

The Cloud of Unknowing*

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Abstract: Neg-raising (NR) predicates satisfy the consistency and completeness properties of Zwarts 1986, $\neg f(X) \Leftarrow f\neg(X)$ (cf. Klooster 2003), strengthening formal contradictory negation to contrariety. But when can this strengthening occur? Collins & Postal (in press) argue for deriving “NEG (a V_{NR} that p)” grammatically from “a V_{NR} that NEG- p ” on the basis of the possibility of subject-aux inversion under higher negation as well as the licensing of strict NPIs, properties they claim to be restricted to classical NR governors. Closer inspection shows that no such restriction can be maintained, in light of the under-appreciated properties of non-factive “know”.

1. Introduction

As related by the usual infallible authority, Wikipedia, *The Cloud of Unknowing* (or *Cloude of Unknowyng*) is “an anonymous mystical work written in Middle English in the latter half of the 14th century” that “draws on the mystical tradition of Pseudo-Dionysius the Areopagite and Christian Neoplatonism, which focuses on the via negativa road to discovering God as a pure entity” (<http://tinyurl.com/6c295h>). As a longtime traveler myself on the via negativa, I am pleased to follow that road into that cloud with the aim of determining how exploring unknowing—or more exactly, the behavior of *know* in the scope of negation—might help elucidate (or at least fruitfully complicate) our understanding of neg-raising, negative polarity licensing, inversion, and intervention.

2. Varieties of contra(dicto)ry negation

A relation between neg-raising (NR), the lower-clause understanding of higher-clause negation, and the logical property of consistency, $\neg f(X) \Leftarrow f\neg(X)$, is first suggested in Zwarts 1986; cf. Zwarts 1991, Kas 1993, Tovená 2001. NR predicates seem to allow this conditional to be perfected to a biconditional satisfying both Zwarts’s consistency and completeness properties, $\neg f(X) \Leftrightarrow f\neg(X)$. In such cases, not only does contrariety entail contradictory sentence negation (reading the biconditional right to left) but formal

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contradictory negation is strengthened to contrariety (reading left to right). But just when and how is this possible?

“The essence of negation”, according to the 19th century philosopher Bernard Bosanquet, “is to invest the contrary with the character of the contradictory” (1888: 306). One prime instance of this investment practice is “...the habitual use of phrases such as *I do not believe it*, which refer grammatically to a fact of my intellectual state but actually serve as negations of something ascribed to reality...Compare our common phrase ‘I don’t think that’—which is really equivalent to ‘I think that ___ not’” (Bosanquet 1888: 337). This, of course, is a proto-description of the practical equivalence at the heart of neg-raising, to which we return shortly.

But first it is worth noting some other examples of this strengthening tendency at work. In many instances to the Law of Excluded Middle, in that when a disjunction between live contraries $p \vee q$ can be inferred, the formal negation of p results not merely in a simple contradictory $\neg p$ but in the affirmation of q . Janet Fodor (1970: 158-168) describes the “ALL-OR-NONE” effect resulting in the tendency for an apparent sentential negation with a definite plural or generic bare plural to scope under the (explicit or implicit) quantification within subject and object terms. Thus while seeing the boys generally amounts to seeing them all, the possibility for negation to outscope a universal as in (1a) is unavailable with the plural definite in (1b), while (2b), unlike (2a), “leaves no room for disagreements about different women.”

- (1) a. I didn’t see all the boys, but I did see some of them.
 b. #I didn’t see the boys, but I did see some of them.
- (2) a. All women enjoy/do not enjoy washing dishes; Do all women enjoy washing dishes?
 b. Women enjoy/do not enjoy washing dishes; Do women enjoy washing dishes?

In each case, the set in question behaves uniformly as a monolith, rendering any literal wide-scope contradictory reading of the negation difficult or impossible to get.

Fodor’s all-or-none with implicit quantification in bare and definite plurals resurfaces as the GENERIC EXCLUDED MIDDLE of von Stechow (1997: 31)—

When a kind is denied to have a generic property P_k , then any of its individuals cannot have the corresponding individual-level property P_i .

—and the HOMOGENEITY OR UNIFORMITY PRESUPPOSITION of Löbner (1985 & seq.), based on the interpretation of negative responses to questions like *Do mammals lay eggs* or *Are the children asleep?*:

If the predicate P is false for the NP, its negation not- P is true for the NP.

—later reformulated as the PRESUPPOSITION OF INDIVISIBILITY:

Whenever a predicate is applied to one of its arguments, it is true or false of the argument as a whole. (Löbner 2000: 239)

In each case, the members of a set A either homogeneously exhibit a property (e.g. egg-laying) or homogeneously exhibit the opposite property (e.g. non-egg-laying); the possibility that there might be an $a \in A$ in one camp and a $b \in A$ in the opposite camp is ruled out. We have, then, an instance of the Zwarts biconditional in which both consistency and completeness are satisfied, so that $\neg f(X) \leftrightarrow f\neg(X)$. In these cases, the Law of Excluded Middle is triggered, strengthening apparent wide-scope sentential negation ('No, it's not the case that mammals [in general] lay eggs') into contrary negation ('Mammals are such they [don't lay eggs]'), by virtue of the nature of the implicitly quantified terms with which negation interacts, or rather fails to interact. In the case of neg-raising, to which we now turn, the effect derives from the nature of the predicate.

3. Neg-raising and the excluded middle

The Golden Anniversary of the first analysis of neg-raising within a fragment of generative grammar (Fillmore 1963) has now been marked by a major monograph, Collins & Postal 2014, that marshals old and new evidence in support of a syntactic approach to neg-raising. In motivating his original rule for the "Transposition of NOT (EVER)"—"Under certain conditions (e.g. after verbs like WANT or THINK which are themselves not negated), a NOT in the embedded sentence may be moved in front of the main verb..."—Charles Fillmore cites no explicit evidence for a grammatically co-deriving (3a,b), relying instead on the (purported) paraphrase relation between (3b) and one reading of the putatively ambiguous (3a) (Fillmore 1963: 220, fn. 12).

- (3) a. I don't believe that he wants me to think that he did it.
 b. I believe that he wants me to think that he didn't do it.

In fact, it is unclear whether (3a,b) do constitute good paraphrases; as recognized a half-century earlier by the grammarian Poutsma (1928: 105), "the shifting of *not* often has the effect of toning down the negating of a sentence."

After some years of neglect, Fillmore's syntactic approach to what had come to be called neg-raising (NR), following the introduction of the NEG element in Klima 1964, began to be supported with direct evidence. The most influential argument was due by Robin Lakoff. Citing an earlier personal communication from Masaru Kajita, Lakoff (1969) points

out that strict or strong negative polarity items (NPIs), e.g. *until midnight, in weeks*, which normally require a tautoclausal negative licenser, are nevertheless well-formed in the scope of negated NR predicates like *think* or *suppose*:

- (4) a. I didn't think John would leave until tomorrow.
 b. *I didn't say John would leave until tomorrow.

The functional transparency of NR predicates that overrides the locality restriction on strict NPIs turns out to be a more complex matter than first appeared; see Horn 1978, Gajewski 2007, and Collins & Postal 2014 for details, some of which we consider below.

Over the years, empirical and theoretical considerations have gradually led linguists away from Fillmore and Lakoff and down the trail blazed by Jackendoff (1971: 291): "The synonymy between *John thinks that Bill didn't go* and one reading of *John doesn't think that Bill went* is inferential in character and has nothing to do with the syntactic component—it may even have nothing to do with the semantic component." (This analytic trend is reviewed in Horn 1978 and Horn 1989: Chapter 5.) The result has been a de facto rejection of the syntactic approach to NR and a return in essence to the traditional view purveyed in grammars of English that tend to subsume NR (if it's noticed at all) under a more general tendency for formal contradictory negation (paraphrasable as "It is not that case that p") to be strengthened to a contrary, as when *She's unhappy* or even *She's not happy* are understood as making a stronger negative claim than a mere denial that she is happy. These can be viewed as expressing lexicalized and virtual (or on-line) contrariety respectively. And similarly, Jespersen (1917: 53) presents the use of *I don't think* to "really mean" *I think he has not come* as both an instance of specialization of negative meaning and an illustration of "the strong tendency in many languages to attract to the main verb a negative which should logically belong to the dependent nexus," i.e. as a contrary, $f\text{-}(X)$, in contradictory's clothing, $\neg f(X)$.

But just how and why is the hearer led to strengthen the weaker contradictory, *I don't believe that p* understood as $\neg(\text{I believe that } p)$, to the force of the contrary, *I believe that $\neg p$* , ? The classic recipe is given by Bartsch (1973) in a paper that wears its conclusion on its sleeve: "'Negative transportation' gibt es nicht." Like Jackendoff, Bartsch (1973: 3) rejects any ambiguity for (5), but argues that mirroring the semantic entailment from (5a) to (5b), there arises in certain contexts a pragmatic implication from (5b) to (5a).

- (5) Peter doesn't believe that Hans is coming.
 a. Peter believes that Hans is not coming.
 b. It is not the case that Peter believes that Hans is coming.

This implication derives from the assumption that the subject *a* can be assumed to have given some thought to the truth of the complement *p* and come to some conclusion about it, rather than that *a* hasn't thought about *p* or is neutral as whether *p* or $\neg p$. Propositional attitudes ('think', 'believe', 'want') express the subject's cognitive or psychological stance toward the complement, inducing a disjunctive pragmatic presupposition of the form "[*a* believes that *p*] or [*a* believes that $\neg p$]." Thus so-called neg-raising is not a rule of grammar or semantic interpretation but a (mere) *pragmatische Implikation*; (5a,b) are semantically distinct but can express the same information relative to a given *Sprechsituation*. Bartsch's inference schema can be given as follows:

- | | | | |
|-----|-------|------------------------------------|---|
| (6) | (i) | $F(a, p) \vee F(a, \neg p)$ | (the pragmatically presupposed disjunction) |
| | (ii) | <u>"$\neg F(a, p)$"</u> | (the proposition actually asserted) |
| | (iii) | $F(a, \neg p)$ | (the proposition conveyed) |

The key step is the assumed disjunction in (i): if you can naturally assume I either want to go or want to stay (= not-go) and I say (out of diffidence, politeness, cowardice, etc.) that I don't want to go, you can infer that I want to stay. From the disjunction *p* or *q* and the expression of *not-p*, infer *q*—this is a basic inferential schema variously known as DISJUNCTIVE SYLLOGISM, MODUS TOLLENDO PONENS, REASONING BY EXCLUSION, or (if you're a Stoic) THE FIFTH INDEMONSTRABLE SYLLOGISM.

Unfortunately, this proposed solution to NR cannot handle variation within and across languages as to just which NR candidates can substitute for *F* in (6). When is the middle-excluding disjunction in (6(i)) actually assumed? Not just any predicate of the knowledge and belief class will do. In fact, membership in the class of propositional attitudes is not necessary; neg-raising was first identified by Saint Anselm (1033-1109), who describes the strong tendency for *debere* 'ought' in *non debet peccare* (i.e. '[a man] *not-should* sin') to be interpreted as *debere non peccare* (i.e. '[a man] *should not-sin*') and similar readings are available for a range of other deontic and epistemic predicates, e.g. *be supposed to*, *falloir* 'must', *be advisable*, *be likely* (see Horn 1989: 308ff. and references therein). Nor is propositional-attitude-hood a sufficient condition, given the fact that factives like *know*, *realize*, and *regret* and related strong epistemics like *be certain* or *be sure* fail to allow lower-neg or contrary readings.

And then there is the problem of variation, both within and across languages. While German *hoffen* and Dutch *hopen* neg-raise, their English sister *hope* (usually) doesn't; Latin *sperare* 'hope' neg-raised but its French derivative *espérer* doesn't (while *souhaiter* 'wish, hope' does). Parenthetical *guess* is a neg-raising propositional attitude in Southern U.S. English but not in other U.S. or U.K. varieties. And so on: see Horn & Bayer 1984 for

further discussion and a proposed fix. More recently, Gajewski (2007) takes the existence of lexical exceptions (non-NR attitude predicates) as indicating that excluded middle for NR must be treated as a “soft” presupposition, while Collins & Postal (2014) see this muddle as further evidence for a grammatical rather than pragmatic account of NR readings.

Klooster (2003) undertakes his own quasi-Bartschean analysis of NR by invoking the notion of dichotomy, or what he calls a ‘BLACK AND WHITE’ EFFECT, for verbs like *think* and *want*, given that “in a discourse where judgements and intentions are relevant, but reserving or deferring them are not, verbs of the considered type are easily interpreted as dichotomous” (Klooster 2003: 3-4). This suggests an analysis along the lines of the Zwartsian completeness + consistency biconditional—

In a sentence containing a matrix verb of the [dichotomous] type in question, its contrary can thus (indirectly) be expressed simply by introducing negation. That is, where *P* is an NR verb, *x* the subject, and *p* the complement clause, the following seems to hold:

[7] $\neg P(x, p)$ iff $P(x, \neg p)$

—but there’s many a slip between what seems to hold and what does hold. Klooster ultimately rejects his tentatively advanced biconditional for the verbs at issue, given the non-synonymy of the higher-clause and lower-clause versions of pairs like that in (3a/3b) and (5/5a) and other considerations. Indeed, the one value of *P* that most truly fits the biconditional frame of (7) is not even a neg-raiser, given its non-transparency for the licensing of strict NPIs (cf. Horn 1978: 207, Klooster 2003: 4):

- (8) a. It is true that John will not {leave until tomorrow/do a fucking thing}.
 b. *It is not true that John will {leave until tomorrow/do a fucking thing}.

The failure of *not true that* to license NPIs (as opposed to, say, *not likely that*) is of course grist for the syntactic NR mill of Collins and Postal, as they recognize (2014: §12.4), but I want to turn the investigation in another direction.

4. Ways of not knowing

Characterizing the class of potential neg-raising predicates has been an avocation of linguists for well over a century, from Tobler (1882) and Kalepky (1891) to G. Lakoff (1970), Horn (1975), and Collins & Postal (2014). One constant has been the ostracism of

factive predicates, whether epistemic (*know, realize, point out*) or emotive (*regret, conceal, be surprising*). The difference between contradictory (*Lee didn't realize it was snowing*) and contrary (*Lee realized it wasn't snowing*) in such cases is just too broad for these predicates to be viable candidates for “dichotomous” readings. Further, since negation outside the scope of such predicates can't be interpreted as derived from an embedded clause, these predicates should be uniformly opaque with respect to the diagnostics for which neg-raising predicates are transparent. But as we are about to see, what we find when we look closely enough is sometimes not opacity but translucence. In particular, consider the case of *know*.

From Kiparsky & Kiparsky (1970) on, *know* has stood as the epitome of factivity. But how factive is *know*? A good starting point is Hintikka (1962) and his logic of knowledge and belief. For Hintikka, negating a *know* clause brings out an ambiguity, as seen in this summary of his translations:

- | | |
|------------------------------|--|
| (9) a. a knows that p | a'. $K_a p$ |
| b. a knows whether p | b'. $K_a p \vee K_a \sim p$ |
| c. a does not know that p | c'. $\sim K_a p$ c''. $p \ \& \ \sim K_a p$ |
| d. a does not know whether p | d'. $\sim (K_a p \vee K_a \sim p) \leftrightarrow \sim K_a p \ \& \ \sim K_a \sim p$ |

The principal complication, Hintikka observes, resides in the apparent ambiguity of (9c), as seen in the dual translation possibilities. The conjoined (9c'') reading is taken to be the appropriate one for “the most typical cases”, especially third person examples¹; (9c'), however, is needed for e.g. an imagined reaction of Russell's in (10a) to rumors of Wittgenstein's death in or a challenge in (10b) to an earlier claim that someone is a perjurer (Hintikka 1962: 13-14). A simpler example is that in (10c).

- (10) a. I don't know that he's dead; the rumours may not be true, for all that I really know.
 b. You don't know that he is; the witnesses you're relying on are untrustworthy.
 c. I don't know that I can make it there on time.

¹ Note that Hintikka assumes a simple conjunction here rather than the presence or absence of a presupposition, although he characterizes such as cases as those in which “the speaker assumes that p is in fact true” (1962: 13). In the same “prolegomena”, Hintikka notices and dismisses the “peculiarity” of *a does not believe that p* in that “it is often used as if were equivalent to “a believes that $\sim p$ ”, i.e. as $B_a \sim p$ rather than as $\sim B_a p$, thus dismissing neg-raising as an unfortunate quirk of English. See Horn 1978: 129 for similar remarks by Quine and others.

I shall assume that Hintikka's (9c') is the basic compositional meaning of (one reading of) *not know* sentences, remaining neutral as to whether factivity (the presuppositional counterpart of (9c'')) represents a fork of a true ambiguity or arises in some other manner. But what is it to not know (or, if you insist, not to know), and what isn't it? To be agnostic is to not know whether or not *p*; to be ignorant is to not know *p* in a context in which *p* is presupposed. To not know that *p* is neither to be agnostic about *p* (since it's compatible with knowing that $\neg p$ ²) nor to be ignorant about *p* (since it's compatible with contexts in which $\neg p$ is a live option). If knowledge is justified true belief as in Plato's *Theaetetus* (which it isn't; see Ichikawa & Steup for a helpful review), to say non-factively that *a* doesn't know that *p* tends to deny the presence of justification or evidence.

We can begin by leaving aside cases in which *a knows that p* can be used in positive utterances of (9a) without an entailment that *p* is the case. Such cases exist, but are clearly marginal, often utilizing scare quotes or their intonational counterpart; one can't really know what isn't true, but at best "know" what isn't true.

- (11) a. That peacocks fan their tails in the sight of poison was a good thing to know, even if it wasn't true." (—David R. Slavitt (1971), *Anagrams*)
 b. Everybody knew that doing anything to reduce inequality would have at least some negative impact on G.D.P. But it appears that what everyone knew isn't true. (—Paul Krugman column, NYT 10 March 2014, <http://tinyurl.com/nytt4fn>)

Crucially, there is a sharp contrast between (12a,b),

- (12)a. John knows that Mary is in Paris (#but she isn't).
 b. John doesn't know that Mary is in Paris, because she isn't.

and while (12b) may be seen as an instance of presupposition cancellation (as it is for Chierchia 2013: 405; cf. also Beaver 2010), this doesn't generalize to the cases in (10). So if an entailment is present in the positive (9a) but is (sometimes) absent in the negative (9b), *know* cannot (always) be a factive in the linguistic sense (Kiparsky & Kiparsky 1970). We might call it VERIDICAL in the sense of Zwarts 1995³, were it not for the general use of this term to encompass verbs like *believe* where no entailment is present (cf. Giannakidou 1998 and subsequent works). In the terminology of Karttunen 1971a, (non-factive) *know* is a one-way implicative, along with *prove*, *imply*, and *make*.

² Knowing that not-*p* unilaterally entails (non-factive) not knowing than *p*, assuming a scale of the form $\langle a \text{ doesn't know that } p, a \text{ knows that not-}p \rangle$.

³ A one-place propositional operator *Op* is veridical iff $Op(p) \rightarrow p$.

Finessing the ambiguity question first raised by Hintikka, let us refer to the *know* of (9c') and (10) as *know*-NF, remaining agnostic (not-knowing-whether) as to the status of this category as a use or distinct sense of *know*. One argument for ambiguity is that apparent synonyms of *know* lack non-factive occurrences in simple negative contexts. Thus, by uttering (13a) I may disappoint you, but by uttering (13b) instead I will just confuse you.

- (13)a. I don't know that I can trust you.
 b. #I don't realize that I can trust you.

It may be thought that *know*-NF is restricted to the presence of negation, but it shows up more generally in questions, as Hintikka points out ("Do you know that he's reliable?"). Second-person questions are in fact as natural a context for *know*-NF as first person declaratives, although in both cases tense is crucial:

- (14) a. How do you know he's here? (*know*-NF preferred; ≈'What makes you think...')
 b. How did you know he was here? (*know*-NF dispreferred; ≈'How did you find out...')

Other non-veridical contexts allow or favor non-factive readings of *know*, yielding a meaning distinct from a *know-whether* paraphrase. Thus in the first couplet of this verse from Carole King and Gerry Goffin's 1961 pop classic *Will You Still Love Me Tomorrow*,

- (15) I'd like to know that your love,
 Is love I can be sure of,
 So tell me now and I won't ask again,
 Will you still love me tomorrow?

the singer's expressed desire is not equivalent in content (or meter) with *I'd like to know whether your love/Is love I can be sure of*. Similarly, if I tell my doctor that I'd like to know that I'll survive the operation, or that I'd agree to the operation if I knew I'd survive it, this is not the same as wishing I knew whether or not I'd survive it; knowing whether may well be necessary but not sufficient.

Another correlate of *know*-NF is the complementizer. For many speakers (as Googling confirms), *not-know*-NF insists on the presence of *that*, while factive *know* is indifferent. Thus, the sequence "I don't know that I'm all that..." has 133 Google hits, compared to just 3 for "I don't know I'm all that..." (The first person present tense and the strong NPI *all that* both rule out factive readings here.) Similarly, compare the near-obligatory complementizer in (non-factive) *I don't know that I can* and its optionality in (usually factive) *I didn't know (that) I could*.

While, as we've seen, *know*-NF is most comfortable in first person declaratives (and second person interrogatives), the real key is whether the author of the (original)

utterance is the possessor of the epistemic state. Thus, *know*-NF seems to require coreference of *John* and *he* in (16b) (cf. Chierchia's (12b) above, where the non-factive reading only emerges with direct cancellation); if *John = he*, (16b) is essentially an instance of the impeccably non-factive (16a).

- (16) a. I don't know that Mary is in Paris.
 b. John says he doesn't know that Mary is in Paris.

Compare (17) (following my established practice, I use γ to mark Googled examples):

- (17) γ he says that he doesn't know that I'm the woman he wants to spend the rest of his life with even though at the moment he loves me. (<http://tinyurl.com/l5w8e75>)

As Dear Cupid's correspondent, nine weeks pregnant, knows all too well, her boyfriend's not-knowing is non-factive.

In his recent treatise on the logic of polarity and implicature, Chierchia (2013: Ch. 7) investigates the role of factive presuppositions as intervener that block the licensing of even weak NPIs by negation outside their scope. He points out that this effect is parameterized across languages, so that *John doesn't know that Mary stole anything*, while grammatical in English, has no grammatical counterpart in Italian. On Chierchia's account, the presupposition of factives is predicted to interfere with polarity licensing, but the facts as reported appear to be admittedly unsystematic (2013: 401), yielding arrays like that in (18) (= Chierchia's (60)).

- (18) a. Leo does not believe that John stole any vase
 b. ?Even though John did steal a vase, Leo doesn't know that John stole any vase.
 c. It isn't at all strange that Mary wrote any books.
 d. Paul didn't discover that Mary ever went to New York.

Actually, on closer examination, the facts aren't as murky as they appear. In (18b), *know* is clearly factive and the result is indeed pretty bad. Complicating matters is the unlikely *a vase...any vase* sequence; (18b) remains an odd sentence even if *doesn't think* replaces *doesn't know*. But compare the following, where the *know/think* distinction is clearer, and the facts go as predicted:

- (18') Leo doesn't {think/#know} that you have any friends, even though you do.

In (18c), *strange* is indeed factive and *any* is indeed fine. However, it's not the upstairs negation that licenses the NPI *any* (although that negation does license *at all* in the matrix), but rather the emotive factive *strange* itself:

(18) c'. It's strange that Mary wrote any books.

The distinction between cognitive/epistemic factives and emotive factives is an important one (as the Kiparskys first recognized) and its ramifications extend well beyond polarity licensing.

In (18d), *discover* is at most a semi-factive, lacking any presupposition in a negative statement (especially in the presence of an NPI); cf. Karttunen 1971b, Beaver 2010.

Chierchia does not distinguish factive from non-factive occurrences of *know* (and nor does Schueler 2005 in his study of intervention effects), but this is directly relevant to its interventional potential. When *know* behaves as a factive, its interventional potential is revived. While the naturally nonfactive first person cases—*I don't know that I did anything wrong*—are impeccable, even the third person cases are more natural if they can be read as *know*-NF: compare (18') with *Leo says he doesn't know that you have any friends*. If we replace *know* with *point out* (an epistemic predicate that doesn't have a non-factive use), the result, *I didn't point out that I had done anything wrong*, seems hopeless. Another approach to the factivity factor is to Google sequences in which *know*-NF is either favored (in the first case) or disfavored (in the other two):

(19) “don't know that anything ever”:	91 hits
“doesn't know that anything ever”:	3 hits, of which two are clearly non-factive (“He says he doesn't know...”)
“didn't know that anything ever”:	5 hits

Why these particular strings? The “doesn't know” eliminates first and second person cases, where the *know*-NF is easiest to get, and the “anything ever” is easily searchable while knocking out free-choice *any*, which infects examples with *anything* tout court, and past tense favors factive readings. So this tends to support the hypothesis that when a negation outside *know* licenses NPIs, it's generally an instance of *know*-NF, whence also the intervention properties of persistent factives like *point out*. Of course the equally persistent emotive factives license NPIs on their own, but that's a different problem (see Linebarger 1987 and everyone since).

The NPIs licensed in the cases under consideration here are the weak ones, in particular, *ever* and (polarity-sensitive) *any* and its derivatives. Predictably, factives

intervene to block licensing of strong NPIs—after all, if factives can't be neg-raisers and if only neg-raisers can be transparent to the licensing of strong NPIs in embedded clauses, how could negation over *know*, even *know*-NF, license a strong NPI? The problem is that strong NPIs do occur under negated *know*—or more precisely under negated *know*-NF, as we shall see below. I don't know that Chierchia 2013 or Collins & Postal 2014, inter alia, would be all that pleased with this fact, but a fact it remains.

5. When to not know is to imply: Patty Hearst's revenge

Following Horn 1975: 283 and Horn 1978, Collins & Postal (2014: Chapter 13; cf. also Collins 2013) construct an argument for the syntactic nature of NR based on the possibility of embedded subject-aux inversion. They cite the following passage from Horn 1978: 168-69; I follow Collins & Postal in preserving the original example numbering.

“Consider the following observation made by a television newsman covering the Patty Hearst abduction:

(96) I don't think that ever before have the media played such a major role in a kidnapping.

In this sentence, Subject-Auxiliary Inversion has not only applied in a subordinate clause, it has apparently been triggered by a negative which appears in the surface structure in the clause above that where the inversion has taken place. In a theory with a syntactic rule of neg-raising, we might posit as an intermediate string in the derivation of (96) something of the form:

(97) I believe that NEG [the media have (at) some time before played such a major role in a kidnapping]

[...] If the higher predicate is not an NR-governor, only...Negative Incorporation [but not Subj-Aux Inversion] is available:

(99) a. I claim that never before have the media played ...

b. *I don't claim that ever before have the media played ...”

McCawley (1998: 598), endorsing this argument for NR, adding the (constructed) examples in (20), to which Collins and Postal add the attested and constructed examples in (21) illustrating what they term HORN CLAUSES (HCs):

(20) a. I don't suppose that under any circumstances would he help me.

b. We didn't anticipate that at any time would our work create difficulties.

- (21) a. γ I don't believe that at any time did traffic come to standstill.
 b. γ I don't believe that at ANY time did Rockstar consider closing shop.
 c. I didn't expect that for any reason would she agree to that.
 d. I didn't imagine that either of them would she be anxious to marry.

The problem with this otherwise elegant argument for a syntactic rule of NR is that “dichotomous” status is not a necessary property for triggering embedded subject-aux inversion following a fronted NPI, as revealed by our old friend *know*-NF, a staunch non-neg-raiser (*I don't know that p* \neq *I know that \neg p*):

- (22) a. γ It has been my fortune to have many such cases, but I don't know that ever before have I had three such cases in succession. (*The Clinique*, Vol. 4, 1883)
 b. γ I don't know that ever before or since in my life have I felt such exhaustion. (Hugh Walpole, *The Dark Forest*, 1916)
 c. I don't know that EVER before had all three boys napped simultaneously. (<http://www.vrbo.com/194521/reviews>)
 d. I don't know that ever before had the Army commander been in charge of the Naval forces. (<http://www.americancivilwarforum.com>)
 e. “I don't know that ever before has the world been so small in the sense of media getting out to the people.” (<http://tinyurl.com/kvdjn3f>)
 f. “I don't know that ever again will we have four 6-10 guys on the team at the same time. And they all can play.” (<http://tinyurl.com/lbtc7mm>)

HCs are likewise possible under *can't say* and *not aware*-NF, which are equally non-raisers (*I can't say that p* \neq *I can say that \neg p*); as above, the googled examples are all fully acceptable in my own dialect.

- (23) a. For the record, I view “hoping that there is no Christian God” to be utterly silly and useless. I can't say that at any time have I ever hoped that there is no Christian God (hah! As if there's just one. (<http://tinyurl.com/mdralo7>)
 b. I can't say that at any time did I have a problem with any of the customer service team. (<http://www.reviewcentre.com/reviews182288.html>)
 c. I can't say that at any of those situations with any of those women has it [= below-average penis size] ever presented itself as a real issue. (<http://www.documentary-log.com/penis-size-insecurity-by-men>)

- (24) “I’m not aware that ever in the history of New York State has something like this happened. It’s an unfortunate first. Normally when State agencies lay people off, there is an announcement that layoffs will have to occur.”
<http://tinyurl.com/m8qpygg>

Note that although no lower-neg reading is available in such cases, there is a negative proposition that is at issue in such cases; in (24), for example, the speaker’s point is to indicate that he suspects that such abrupt layoffs have never happened before.⁴

Crucially, this same class of non-neg-raisers tends to allow strict NPIs in embedded clauses, again contra the received wisdom, and again with the implicit suggestion that the negation of the embedded proposition holds, so that Isabel, the author of (25c), is taken as suggesting that she hasn’t cooked myself a full meal in weeks.

- (25) a. γI don't know that Santa comes around these parts until Christmas Eve.
<http://www.sowonderfulsomarvelous.com/2013/12/santa-visit.html>
- b. γ[W]ith my 1st pregnancy...I don't think I got breast milk. I don't know that I have it this time either. (<http://tinyurl.com/n35lw62>)
- c. γI can't say I've cooked myself a full meal in weeks, if not months.
<http://starnickel.com/undercoverkinkster/blog1.php/long-time-no-blog>
- d. γI’m not aware that herb identification walks were a common practice at *any* veterinary meeting until VBMA began offering one at its yearly conference.
<http://www.vbma.org/Susan%20Wynn.html>

This is not a new observation. As remarked in Horn 1978: 148, following Lindholm (1969: 153-4), nonclausemate negation can license embedded *until* phrases “despite the unavailability of either a paraphrase with the negation in the lower clause or, concomitantly, any possible NR derivation.” Indeed, this observation goes back to Baker (1970), who points out that (26a) is acceptable by virtue of its implication that whatever you say, I will go on believing that he DIDN’T lift a finger. Where this implication is absent, as it is in the syntactically parallel (26b), the polarity item is harder to get.

- (26) a. You can’t make me believe that he lifted a finger to help.
 b. #You shouldn’t make {me/her} believe that he lifted a finger to help.

⁴ I argue in Horn (to appear) that the distribution of NPIs—both weak and strong—is robustly linked to the presence of at-issue negative propositions; cf. Linebarger (1987) for a related view.

Cornulier (1974) makes a similar point about French based on the data of (27) (glosses are mine) involving a high register main-clause subjunctive expressing *savoir*-NF; cf. <http://tinyurl.com/kh5okw6> for another take on this somewhat restricted double-subjunctive construction.

- (27) a. Je ne sache[SUBJ] pas qu'il ait[SUBJ] jamais dit cela.
 'I don't know that he's ever said that'
- b. Je sais qu'il n'a[INDIC] jamais dit cela.
 'I know that he (has) never said that'
- c. Il n'a jamais dit cela {que je sache/à ma connaissance}.
 'He (has) never said that, {that I know of/to (the best of) my knowledge}'

(27a) cannot be paraphrased by (27b)—as it would have to be if *savoir* 'know' were in fact an NR-verb of the *croire* ('believe') stripe—but rather by (27c), an admission of lack of positive knowledge rather than an assertion of knowledge to the contrary. (Notice that this is true of the English glosses as well.) Yet the speaker's implication that that such a negative proposition holds is sufficient to license an embedded *jamais* in the absence of a tautoclausal negation or a NR predicate.

Let us touch on one more instance of a (putatively) strict NPI licensed under *know*-NF. Collins & Postal rank *all that* in the roster of strict NPIs. Their judgments include the paradigm in (28) (= their (21) in Chapter 9).

- (28) a. Arnold is *(not) all that intelligent.
 b. Lucinda doesn't believe/think that Arnold is all that intelligent.
 c. *Lucinda doesn't know/realize that Arnold is all that intelligent.

However, well-formed analogues of (28c) are not all that hard to find, as in the exchange in (29), from Clint Eastwood's 1992 western *Unforgiven*.

- (29) *Ned Logan*: How long has it been since you fired a gun at a man, Will? Nine, ten years?
 Will Munny: Eleven.
 Ned Logan: Easy, huh? Hell, I don't know that it was all that easy even back then. And we was young and full of beans.

Relevant instances of "I don't know that * is all that..." are epidemic on the web, but we also find an occasional third-person example in the frame of (28c), e.g.

- (30) γ But she doesn't know that it's all that bad. A house that's dusty and full of stuff.
[\(http://crookedkat.tumblr.com/\)](http://crookedkat.tumblr.com/)

Crucially, however, these examples all feature *know*, i.e. *know*-NF, rather than *realize*, despite the equivalence Collins & Postal seem to be suggesting in (28). There are, for example, dozens of Google hits for “*I don't know that ___ is/'s all that common*”—about the same number as for *believe* or *think*—as against none at all for *realize*, which (while permitting presupposition cancellation in some environments, as shown by Karttunen 1971b) does not occur as a coherent non-factive in the frame *I don't ___ that p*.

We have seen that nonfactive occurrences (especially but not only in first person cases) of *a doesn't know that p* often tend suggest that the speaker thinks that $\neg p$ is likely to be the case, but we do have examples like that in (31), where the radio commentator was struggling with certain counterfactual truth conditions (this was uttered after the 49ers benched Smith in favor of Colin Kaepernick and went on to get to the 2013 Super Bowl).

- (31) I don't know that the 49ers would be in the Super Bowl if Alex Smith were still the quarterback. I don't know that they wouldn't be. But...

But even here, despite the disclaimer in the second sentence, the point of the utterance is to discount the possible worlds in which Smith remained the QB and the 49ers succeeded.

The canonical case in which Hintikka's (9c), *a doesn't know that p*, is read as (9c'), *know*-NF, rather than as (9c''), is one in which the speaker (or the subject, when these are distinct) undertakes to highlight her belief in the possibility or likelihood of $\neg p$, Neg-raising is a sufficient condition for triggering this effect, to be sure, but not a necessary one. And it is this highlighted negative proposition that results in the correlates we have observed, from the conditions on intervention to the distribution of “Horn clauses” and strict NPIs. This brings us to the following hypothesis, with which we conclude:

The crucial factor in licensing embedded subject-aux inversion (“Horn clauses”) and strict NPIs when these occur under higher negation in the sequence [**a** NEG-Fs that **p**] is not the requirement that F be a NR predicate per se but the existence of a robust association between **a** being in a NEG-F relation to **p** and **a** being in an **F'** relation to $\neg p$, where **F'** = **F** or **F'** < **F** on a relevant scale.

6. Envoi

There are known knowns; there are things we know that we know. There are known unknowns; that is to say, there are things that we now know we don't know. But there are also unknown unknowns—there are things we do not know we don't know. — Donald Rumsfeld, press briefing, February 2002

7. References

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