To frame thy fearful asymmetry:
More stories of O

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O me no O's
Ben Jonson (1609), "The case is altered", V.i

The back cover blurb for the published version of Dany Jaspers' (2005) masterful Leiden dissertation begins as follows:

> *Operators in the Lexicon* begins with an old chestnut: why are there no natural single word lexicalizations for negations of the propositional operator *and* and the predicate calculus operator *all*: neither **nand* nor **nall*?

Much of Dany's career since then — and much of mine dating back 45 years — has been devoted to the development of techniques for pulling that chestnut out of the fire.
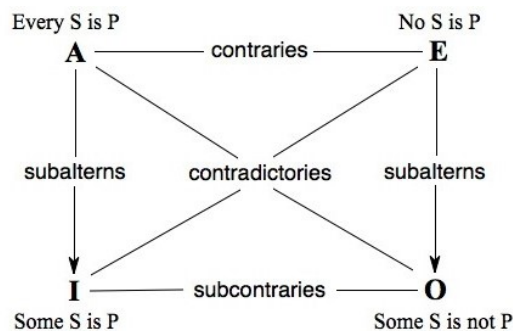

Figure 1: The traditional square.

While the traditional logical square is horizontally and vertically symmetrical (see Parsons 2017 for an overview), natural language lexicalization patterns reveal a sharp asymmetry, one partially recognized by St. Thomas Aquinas (Horn 1989, 253, Jaspers 2005, 15). Alongside the quantificational determiners *all*, *some*, *no*, we never find an **O** determiner **nall* for 'not all'/'some not'; corresponding to the quantificational adverbs *always*, *sometimes*, *never*, we have no **nalways* (= 'not always', 'sometimes not'). We find univerbations for *both (of them)*, *one (of them)*, *neither (of them)*, but never for **noth (of them)* (= 'not both', 'at least one…not'); we have connectives corresponding to *and*, *or*, and sometimes *nor* (= 'and not'), but never to **nand* (= 'or not', 'not…and'). Similar if less absolute asymmetries obtain among non-quantificational and indeed non-logical operators; cf. Horn (1972, 2012); Van der Auwera (1996).

My own story of the asymmetry of SQUOP (as I affectionately dub the square of opposition) invokes neo-Gricean pragmatics, which predicts the tendency for subcontraries (*some/some not*; *or/or not*; *possible/possible not*) to collapse together given the tendency for the assertion of either member of any of these pairs to quantity-implicate the other (cf. Fogelin 1967; Grice 1989; Horn 1972, chapter 4, Horn 2012). These implicatures render one of the subcontraries otiose for lexicalization, while the marked status of negation (cf. Horn 1989 and works cited therein) guarantees that the lexicalized subcontrary will always have the **I**, not the **O** value. Dany, in his own work and in collaboration with Pieter Seuren, has pursued different modes of explanation for these asymmetries in lexicalization potential (Jaspers, 2005; Seuren & Jaspers, 2014), as have others exploring these issues related to what Jacques Moeschler calls "Horn's conjecture", although some of these studies have concentrated exclusively on the lexical asymmetries affecting the quantifiers and connectives, excluding modals and adverbials (Huybregts, 1979; Barwise & Cooper, 1981; Hoeksema, 1999; Moeschler, 2007; Katzir & Singh, 2013; Smessaert & Demey, 2014). Related inquiries have been pursued by Löbner (1990) and by Van der Auwera (1996, 2014); Van der Auwera & Bultinck (2001) with special reference to the "modal square", while Ziegeler (2017) proposes typological extensions of the logical geometry.

The prediction that no natural language lexicalizes **nall* or the corresponding binary connective **nand* has stood up well. On logical grounds there is no reason why such a univerbation shouldn't exist; indeed, **nand*, while not attested in natural languages, has been well ensconced in electronic circuitry since 1958 for 'a Boolean function of two or more variables that has the value 0 when all of the variables are 1, and otherwise has a value 1 = NOT AND' [Oxford English Dictionary], i.e. is false just in case all the inputs are true. Furthermore, *nand* is

functionally complete in that all other Boolean functions can be defined in terms of it. But just as the Sheffer stroke p|q — cf. Jaspers (2005, 19) — is functionally complete but never lexicalized by a single operator, so too is *nand* absent from natural spoken or signed languages.

Similarly, exclusive disjunction (the <0110> truth function, whose output is true if one input is true and the other false and false if both are true or both are false) is not directly lexicalized in natural language, despite claims to the contrary (see Horn 1989, 222-26). On the neo-Gricean account of Horn (1972, 1989), *nand* and *xor* are excluded for the same reason as *nall*: given that *p or q* tends to implicate '[for all S knows] not both p and q', and hence to communicate exclusivity, the closed set of connectives need admit just the one **I** vertex disjunctive connective.

If it were attested, exclusive disjunction would actually lexicalize not the **O** vertex but the conjunction of **I** (= inclusive *p or q*) and **O** (= *not both p and q*). While such a value (unlike the equally unattested **O** connective *noth* = 'not both') is not represented on the classical post-Aristotelian Square, they are located on a variety of more complex logical polygons independently developed in the mid-20th century. In a 1990 paper, "Hamburgers and Truth", I revisited three insightful but at the time but almost entirely neglected alternative geometries for filling out the array of oppositions, proposed in the mid-20th century by Jacoby (1950); Sesmat (1951), and most systematically Blanché (1952, 1953, 1969). In Blanché's hexagonal schema, and in my own "Magen David of opposition" juxtaposed alongside it in Figure 2 — from Horn (1990, 460) —, the conjunction of **I** and **O** (as in *some but not all* or exclusive disjunction) is represented by **Y**:
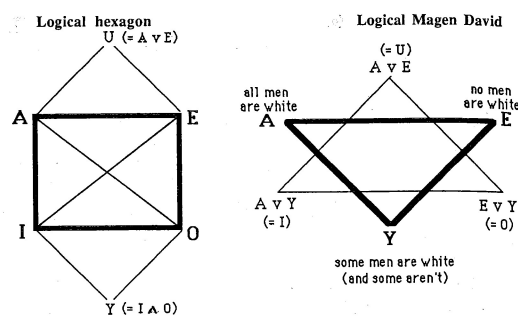

Figure 2: Two alternatives for SQUOP extension.

The figure on the right is not a standard hexagon, as in the Blanché picture (see the variations on a hexagonal theme in the papers in Béziau & Payette 2012),

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but a juxtaposition of two triads: the strong epistemic triangle with the mutually contrary statement forms **A-E-Y** reflecting full knowledge states is superimposed upon a triangle of subcontraries called into play when a speaker's epistemic impoverishment precludes a more definitive claim, whence the "I.O.U." values. As De Morgan puts it,

> There are three ways in which one extent may be related to another…: complete inclusion [= A], partial inclusion with partial exclusion [= Blanché's Y], and complete exclusion [= E]. This trichotomy would have ruled the forms of logic, if human knowledge had been more definite. (De Morgan, 1858, 121)

When knowledge is lacking, **I-O-U**'s are issued.

In 1990 I wrote of my mid-20th century predecessors in the art of SQUOP extension, "These efforts to redesign the square have met with general nonacclaim" (Horn, 1990, 460), but my assessment, while accurate through the end of the previous century, has proved premature, given more recent developments. In 2007, Jean-Yves Béziau organized in Montreux the first but — to the surprise of many — far from the last World Congress on the Square of Opposition, where I first met Dany in person. Over the last decade, the logical and linguistic possibilities inspired by the Square have been further explored at subsequent biennial congresses in Corsica, Beirut, Vatican City, Rapa Nui, and Crete, in high-level collections published by Springer, and in the launching of the journal of record, *Logica Universalis*, establishing a virtual industry devoted to leveraging the geometries of opposition for bridging classical, medieval, and modern logic (see `https://www.square-of-opposition.org/` for an industry report). The structural soundness of these bridges was further dissected at three Logic Now and Then (LNAT) conferences held in Brussels organized by Dany Jaspers himself. I have very much enjoyed getting to know Dany through his presentations and his important and creative work on the properties of oppositional geometry in realms from quantification to color to prime numbers. Among other insights, Dany, in collaboration with Pieter Seuren (Seuren & Jaspers, 2014; Jaspers & Seuren, 2016) has made significant contributions to our understanding of the possibilities of the geometry of opposition and of the historical milestones in its development. Pointing to Latin *ne-que/nec* (lit. 'not-and') and Dutch *nimmer* (lit. 'not-always'), he observes:

> Although these two different A-corner based lexicalizations are formally negations of an A-corner operator and might therefore at first

> sight be viewed as O-corner items, they are not. The negations in question are really inner negations: Lat. *Neque* does not express the O-corner meaning "not and" but rather the E-corner meaning "nor" [= 'not or', 'and not'—LH]; and Dutch *nimmer* does not express "not always" but rather the E corner meaning "always not", i.e. "never", with *always* scoping over negation. (Jaspers, 2005, 150)

The *locus classicus* for this reshuffling, notes Jaspers — following Horn (1989, 261) and Hoeksema (1999) — is provided by the Old English *n(e)alles*, which compositionally "should" mean 'not all', but only ever expressed the meaning 'none' (= 'all not').

Much ink has been spilled in pursuit of explanations for the sparseness of lexicalization in what is variously branded the "nameless" **O** corner (Béziau, 2003) or the "empty **O**-corner" (Ziegeler, 2017), and on the proper reformulation of "Horn's conjecture" on negative particulars (Moeschler, 2007). The remainder of this study will be devoted to an aspect of SQUOP relating to relative rather than absolute asymmetry — not the fate of the **O** (un)attested in the paradigms of quantifiers (**nall, *neverybody*), connectives (**nor, *noth*), and quantificational adverbs (**nalways, *neverywhere*) but cases in which a given **O** form, though attested, can be shown to be fully lexicalized, less diachronically stable, more limited in its distribution, and generally marked with respect to its **E** counterpart. We are dealing here with implicational rather than absolute universals (cf. Greenberg (1963): essentially, if **O** then **E**, but not vice versa.

For example, while unlexicalized *can not* and *could not* (as in *A priest can not marry*) allow both **O** (Episcopalian) and **E** (Catholic) interpretations, lexicalized *can't* and *couldn't* (along with the orthographic "contraction" *cannot* and the Scots variant *couldnae*) can only be used for **E** statements denoting impossibility.

What of **A**-vertex modals? Whether understood logically, epistemically, or deontically, Eng. *must* can only incorporate an inner negation, resulting in an **E** meaning for *You mustn't leave*; similarly for *You are not to leave*. On the other hand, negating the **A** modal *need* does yield a lexicalized **O** value for *needn't*, but it can't help doing so: given the negative polarity status of *need* as a modal auxiliary — *You needn't/*need leave* — negation must semantically outscope the modal, rendering the **E** reading unavailable. (Analogous constraints extend to fellow NPI **A**-vertex modals Dutch *hoeven* and Ger. *brauchen*.) It should be noted that *needn't* is also distributionally restricted by semantics (it tends to be deontic) and register (it tends to be constrained to high or written style). In other (spo-

ken and signed) languages, an opaque **E**-valued modal negation is synchronically unrelated to possibility or necessity, while the corresponding **O** form for 'possibly not'/'not necessary' is both semantically transparent and non-lexicalized (Horn, 2015).

Thus, while the asymmetry in lexicalizing complexes associated with the **A**, **I**, and (sometimes) **E** vertices as against **O** is exhibited across lexical domains, some domains are more equal than others (cf. Van der Auwera & Bultinck 2001 for related discussion). The degree of asymmetry is directly correlated with how closed the category is: strongest for connectives and determiners/quantifiers, somewhat weaker for modal auxiliaries (where *needn't* would violate the absolute form of the constraint, and weaker still (though still present) for ordinary predicates. Unlike *impossible*, *unnecessary* is restricted to deontic, non-logical contexts and fails to nominalize (*impossibility/*unnecessity*). (See Horn 2012 for elaboration.)

A significant corollary of **O**-avoidance can be found in the robust cross-lin-guistically attested tendency of formal contradictory negation to become semantically or pragmatically strengthened to a contrary, a tendency I have dubbed MaxContrary (Horn, 2015, 2017). This effect is particularly strong in lexicalized cases. Thus, for example, compare the unambiguous contrary readings required by negative-affixed adjectives like *improbable*, *unlikely*, *inadvisable* with the ambiguity of their unlexicalized counterparts *not probably*, *not likely*, *not advisable*. But while the latter forms can be read as either contradictories or contraries, the contrary interpretations (attributable to the grammatical or pragmatic effect of neg-raising, to which we return below) are the more salient, whence the sense that *A fair coin is not likely to land heads* is false, although it's true if read as a contradictory of the affirmative.

While the emergence of **E** readings is particularly robust in the case of incorporated negation, even sequences of ¬... A often strengthen to contrary interpretations. One case in point is the interaction of negation and causatives. Thus, while It. *fare* + infinitive on its own conveys a strong causative ('make', not 'let'), its negation is often understood with an **E**-style strengthened meaning: *Il caffè non mi fa dormire* is understood as asserting that coffee doesn't let me sleep (rather than that it doesn't make me sleep). In languages as varied as Japanese, Turkish, Amharic, Czech, Biblical Hebrew, and Jacaltec, the negation of a strong causative (lit., 'not make') may or must strengthen to yield contrary ('make not' = 'not let' = **E**) force. The reverse drift, in which a 'not let' (**E**) causative is understood as 'let not' or 'not make' (**O**), on the other hand, appears to be unattested.

A related locus of MaxContrary is the prevalence of prohibitives, as tracked

by Van der Auwera (2006, 2010). 2/3 of van der Auwera's sample of 500 languages have a dedicated prohibitive marker, typically derived from the incorporation of a negative element into an imperative or semantically bleached auxiliary. Regardless of the semantic character of the modal or the order of operators, the resultant force is always MUST¬ (¬ALLOW), i.e. **E**, not **O**. There are no dedicated ¬MUST (ALLOW¬) type **O** counterparts of **E** prohibitives. Nor is there even a standard name for such "exemptives".

In addition, some modals are ambiguous or underspecified as between weaker (**I**) and stronger (**A**) meanings, this ambiguity disappears under negation. For example, while OE *motan* could denote permission, ability, or obligation (Goossens, 1987, 33), its negation *ne motan* unambiguously signaled **E** force; comparable facts hold in Dutch (*niet moeten*) and in non-Indo European languages. Deal (2011, 573) notes that Nez Perce *o'qa* 'must, can' is unambiguously marks impossibility in DE contexts: only the **E** 'mustn't, can't', not the **O** 'possible not, not necessary' reading is available.

Another case in which potential ambiguities between **E** and **O** readings are typically (although not universally) resolved in favor of the former is that of unincorporated negation in verb-final languages. In many SOV languages, no dedicated **E** (or, of course, **O**) determiners or quantifiers exist; instead, as in Bangla — Ullah (Forthcoming); cf. Davison (1978) for related facts from Hindi —, an indefinite subject co-occurring with sentential negation as in (1a) allows either of two scopal assignments, but *ceteris paribus* (and in particular when such sentences are evaluated in isolation and with no marked intonation contour) the **E** interpretation as in (1b) is preferred over the **O** interpretation in (1c).

(1)   kono boi   harie jay   ni
        some book lost   go.3P NEG.PST
        'No books got lost'   ¬∃x (x: book) x got lost
        'Some books didn't get lost'   ∃x (x:book) ¬[x got lost]

Some experimental evidence bears on the asymmetry between **E** and **O** in processing as well as lexicalization. In a study of responses to conjoined and disjoined propositions, Khemlani et al. (2014) report:

> When the participants had to deny assertions, they were most accurate in denying disjunctions and least accurate in denying conjunctions...Even if we counted: *No, not A* and *No, not B* as correct denials of *A and B*, the conjunctions remain harder to deny than disjunctions. (Khemlani et al., 2014, 5-6)

Thus, not only do the **E**-vertex connectives (*neither p nor q, neither of them*) lexicalize more readily than their **O**-vertex counterparts (*not both p and q, *noth of them*), but **E**-denoting sequences (denials of **I** disjunctions) are also easier to process than **O**-denoting ones (denials of **A** conjunctions).

A hitherto unnoticed instance of a contrary in contradictory clothing is provided by the interaction of universally quantified objects of inherently negative predicates: someone who has (to use Googled citations) "lost complete/total/ utter control" of a situation (or one's life, or a tennis match) has completely, totally, or utterly lost control. Likewise, if you tell me you've lost all respect for me, I can't take comfort in having perhaps retained some of your respect; the *all* outscopes the negative in *lose*. Once again, as with *n(e)alles*, an apparent **O** form (*not … all*) exhibits **E** meaning (*all … not*).

One key step for setting in motion the strengthening of contradictory negation to a contrary reading is the activation of the inference schema of disjunctive syllogism *modus tollendo ponens*):

(2) $\psi \lor \phi$
$\neg\,\psi$
$\therefore \phi$

While the key disjunctive premise is typically suppressed, the role of disjunctive syllogism can be detected in a variety of strengthening shifts in natural language where the disjunction in question is pragmatically presupposed in relevant contexts. Among the illustrations of this pattern are:

- The tendency for negation outside the scope of (certain) negated propositional attitude predicates (e.g. *a does not believe that p*) to be interpreted as associated with the embedded clause (e.g. *a believes that not-p*); this is so-called "neg-raising", to which we return below.

- The tendency for a semantically contradictory negation of an unmarked positive value, whether affixal (*x is unfair/unhappy*) or clausal (*I didn't like it*), to be strengthened (as either an "online" or conventionalized process) to a contrary of the positive predication.

- The tendency for a negated plural definite (*The kids aren't sleeping*) or bare plural (*Beavers don't eat cheese*) to strengthen from a contradictory to a contrary of the corresponding affirmative.

In particular, in the case of neg-raising, as pointed out by Bartsch (1973), when the context allows only two alternatives, the denial of one (*I don't believe it will rain*) amounts to the assertion of the other (*I believe it won't rain*). The relevant reasoning is an instance of the disjunctive syllogism pattern in (2) as seen in (3), where *F* represents a propositional attitude and *a* the subject of that attitude.

(3) $F(a,p) \lor F(a,\neg p)$ [the pragmatically assumed disjunction]
        $\underline{\neg F(a,p)}$ [the sentence explicitly uttered]
        $\therefore F(a,\neg p)$ [the stronger negative proposition conveyed]

The key step is the pragmatically licensed disjunction of contraries: if you assume I've made up my mind about the truth value of a given proposition p (e.g. "it will snow") rather than being ignorant or undecided about it, then you will infer that I believe either *p* or ¬p, and my denial that I believe the former ("I don't think it will snow") will lead you to conclude that I believe the latter ("I think it won't snow"). (See Horn 1989, chapter 5 for more on this phenomenon, Gajewski 2007 for a neo-Bartschian analysis, and Collins & Postal (2014) for a vigorous defense of a grammatical approach to neg-raising).

The "neg-raised" reading of *I don't think that p* as 'I think that not-p' has been deplored as an illogical placement of negation, an unfortunate ambiguity, or (in Quine's terms) an "idiosyncratic complication" of one language — "the familiar quirk of English whereby '*x* does not believe that *p*' is equated to '*x* believes that not *p*' rather than to 'it is not the case that *x* believes that *p*'" (Quine, 1960, 145-6); similar views have been expressed by Hintikka, Deutscher, and others.

But this "quirk" has deep roots. The locus classicus is St. Anselm's Lambeth fragments — Henry (1967, 193-94); Hopkins (1972, 231-32); Horn (1989, 308ff.). Anselm points out that "*non...omnis qui facit quod non debet peccat, si proprie consideretur*" —— not everyone who does what he *non debet* ('not-should') sins, if the matter is considered strictly (with the contradictory reading of negation as the syntax suggests). The problem is that *non debere peccare* is standardly used to convey the contrary meaning *debere non peccare* rather than the literal contradictory ('it is not a duty to sin'). It is hard to stipulate e.g. *non debet ducere uxorem* (= 'a man is free not to marry') without seeming to commit oneself to the stronger *debet non ducere uxorem*, an injunction to celibacy Henry (1967, 193ff.), Horn (1978, 200). For Henry (1967, §6.412), Anselm's observations on modal/negative interaction are "complicated by the quirks of Latin usage". But far from a Quinean quirk of English and/or Latin usage, "neg-raising" — the lower-clause understanding of negation of a *believe-* or *ought-*type predicate —

is distributed widely and systematically across languages and operators.

But across which operators? As the literature from Horn (1978) to Collins & Postal (2014) makes clear, neither membership in the class of propositional attitude predicates nor the availability of a plausible excluded middle disjunction as in (3) correlates with the possibility of securing a "raised" reading for the main clause negation. In addition, the "raised" or contrary understanding is always stronger than the contradictory negation, applying to a proper subset of the situations to which the contradictory applies (is true in a proper subset of possible worlds). The compositional meaning is true but too weak. In French, for example, neither *pouvoir* 'can' nor *falloir* 'must' is an obvious choice to sustain an excluded middle, but while the former—and indeed possibility predicates cross-linguistically—does not allow neg-raising (*Je ne peux pas que p ≠ Je peux ne pas p*), the latter does, as recognized since Tobler (1882). This is a problem for a pure excluded-middle account like those of Bartsch or Gajewski.

Without linking neg-raising to other instances of **O** > **E** strengthening, such accounts, as well as the syntactic analysis of Collins & Postal (2014), also overlook the relationship between neg-raising and (other) cases of strengthening of contradictories to contrariety. This relationship is especially salient in the case of predicates like *believe* that take both a simple NP object and a complement. Thus, while (4a) can represent both the weaker (contradictory) credo of the agnostic or the stronger (contrary) credo of the atheist, only the latter reading is available in (4b). The scalar relation between the two readings is exploited in the attested example in (5).

(4)　　a.　　I don't believe {in God/there is a God/that God exists}.
　　　　b.　　I believe {there is no God/that God does not exist}.

(5)　　I don't just not believe in God. I believe there is no God.
　　　　(`www.metafilter.com/60596/Atheist-Symbols`, retrieved 1 January 2018)

Note that the semantics — i.e. the availability of a contrary, (4b)-type reading in (4a) — cross-cuts the syntactic distinction between biclausal (NR-relevant) and monoclausal structures.

Similarly, I can tell you that I don't believe your claim or I can tell you that I don't believe your claim is correct; only in the latter case can NR be invoked, but the same strengthening to contrariety is involved in both versions. An administrator may imply the need for sobriety by stating either "We don't recommend drinking alcohol" (via neg-raising) or "We don't recommend alcohol" (where no

neg-raising is involved). I can decline your proferred plate of kimchi by informing you either that I don't like garlic or that I don't like to eat garlic; any difference in meaning or force would be hard to discern.

The availability of strengthened contrary readings for apparent contradictory negation in monoclausal sentences has long been recognized, dating back to classical rhetoricians of the 4th century on the figure of litotes, in which an affirmative is indirectly asserted by negating its contrary (Hoffmann 1987). Litotic interpretations tend to be asymmetrical: an attribution of "not happy" or "not optimistic" will tend to convey a contrary (in this case 'rather unhappy' or 'fairly pessimistic'), while no analogous virtual contrariety is normally signaled by "not sad" or "not pessimistic", which are usually understood as pure contradictories. Here too, there is a clear parallel with the neg-raising effect in multiclausal structures, given the unavailability of a raised interpretation with inherently negative verbs: *I don't doubt that p* can't be understood as *I doubt that not-p*.

As we have seen, the stronger, contrary interpretation is often more salient than the weaker, compositional one. This effect is particularly salient in nonfinite cases (e.g. *I don't want to leave*), where the effect approaches that of obligatory neg-raising, given the tendency to avoid embedded non-finite negation as in the grammatical but awkward *I want not to leave*. The result is that it's hard to interpret negated want on a compositional non-neg-raised interpretation. Indeed, linguistic contortion may be required to avoid it, as the eponymous protagonist of Kingsley Amis's 1979 novel *Jake's Thing* discovers (pp. 217-18, emphasis mine):

> [M]y "therapist" works on the principle that the way of getting to want to do something you don't want to do is to keep doing it. Which seems to me a handy route **from not … pause … wanting** to do it **to not-wanting, wanting not**, to do it … My chap is always on at me to go through the motions of it on the principle I've described. I'm a bit scared of being shifted **from not-pause-wanting** to do that **to not-wanting** to do it.

Jake's strengthening of "not-pause-wanting" to "not-wanting" (or "wanting not"), illustrated in Figure 3, represents another instance of **O** > **E** drift from contradictory to contrary: the innovative verb forms (*not … pause … wanting*; *not-pause-wanting*) mark the unwanted but apparent inevitable tendency to understand the simple negative (*not wanting*) as a neg-raised **E** contrary rather than the **O** contradictory it formally expresses.
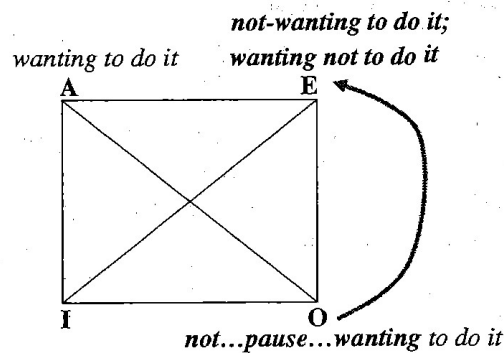
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Figure 3: Strengthening to the contrary (ad hoc).

This inevitability is paralleled by a better known development in the history of French. As related by grammarians like Tobler (1882) and Martinon (1927, 536), negating an **A** vertex modal verb *falloir* 'must, be necessary' no longer yields the compositional or "logisch" **O** meaning but only the contrary **E** force. *Il ne faut pas sortir/que vous sortiez*, while literally negating 'One must leave' and 'You must leave', "represent in reality *il faut que vous ne sortiez pas* and *il faut ne pas sortir*" respectively Martinon (1927, 536), with embedded negation, while the corresponding structures with embedded negation are awkward at best. Martinon explains that "Il est assez probable que cette forme illogique a été employée d'abord dans le dessein d'atténuer la rigueur de la défense; mais la défense est devenue tout aussi rigoureuse dans cette nouvelle forme, dont elle a fait disparaître le sens propre"; that is, "It's likely that this illogical form was first used with the idea of attenuating the rigor of the prohibition; but the prohibition has become as rigorous in this new form, **whose proper sense it has caused to disappear**" (my translation and emphasis). This is a clear instance of the general phenomenon of **O** > **E** drift (Horn, 1989), the northward diachronic or interpretive shift along the right (negative) vertical dimension of the modal SQUOP: formal **O** values tend to be understood either preferentially or exclusively with **E** meaning. As Martinon suggests, one of the motivations for this process, and for the related phenomena of litotes and euphemism, is politeness, or more specifically the need to respect negative face (see Ducrot 1973; Brown & Levinson 1987; Horn 1989).

Dahl (2001, 477-8) has called attention to the frequent diachronic effect of linguistic inflation, whereby (as with the bleaching of intensifiers) "an expression which expresses a strong value of some parameter may tend to be used even

when a weaker value is called for", in particular when an emphatic construction is (over)used in situations in which no emphasis is intended. A classic instance of such inflation is "Jespersen's cycle" affecting the expression of negation. Dahl, however, also allows for the rarer process of **de**flation, noting that "in some situations, it may be be advantageous for a user to avoid too strong expressions, especially in connection with negative evaluations", plausibly motivated by politeness. While Dahl exemplifies this process with the case of simple litotes (e.g the use of "It may be difficult to do it" implicating "What you propose is totally impossible"), the phenomenon of neg-raising illustrated by *Il ne faut pas* (or *Je ne veux pas …/I don't want to …*) would serve equally well.

But has the **O** reading (= 'needn't' rather than 'mustn't') in such cases truly become totally inaccessible, as Martinon maintains? While negating *falloir* or *vouloir* (or Eng. *want*) does result in contrariety, it's not that hard (as Pierre Larrivée has pointed out to me) to find examples that retain a compositional interpretation with contradictory negation, particularly in the past tense *Il n'a pas fallu* construction:

(6)   Il n'a pas fallu y aller.
        'It wasn't necessary to go there' [**O** reading]

(7)   Il n'a pas fallu attendre les amères expériences de la crise de l'euro pour comprendre que les Européens ne jouent pas collectif.
        'We didn't have to wait for the bitter fallout from the Euro crisis to realize that Europeans don't play well together.'
        (Googled example; my translation)

In other syntactic frames both contradictory and contrary interpretations are available, depending on the discourse context (where □ indicates the **A** modal of necessity or obligation):

(8)   a.   Il ne faut pas s'inquiéter.
               'Don't worry' [**E**, □¬]', 'No need to worry' [**O**, ¬□]
        b.   Il ne faut pas que tu t'inquiètes.
               'You shouldn't worry[**E**], You needn't worry' [**O**]
        c.   Il ne faut pas s'excuser.
               usually = 'No need to apologize' [**O**, ¬□]

MaxContrary, while a powerful force in determining the expression and interpretation of negation and parallel cases of euphemistic substitution I have reviewed elsewhere (Horn, 1989, 2015, 2017), remains at its basis a pragmatic tendency,

one that (in the absence of lexical conventionalization) can be overridden in context — although the context often has to work with some diligence to do so.

We have progressed in these remarks from the original *Histoire d'*O* to subtler expressions of the tendency to evict or strengthen **O** readings (even when grammatical form seems to express them) as reflected in the full range of Max-Contrary effects manifesting the preference for contrary readings of contradictory negation. In the insightful words of a generally neglected 19th century philosopher, "The essence of negation is to invest the contrary with the character of the contradictory" (Bosanquet, 1888, 306). The result of this investment is the linguistic suppression of the southeast vertex of the square of opposition. I have tried to show that is one corner in the "negative logic of natural language" (to borrow from our festschriftee) that continues to be fruitfully unearthed even when it is sometimes unattested.

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