an agent is free only if they have many alternatives, many histories depart from the counterfactual moment at which Curley is offered a bribe: in some of them he accepts, in others he refuses. Plantinga claims that one of these histories is privileged over the others because it is the history

that would have *actually* occurred if Curley had been offered a bribe. The truth value of counterfactuals of freedom cannot be known by human beings but can be known by God.

[6] Commenting a scenario in which sport fans are arguing who would have won the game if Jones had made that catch, Todd writes Ordinary thought and talk presupposes that there *is* a fact of the matter concerning who would have won the game. In other words, ordinary thought and talk tends to treat our failure to know who would have won as *ignorance*, and *not* as failing to know what is not there to know (Todd 2021, 93).

[7] For a demonstration, cf. (Williams 2010, 664n).

[8] Generics have scope interactions with other constructions. For instance:

i. Typhoons arise in this part of the Pacific

(i) can mean either that typhoons in general have a common origin in this part of the Pacific or that there arise typhoons in this part of the Pacific. This second reading is not existential because it does not mean that there are some particular typhoons that originated in Pacific, but rather says something general about the Pacific: situations involving that location are with sufficient regularity situations involving the arising of typhoons. It is very difficult explain these difference within a kind referring view. For compelling arguments in favour of the quantificational view, see Schubert and Pelletier (1987).

[9] The similarities between counterfactuals and plural definite descriptions were noticed by Schlenker (2004).

[10] It is well known that the addition of 'all' removes homogeneity:

i. Mary didn't read all the books on the reading list

(i) is true even if Mary read the vast majority of books on the reading list.

[11] Most of the explanations of the scope interactions between negation and plural definite article do not rely on single homogeneous plural individuals such as groups. Cf. Krifka (1996), Križ (2016), Malamud (2012), Križ and Spector (2021).

[12] Probably, there are other linguistic constructions that are characterized by these properties. For instance, Goldstein (2019) argues that 'Free choice' constructions such as

i. Mary may have soup or salad.

are true iff Mary may have soup and Mary may have salad, false iff Mary cannot have soup and Mary cannot have salad, undefined otherwise. This explains why (i) seems to imply (ii):

ii. Mary may have soup and Mary may have salad

(i) is true iff both disjuncts are true.

[13] Using a supervaluationist language, we can say that (30) means that Mary is not bald in every precisification, not that not in every precisification Mary is bald.

[14] Incidentally, this is a problem for Linearism in general and also extends to counterfactuals. According to Linearism, the following sentence has just one reading:

i. If there had been a lottery drawing, a ticket would have won.

However, this seems wrong. Suppose that for some reason, the lottery has not been drawn. Then, (i) can mean either that, if there had been a drawing, a particular ticket would have won (because the lottery would not have been fair) or that, if there had been a drawing, one ticket or another would have won (the lottery would have been fair). We two readings can be regimented as follows, where $D(x)$ is the predicate of drawing, and $L(x)$ the predicate of being a lottery:

ii. $\exists x(T(x) \wedge (D(\imath yL(y)) \ \Box\!\!\rightarrow \ W(x)))$

iii. $D(\imath yL(y)) \ \Box\!\!\rightarrow \ \exists x(T(x) \wedge W(x))$

For a detailed version of this argument against Linearism, cf. De Florio and Frigerio (2024, sec. 4).

[15] Another alternative is to assert that vagueness is purely epistemic: language establishes extremely precise rules regarding the boundary between 'bald' and 'not bald', that is, its rules determine the exact number of hairs that constitute the boundary between bald and non-bald individuals. However, the differences are so small that we find ourselves unable to make reliable judgments about cases near the border. It is this epistemic inability, rather than any semantic deficiency, that accounts for the fact that we are unable to determine when a predicate applies and when it does not apply in cases near the border (cf. Williamson, 1994). The advantage of such a position is to maintain a classical bivalent logic. The drawback, however, is that a position like this must eliminate all vagueness from language. For example, it must argue that there is a precise nanosecond before which a statement like 'it's almost 5pm' is false and after which it becomes true. Or that there is a precise range of numerals within which a statement like 'there are about 100 people' is true; for example, that such a statement is true if there are n people, but false if there are $n+1$, where $n > 100$. This has seemed incredible to many. In any case, in this paper I will not present arguments for or against epistemicism. What matters here is that if epistemicism is true, then the correlation I am making here between certain linguistic constructions and vague expressions is no longer valid. Such correlation exists only in the case in which vagueness is not a purely epistemic phenomenon, but also concerns the semantics of our words.

[16] Even though for different reasons, I agree with the judgment of Stalnaker (1980) on these sentences. Stalnaker believes that in such cases, there is not a unique closest world in which the antecedent is true because the selection function of the most similar world has no definite value. Based on the supervaluation theory of Van Fraassen (1966), Stalnaker holds that these sentences have no truth value. Instead, following Lewis, I believe that valuation concerns all most similar worlds (and not a single world). However, the valuation gives a value only if in every most similar world, the consequent is true, or if in every most similar world, the consequent is false. The result is similar to that of Stalnaker: no truth value is assigned to sentences (13)–(16). Therefore, I hold at the semantic level what Stalnaker holds at the post-semantic level.

[17] The analogy between the behaviour of *will* and the other linguistic constructions that comply with (H) favours an Aristotelian semantics of *will* rather than a Peircean semantics. This is another difference with respect to Todd's defence of Universalim, which embraces Peirceanism.

[18] Soames (1999) advances a similar position about vague predicates: the semantics of a vague predicate like *bald* gives sufficient conditions for belonging to its extension, and if an object x is part of the extension, then 'x is bald' is true. The semantics of the predicate also gives sufficient conditions for belonging to its anti-extension, and if x is part of the anti-extension, then 'x is bald' is false. These semantic instructions, however, are not individually necessary and jointly sufficient, and there are cases in which no instruction is given. It follows that the unique possible interpretation of 'Ann is not bald' is that 'Ann is bald' is false. But 'Ann is bald' is false if Ann is part of the anti-extension of the predicate and not in the intermediate area between extension and anti-extension.

[19] For further arguments in support of the compatibility between Universalism and assignment of probabilities to future tense sentences, cf. De Florio and Frigerio (2022). An anonymous referee objects that, even in the cases where we assign an indeterminate credence to both (46) and (47), we are still inclined to accept their disjunction: (46) ∨ (47). However, in the cases where we assign an indeterminate credence to both (44) and (45) because Mary read some but not all the book on the reading list, we would *not* accept their disjunction: (44) ∨ (45). This is an important difference between plural definites and future tense. I suspect that this difference is connected to our tendency to accept the principle of excluded middle concerning

future tense, counterfactuals, generics, vague predicates and some modals, but not concerning plural definites: 'The *N*s are *P* or the *N*s are not *P*' seems to me a doubtful statement. However, I do not have an explanation at the moment for this difference between plural definites and other NAN constructions.

[20] For the interaction between future and modality within universalism, cf. Thomason (1984). Cariani himself provides a linearist solution in 2021 (ch. 6).

[21] For the distinction between soft and hard presuppositions, see Abusch (2005).

[22] I am very grateful to two anonymous referees of this journal for their insightful comments and helpful critiques, which led me to thoroughly revise an earlier version of this paper.

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