

Abstract

The paper discusses hedges such as *that I know of* in *The train is not late, that I know of*, which form a hitherto undocumented polarity sensitive construction that can be found in a number of European languages. Internally, they resist negation, in ways reminiscent of parenthetical *as*-clauses, and other parenthetical constructions. On the basis of a small corpus of English and Dutch occurrences of the hedge construction, I outline the distributional properties and internal structure. A number of restrictions are uncovered regarding the subject of the hedge clause (in particular: universally quantified and indefinite subjects are ruled out, second person subjects are limited to questions), which point to a strong pragmatic effect of point of view, but still require further study. The polarity sensitive status of the hedge is derived from the interaction of strong verbs (*know, be aware of, etc.*) and the pragmatic requirement of hedges that they tone down a statement. Together, these require that the hedge be within the scope of negation.

Key words: hedge, negative polarity, cross-linguistic comparison, corpus data, syntactic structure, factivity

Not that I know of: a polarity-sensitive construction

1 Introduction¹

English, together with a fair number of other European languages, has a construction involving a zero element with all the characteristic properties of a negative polarity item (NPI). The construction in question is exemplified by the examples in (1):

- (1) a. Fred does not have AIDS, that I am aware of.
b. Fred had never visited Spain, at least not that Ethel knew of.
c. None of it belongs to Fred, that I can see.
d. Nothing was done about it, that I recall.

Notable properties of the construction are (1) the presence of the complementizer *that*, followed by (2) a short finite clause, with a predicate taken from a fairly small set of propositional-attitude adjectives and verbs, and (3) a gap. In addition, the construction requires a negative licenser, as a comparison of the examples in (1) with those in (2) makes clear:²

¹ This paper was presented at the Crisco workshop *The pragmatics of grammar: negation and polarity*, held in Caen, May 19-20, 2015. I thank the audience and the organizer, Pierre Larrivee, for comments and discussion. An additional debt of gratitude is owed to two anonymous referees for this journal.

² In my data set, there was one exception to this requirement:

(i) I've sired at least one bastard that I know of. (from: George R.R. Martin, *A Feast for Crows*, Bantam, New York, 2011, p 790.

This example does not seem to be a random exception, but points to a complicating factor, namely that cardinal and ordinal numerals, especially in combination with *at least*, are compatible with the hedging construction. Compare also:

(ii) He has defeated me at least twice (that I know of).

From the perspective of negative polarity licensing, this is an unusual state of affairs. Ladusaw (1979) made the important observation that the restriction of *at most n* may contain polarity items, but not that of *at least n*. Presumably, the hedging construction is special in this respect, since its function is to state incomplete knowledge, either with regard to whether something is the case, or took place (as in the

- (2)
- a. *Fred has AIDS that I am aware of.
 - b. *Fred has visited Spain, that Ethel knew of.
 - c. *Some of it belongs to Fred, that I can see.
 - d. *Much was done about it, that I recall.

While the *that*-clauses in (1) may look a bit like relative clauses, their function is a different one. They are functionally akin to what are commonly referred to as hedging (Lakoff 1973, Prince et al. 1982), or mitigating (Fraser 1980) adverbials, such as *as far as*-phrases or expressions like *to the best of my knowledge*:³

- (3)
- a. Fred does not have AIDS, as far as I am aware.
 - b. Fred had never visited Spain, as far as Ethel knew.
 - c. None of it belongs to Fred, as far as I can see.
 - d. Nothing was done about it, as far as I recall.

Just like *as*-phrases, the sentences in (1) do not permit any form of internal negation, including morphological negation by the prefix *un-* (cf. Ross 1984, Szabolcsi and Zwarts 1993, Potts 2002a,b on this property of *as*-phrases, and section 4.2. below for more discussion of this point):

examples in (1) in the main text, or with regard to the number of times something happened, or the number of children one has sired.

³ The hedging function may help to separate the construction at hand from the superficially rather similar cases of *not*-insubordination (cf. Evans 2007 for the term *insubordination* and a discussion of the phenomenon), such as:

- (i) Not that you would ever lift a finger to help!
- (ii) Not that Mr. Self-important cares!

These may be interpreted as condensed versions of *it is not the case that X*, similar to cases like

- (iii) Nice that you could come!

meaning *it is nice that you could come*. Note that the *that*-clauses in (i) and (ii) do not have an empty position, unlike the *that*-clauses in (1) in the main text.

- (4) a. *Fred does not have AIDS, that I am unaware of.
 b. *Fred had never visited Spain, at least not that Ethel didn't know of.
 c. *None of it belongs to Fred, that I can't see.
 d. *Nothing was done about it, that I don't recall.

Unlike *as*-phrases, however, the hedging *that*-clauses may not appear in clause-initial position:⁴

- (5) a. As far as I am aware /*That I am aware, Fred does not have AIDS.
 b. As you know /*That I know of, Fred is not wealthy.
 c. As seems obvious /*That I can see, Fred is not happy.

The property of not appearing in clause-initial position is one that our *that*-clauses have in common with the majority of negative-polarity items (cf. Ladusaw 1979, but see also Mahajan 1990, Hoekstra 1991, Uribe-Etxebarria 1994, De Swart 1998, Hoeksema 2000, Benmamoun 2006, for some discussion of a variety of exceptional

⁴ As Pierre Larrivee pointed out to me, this is not true for the French variant *que je sache* (see also example 8d in the main text), which may appear either to the right or the left of the modified clause. Compare:

- (i) Que je sache, il n'était pas le premier Européen à explorer l'Afrique.
 That I know, he neg was the first European to explore Africa
 "To my knowledge, he was not the first European to explore Africa"

Similar examples with the hedging clause in initial or pre-negation position, can be found in Spanish. The following example was provided by Google:

- (ii) En castellano, que yo sepa, no tiene nombre.
 In Castilian, that I know, not has name
 "It does not have a name in Spanish"

Given the existence of various kinds of polarity-sensitive adverbials that appear in sentence-initial position, such as *as yet* and *for the life of X*, this should not be viewed as a problem for the claim that *que je sache* or *que yo sepa* have negative-polarity status. Compare:

- (iii) For the life of me, I can't/*can think of an appropriate answer.
 (iv) As yet, there is no/*an answer from the Iranian delegation.

In addition, I found the following English example on Twitter (accessed on August 26, 2015):

- (v) Luckily, at least that I know of, nobody ever found dog hairs in the samples, but the possibility was always there

Here, the presence of *at least* may be relevant.

cases). It is, however, possible to “niche” the *that*-clause between subject and predicate of the main clause, provided that negation precedes it. To illustrate this possibility, which is admittedly rare, I offer the following example:

- (6) There isn't (that I am aware of) another know all like you on the net, you are in a class of your own.⁵

Note that *as*-phrases like *as everybody knows*, may likewise appear in this position, similar to many other parenthetical elements (Emonds 1976, Potts 2002a).⁶

The construction is most commonly found in answers to yes/no questions, as in the following exchanges:

(7) Q: Does Fred have AIDS?

A: Not that I am aware.

Q: Did Fred work hard on his exam?

A: Not that I could see.

Q: Did you see the defendant at any time between 10 p.m. and midnight?

A: Not that I can remember.

⁵ <http://niceperson709.wordpress.com/2012/04/15/lynot/> (accessed on July 20, 2012).

⁶ Another similarity between two types of parenthetical clause concerns the possibility of modification by discourse linkers such as *at least*:

(i) Mary is not gay, at least that I am aware of.

(ii) Mary is not gay, at least as far as I know.

Such modification seems to be impossible with *as*-parentheticals:

(iii) *Mary is not gay, at least as you know.

Clearly, this has to do with the weakening character of *at least* (see Grosz 2011) which is incompatible with a strong parenthetical such as *as you know*, but fine with the nonfactive hedge *that I know of*.

Dutch, German, French and Italian counterparts to the English construction are given in (8) below. I omit glosses, because the sentences correspond word-for-word to the English example. Note that the German, French, Italian, Spanish and Portuguese examples have a subjunctive mood. Russian, on the other hand, does not have this construction (Pavel Rudnev, p.c.).

- (8)
- a. Not that I know.
 - b. Niet dat ik weet. [Dutch]
 - c. Nicht dass ich wüsste. [German]
 - d. Pas que je sache. [French]
 - e. Non che io sappia. [Italian]
 - f. No que yo sepa. [Spanish]
 - g. Não que eu saiba [Portuguese]

Filling the gap is not possible:

- (9)
- a. Fred has never been to Spain that I know of (*it)
 - b. Fred does not have AIDS that I am aware of (*it)
 - c. Fred heeft geen AIDS dat ik (*het) weet. [Dutch]
Fred has no AIDS that I (*it) know
“Fred doesn’t have AIDS that I know of”
 - d. Fritz hat kein AIDS dass ich (*es) wüsste. [German]
Fritz has no AIDS that I (*it) knew
“Fritz doesn’t have AIDS that I know of”

The factive character that verbs such as *know* or predicates such as *be aware of* have, is notably absent in the hedging construction. In other words, the clause which the hedging expression modifies, is not presupposed. In this regard, *that I know* or *que je sache* is similar to the use of factive verbs in *as far as I know*, which is likewise non-presuppositional.⁷

In this paper, I present an overview of the construction at hand, partly on the basis of a smallish corpus of hand-collected examples.⁸ I will argue that it involves a negative polarity construction and discuss the status of this construction in light of what is currently known about polarity items.

2 Polarity-sensitive constructions

Polarity items are usually either lexical items, like *any* or *ever*, or fixed idiomatic expressions, like *a red cent* or *give a damn*. Some authors (e.g. Frans Zwarts, cf. Zwarts 1986), have argued that polarity sensitivity is a lexical property. If idioms are lexical units, in the sense of phrasal material stored in the lexicon, (as argued as early as Jackendoff 1975), then idiomatic phrasal polarity items would also qualify as such. I will argue, however, that polarity items need not be lexical items or fixed idioms, but may be constructions as well. One goal of the present paper is to identify and describe one such construction, but I note that Postma (2001) already presented some cases of polarity-sensitive constructions. In the theoretical framework of construction

⁷ English *know* also has a nonfactive interpretation in a more canonical construction (Horn 2014). Simons (2007) views the non-factivity of *know* in parenthetical constructions as evidence that factivity is not a lexical property of verbs.

⁸ The corpus was collected informally over a long period. It was taken from books I read or TV shows I watched over a period of more than 10 years. It is obviously faster to collect data using electronic corpora, such as COCA, but then one has to search for an immense variety of strings of the form *that DP verb*, most of which will turn out to be false hits, being either relative clauses, or *that*-clauses with a missing object. The Dutch data set I collected in this manner is smaller than the English data set, in spite of the fact that the author encounters more Dutch than English, which strongly suggests that the construction at hand is more common in English.

grammar (cf. Goldberg 1995, Boas & Sag 2012, Kay & Michaelis 2011, Hilpert 2014), this state of affairs not only makes perfect sense, but is actually expected, since constructions are viewed as signs. Words and idioms are special cases of signs, and constructions are like them in important ways, but more abstract in a sense: they lack a fixed phonological shape.

Although negative polarity items often come from a limited set of semantic fields (e.g. indefinite pronouns and idioms, modal expressions), and polarity sensitivity does not seem to be randomly assigned, it is clear that it is hard, if not impossible to predict on the basis of meaning alone which expressions are polarity items and which ones are not. It makes sense to view polarity sensitivity as resulting from grammaticalization (Hoeksema 1994), since grammaticalization generally has this character. Auxiliaries expressing future tense, to mention just one well-known case, come from a small set of lexical domains, e.g. verbs of volition (cf. English *will*) and verbs of motion (English *to be going to*, French *aller*), but which language turns out to enlist which verb for this particular task is largely unpredictable. By the same token, items from the same general semantic domain, such as *a bit* and *one bit*, may develop into diminishers (adverbs indicating a low degree, typically positive polarity items) and minimizers (negative polarity items indicating a minimal endpoint on a scale) respectively (Bolinger 1972, Von Bergen and Von Bergen 1993, Israel 2011, Chen 2015). Again there is no telling which turns into which.

- (10) a. I am a bit tired.
b. I am not a bit tired.
c. *I like it one bit.
d. I don't like it one bit.

Dutch has a polarity sensitive construction of the form *er*+COMPARATIVE+*op* “there COMPARATIVE on”, usually in combination with the verbs *worden* ‘become’ or its causative counterpart *maken* ‘make’, illustrated in (11):

- (11) a. Het wordt er *(niet) beter op.
It becomes there (not) better on
‘Things aren’t getting any better’
- b. De buurt wordt er *(niet) gezelliger op.
The neighborhood becomes there not cosier on
“The neighborhood is not getting any cosier.”
- c. Dat maakt mijn werk er *(niet) eenvoudiger op
that makes my work there not easier on
‘That does not make my work any easier’

The individual words in the construction are not polarity sensitive, but the construction is. Note that the constructional nature of these examples is underlined by the fact that they do not have corresponding forms with similar interpretation in English or German, the languages most closely resembling Dutch.

Constructions, just like words, may easily spread through borrowing. The fact that the Western European languages all have a construction analogous to the English one exemplified in (1) above suggests that it spread by language contact. There is plenty of evidence that many syntactic constructions have spread in this manner (Harris and Campbell 1995, Heine and Kuteva 2006), and alternatives such as

independent grammaticalization in all these languages, while not theoretically ruled out, are not terribly likely.

Positive polarity items may also be constructions. A case that comes to mind is the construction exemplified in English by the examples in (12) below (cf. Hoeksema 2010a for some discussion):

- (12) a. Membership has its advantages.
b. *Membership does not have its advantages.
c. Even Jones has his flaws.
d. *Not even Jones has his flaws.
e. All theories have their proponents and opponents.
f. *None of the theories have their proponents and opponents.

The construction in question consists of the verb *have* and a direct object headed by a possessive determiner that is bound by the subject (and hence has to agree in person and number with it). Neither *have* nor the possessive determiner can be viewed as a positive polarity item, but in this construction, they clearly form a positive polarity item. Since the contributing lexical items are not positive polarity items themselves, logic dictates that we attribute the polarity sensitivity to the construction.

The situation with our construction *that I know of* is very similar. The individual components are none of them polarity sensitive: *that* is not a polarity item, nor are *I*, *know* or *of*. I assume that the combination *that I know of* is some sort of CP, with the special property that it contains a hole, a property that makes it superficially similar to relative clauses (*The boys that I know of attend the local school*) and other gap-bearing clauses (*Which problems would you say that I know of?*). Yet none of

these similar-looking clauses is a polarity item. A striking characteristic, at least in English, is the fact that the complementizer *that* cannot be omitted, unlike most finite complement clauses and relative clauses. The same is true for Dutch, but since Dutch no longer has complementizer drop in finite clauses (but cf. for older stages of Dutch Van der Horst 2008, vol. 2, pp. 1980-1984), this is less remarkable.

3 Licensing contexts

Let us suppose that my suggestion in the preceding paragraphs is correct and that we are dealing with a negative-polarity construction. That brings up the question in which contexts it is licensed. The list of environments for polarity items such as *any* is rather long and might therefore provide a checklist against which we can check the various environments for *that I know of* and its ilk. In Table 1 below, I present an overview of the options, based on informally collected corpus data from Dutch and English. But first, let us consider some introspective data (judgments are all mine):

- (13)
- a. *As if she would trust anyone (that I know of)!
 - b. *He leaves as soon as she arrives (that I know of).
 - c. *Before I could say anything (that I know of) she left.
 - d. *She is bigger than Fred (that I know of).
 - e. *If you tell her anything (that I know of), we're through.
 - f. Few people like Fred (that I know of).
 - g. He hardly does any work (that I know of).
 - h. He hasn't responded to our request (that I know of).
 - i. The man is incapable of lying (that I know of).

- j. Jones met her only once (that we know of).
- k. Is she wealthy (that you know of)?⁹
- l. Jones seldom goes to church (that we know of).
- m. Fred is the only student taking French (that I know of).
- n. ?Fred is the best student in this class (that I know of)
- o. Fred is the first/last student to take French (that I know of).
- p. *Fred is too tired to walk (that I know of)
- q. *Fred knows every student (that I know of)
- r. ?Fred left without any food (that we know of)

To properly judge these examples, it is important to distinguish carefully between a relative-clause reading and a hedging adverbial reading. In particular for the categories of restrictions of universal determiners and superlatives, there are clear differences. For example, (13q) is fine if we understand it to say that Fred knows every student of whom I am aware, but not if we understand it as saying that Fred, to the best of my knowledge, knows every student. In English, relative clauses are homophonous with our hedging construction, but in Dutch, it is easier to keep the two constructions apart. Dutch relative clauses agree in gender and number with their antecedent, whereas the hedging construction (not being a relative clause) does not:

⁹ An anonymous reviewer notes that the German counterpart of the hedging construction is no good. I have at the present no account of this difference. French informants don't like them much either, but Pierre Larrivee found an example from a play by Marivaux (1737), *Les fausses confidences*:

(i) Serait-il capable de quelque mauvaise action, que tu saches?
 Be-he capable of some wrong action, that you know?
 "Would he be capable of any wrongdoing, that you know?"

In Dutch, sentences such as (13k) are possible and attested (cf. also Table 1 below), but in general the set of contexts in which the hedging construction is found is largest in English, for reasons as yet unknown.

- (14) a. Fred kent geen student die ik ken.
 Fred knows no student who I know
 ‘Fred knows no student that I know’
- b. Fred kent geen student, dat ik weet.
 Fred knows no student, that I know
 ‘Fred knows no student, as far as I know.’

We see two differences between (14a) and (14b):¹⁰ (1) there is no agreement in (14b): the form *dat* is either a neuter relative pronoun (but that would clash with the common gender of *student*) or the finite complementizer (analogous to English *that*); (2) the verb in (14a) is *kennen* ‘know’, which is the verb used in Dutch when the direct object denotes a person or an object, whereas in (14b), the verb in the hedging construction is *weten* ‘know’, which is used when the direct object is a proposition (the difference between Dutch *weten* and *kennen* is hence similar to that between *savoir* and *connaitre* in French). *Weten* does not take DP-complements, with one exception, namely when the DP can be interpreted as a concealed question:

- (15) a. Weet je de tijd?
 Know you the time
 ‘Do you know the time = do you know what time it is?’

¹⁰ The intermediate forms below, which differ in only one respect from (14a) and (14b), are out:

- (i) *Fred kent geen student dat ik ken.
 Fred knows no student who I know
 ‘Fred knows no student that I know’
- (ii) *Fred kent geen student die ik weet.
 Fred knows no student who I know
 ‘Fred knows no student that I know’

b. Je weet/*kent dat het 10 uur is.

You know/know that it 10 o'clock is

'You know it is 10 o'clock.

c. Je kent/*weet mijn broer.

You know/know my brother

'You know my brother'

The impossibility of our hedging construction with universal and superlative noun phrases may be due to the fact that it does not attach to noun phrases (not being relative clauses), but only to sentences. However, only the restriction of these noun phrases is a proper context for polarity items (Ladusaw 1979). The acceptability of the same construction with *the only/the first/the last* would seem to contradict this. However, it is possible to argue that these cases benefit from a sentence-level negative implicature that might serve to license their occurrence (cf. Linebarger 1980, 1987).

The impossibility of the hedge construction in contexts such as conditional clauses and *as soon as* clauses is not limited to English, but can be extended to other languages, such as Dutch and German. The generalization seems to be that only clauses which are either assertions or questions may be modified by the hedge construction. Conditional clauses, *before*-clauses, *as soon as*-clauses, relative clauses, and comparative clauses are ruled out by this generalization. Other types of hedges, such as *as far as I know* show a similar aversion to clauses that are neither assertions nor questions, so this restriction is most likely orthogonal to the issue of polarity sensitivity. The assertivity condition follows a proposal in Levinson (2008) for English polarity sensitive particles such as *yet* and *either*, elements which have in

common with our hedges that they are clausal adjuncts. Note that the corpus data, presented below in Table 1, are mostly very similar to the introspective judgments.

Table 1: A comparison of the English and Dutch hedging constructions with polarity-sensitive *any* (free choice *any* is not included), using corpus data

Environment	Any		English hedging		Dutch hedging	
	N	%	N	%	N	%
(rhetorical) as if	22	0.2	-	-	-	-
as soon as	23	0.2	-	-	-	-
(nonveridical) before ¹¹	174	1.6	-	-	-	-
comparative of equality	256	2.3	-	-	-	-
comparative of inequality	664	5.9	-	-	-	-
conditional clause	774	6.9	-	-	-	-
few/little	119	1.1	2	0.8	2	1.4
hardly/barely/scarcely	201	1.8	1	0.4	1	0.7
negation	5183	46.3	213	89	130	91.5
negative predicate	918	8.2	1	0.4	-	-
only	59	0.5	5	2.1	2	1.4
positive ¹²	-	-	1	0.4	-	-
question	1647	14.7	8	3.3	5	3.5
seldom/rarely	80	0.7	2	0.8	1	0.7
superlative	92	0.8	1	0.4	-	-
the only	76	0.7	3	1.3	-	-
the first / the last	82	0.7	2	0.8	1	0.7
too	150	1.3	-	-	-	-
universal	96	0.9	-	-	-	-
without	511	4.6	-	-	-	-
Total	11205	100	239	100	142	100

Nonetheless, there are a number of cases that require some discussion. Complements of negative predicates are not attested in my material, but I think some cases might be acceptable, such as (13i) above.

There are some parallels between hedges and exception phrases. Hoeksema (1987) made a distinction between *connected exception phrases* which are part of a larger quantifier phrase and *free exception phrases*. The latter function as sentential satellites, much like hedges. Compare:

¹¹ For nonveridical *before*, see Anscombe (1964), Landman (1991), Sánchez-Valencia et al. (1993).

¹² See fn. 2 for the positive occurrence in my data set. As for *any*, positive occurrences are actually quite common, but these are instances of *free choice any*, which, according to at least some linguists (e.g. Carlson 1980), is not a polarity item.

- (16) a. Somebody damaged every car except for this Cadillac.
 b. Except for this Cadillac, every car was damaged.
 c. *Except for this Cadillac, somebody damaged every car.
 d. Except for this Cadillac, I don't think he damaged a single car.
 e. Except for Richard, John is the only realtor.
 f. *Except for Richard, John hired the only realtor.

While *every car except for this Cadillac* may function as a single phrase, with the exception phrase *except for this Cadillac* serving as a modifier of *every car*, the exception phrase *except for this Cadillac* in (16b,c) is a free adjunct. This adjunct may modify sentences with a quantifier, but in some cases the result is impaired due to the presence of other material, such as the intervening indefinite *somebody* in (16c). Indefinites may be modified by exception phrases, provided they are in the scope of negation, as in (16d) (cf. Hoeksema 1987, Gajewski 2008). Finally, the difference in acceptability between cases with *the only* as predicate nominal and as part of a direct object, illustrated in (16e,f) suggest another way in which the later sentential context plays a role. This particular difference seems to be relevant for hedges as well, cf.:

- (17) a. John is the only realtor (at least that we know of).
 b. John hired the only realtor (?at least that we know of).
 c. Jan is de enige makelaar (dat we weten).
 Jan is the only realtor (that we know)
 d. Jan heeft de enige makelaar in dienst genomen (??dat we weten)
 Jan has the only realtor in service taken (??that we know)
 “Jan hired the only realtor (that we know).”

While (17b) may not be too bad, since it could be read as a relative clause construction, the Dutch case in (17d), which does not have that option (cf. the discussion of (14) above), is quite bad. The relevant difference between (17a) and (17b) is that (17a) asserts that no one but John is a realtor, while (17b) presupposes it. This is shown by the negated versions of these examples:

- (17') a. John is not the only realtor.
b. John did not hire the only realtor.

In other words, there is a uniqueness presupposition for (17b) and (17b'), whereas (17a) asserts that John is unique in being a realtor, which (17'a) denies. The examples in (17) show that the hedge construction is sensitive to this difference.

To summarize: The hedge construction studied here is a negative-polarity item that may be used in downward entailing contexts. In addition, it is an adjunct, modifying assertions and questions. Together, these requirements predict the distribution in Table 1.

The classification of negative polarity items in terms of a distinction between weak and strong items (sometimes a ternary, of weak, strong and superstrong items), familiar from Zwarts (1998), Van der Wouden (1997), or in a somewhat different form Gajewski (2011), would identify the hedges as weak NPIs, since weak triggers such as *few*, *only* etc. may license them.

Licensing by nonveridicality (Giannakidou 1997, 2011, Zwarts 1995, den Dikken & Giannakidou 2002, Hoeksema 2010b, Lin, Weerman & Zeijlstra 2014) does not seem to be operative here, at least as a sufficient condition, since many

nonveridical environments do not license our hedging construction. Nonveridicality is defined in terms of entailment, as follows:

(18) *Nonveridicality*

An operator O is nonveridical just in case O[p] does not entail p.

While *perhaps*, *may*, *quite likely* and *not* are all nonveridical operators, only *not* licenses the construction at hand:

- (19) a. Fiona is not angry, that I know of.
b. *Perhaps Fiona is angry, that I know of.
c. *Fiona may be angry, that we know of.
d. *Quite likely, Fiona is angry, that we know of.

In questions, both yes/no- and WH-questions, the hedging construction is fine, but not in imperatives, modal clauses or disjunctions:

- (20) a. Is there a solution to this problem (that you know of)?
b. Who has visited the palace before (that you know of)?
c. *Find a solution to this problem (that you know of).
d. *It may be raining (that I know of).¹³
e. *It is going to rain or it is going to snow (that I know of).

¹³ Modal clauses and disjunctions are fine with other hedges, as the following examples illustrate:

- (i) It may be raining, for all I know.
(ii) It is raining or snowing, for all I know.

4 Internal structure

4.1 Predicates

The internal structure of the hedging construction is characterized by great simplicity.

The structure is mono-clausal, usually with a single verb. Compare:

- (21)
- a. Fiona was not a witness, that we know of.
 - b. *Fiona was not a witness, that Fred says we know of.
 - c. *Fiona was not a witness, that we seem to know of.
 - d. *Fiona was not a witness, that we try to know.
 - e. *Fiona was not a witness, that we might know of.
 - f. *Fiona was not a witness, that we must know.

The verbs involved are a small subset of the group of propositional attitude verbs, most importantly *know* and its semantic equivalents in the other languages that have the hedging construction. A comparison of our corpus data from English and Dutch shows that English has more variation in the choice of verbs than Dutch, a difference which cannot be attributed in full to the fact that I collected more English data. The main generalization to be made about the differences in the choice of verbs in the two languages is that English uses more verbs of communication than Dutch, in addition to the more entrenched group of mental state predicates such as *know*, *see* or *be aware*. Compare the following example from the movie *Presumed Innocent* (1990).¹⁴

¹⁴ Cf. <http://www.law.indiana.edu/instruction/tanford/web/movies/PresumedInnocent.htm>

(22) Q: To your knowledge, does the Defendant have a closer personal relationship with anyone on the police force than he does with you, Detective Pranzler?

A: Not that he's mentioned, no.

In Table 2, the verbs found in the hedging construction are listed, ordered by frequency in our corpus data.

Table 2: Verbs in the hedging construction

Verb (English)	N	Verb (Dutch)	N
Know (of)	98	Weten (know)	122
See	30	Herinneren (remember)	12
Aware (of)	28	Zien (see)	3
Remember	20	Bekend (known)	3
Recall	20	Horen (hear)	1
Hear (of)	13	Vertellen (tell)	1
Tell	8		
Notice	6		
Think (of)	5		
Find	4		
Mention	3		
Discern	1		
Realize	1		
Admit to	1		
Recollect	1		

Some of the semantically weaker verbs seem to require the presence of the modal *can* to sound natural, compare:

(23) A: Have you ever met anybody from Cameroon?

B: Not that I can think of / ??Not that I think/thought of.

Think is semantically weaker than *know* since knowing that P implies thinking that P but not vice versa. In English, *think* and *believe* are both very common as weak

propositional attitude verbs, so their absence in our data set is quite significant. The possibility of *can think of* is not mirrored by similar combinations with *believe*, nor does it have direct counterparts in Dutch.

As noted in Potts (2002b: 63), citing Stowell (1987) and Postal (1994), there is a categorial distinction between the gap of an *as*-clause and that of a nonrestrictive relative clause. Potts provides minimal pairs such as:

- (24) a. The earth is round, as we are well aware (*of).
b. The earth is round, which we are well aware *(of).

Potts interprets this as evidence that the gap in *as*-clauses is clausal in nature, whereas the gap in the nonrestrictive relative is a DP, corresponding to the dislocated DP *which*. Compare:

- (25) a. I am aware (*of) you are opposed to my view.
b. I am aware *(of) your opposition.

Our polarity-sensitive hedges appear to form some sort of middle ground between *as*-clauses and nonrestrictive relatives, since they may appear with or without the preposition (although the forms with a preposition at the end are more common than the ones without a preposition):

- (26) a. The mission has not been completed that I am aware (of).
b. Not that I know (of).

In Dutch, as we have seen, the verb *weten*, which takes CP-complements, is permitted in the hedge construction, whereas *kennen*, a DP-taking verb, is not. I will assume that the gap is always a CP-type gap, and treat the occurrence of prepositions in (26) as an open problem. Note that, semantically, prepositions may combine with propositions, even in English, as we see in topicalization cases:

- (27) a. That he is the King of France I do not care about.
b. That the moon is made of green cheese, I do not want to argue against.

Assuming that the gaps in these sentences are of the same semantic type as CPs (e.g. <s,t>), there is nothing to prevent us from making the same assumption for the gaps in the hedging construction.

To make the point that the gap in the *as*-construction is the result of movement, rather than ellipsis, Potts (2002a: 629-630) cites cases of long-distance dependencies, such as:

- (28) It was Bar-Hillel who convinced him to put aside all hesitations and postulate (as his intuitions had already told him was correct) something very much like the reconstructed historical forms at the abstract morphophonemic level.¹⁵

He then goes on to note that such cases are sensitive to the usual island constraints. Here is one of Potts' examples illustrating a WH-island effect:

- (29) *Chuck rides a unicycle, just as Sue asked me whether I knew.

¹⁵ Citation from Frederick J. Newmeyer, *Linguistic Theory in America*, 2nd. ed., pp. 29-30.

For the hedging construction under consideration, similar observations could be adduced, but their relevance is murky, since it is unclear whether any long-distance cases can be found, to judge from the examples in (21) above. It seems theoretically unsatisfactory to have a different account for our hedging construction and *as*-parentheticals, one involving movement, the other something else. Yet a Potts-type account would force us to accept the starred cases in (21), so, reluctantly, I propose that the polarity-sensitive hedging construction is structurally simpler than *as*-clauses. In Dutch, the situation is not any different, and sentences involving more complexity are out:

- (30) a. Het gaat niet regenen, dat ik weet/*dat ik denk dat ze weet
 It goes not rain that I know/*that I think that she knows
 “It is not going to rain, that I know /*that I think she knows
- b. Niemand kwam, dat ik me kan herinneren¹⁶ /
 Nobody came, that I me can remember
 ‘Nobody came, that I can recall’
 *dat ik denk dat ik me kan herinneren
 that I think that I me can remember
 “*that I think I can recall”

¹⁶ The judgments for Dutch are more secure than those for the English translation, since the latter may have an irrelevant relative-clause reading. In Dutch, the relative pronoun would be the common gender form *die*, rather than the complementizer *dat*.

4.2 Absence of internal negation

As Ross (1984) and Szabolcsi & Zwarts (1993) have pointed out, there is a clear difference between *as*-clauses and nonrestrictive relatives with regard to the possibility of internal negation, either by overt negation or inherently negative predicates. *As*-clauses reject such internal negation (cf. example a below), unless it is cancelled by an additional negation (cf. example c below), whereas nonrestrictive relatives do not seem to mind the presence of negation (cf. example b).¹⁷

- (31) a. *John is our hero, as you deny.
b. John is our hero, which you deny.
c. John is our hero, as you don't deny.

Potts (2002b), however, shows that this characterization is not entirely correct. He gives examples such as:

- (32) a. George is tough, as is well-known. But he is also lovable, as is not so well-known.
(Potts 2002b: 76)
b. There is not enough space, as I don't need to tell you.
(Potts 2002b, adapted)

Potts does not give a precise account of why these cases are better, but it looks as if factivity plays a role. Both *it is not so well-known that p* and *it is well-known that p*

¹⁷ Similar judgments hold for parenthetical clauses without *as* (Ross 1973, Collins & Postal 2014), cf.:
(i) Jones is perhaps, Mary thinks/*does not think, a despicable man.

seem to suggest that *p* is true, so *well-known* is a factive predicate. The same may be said of the combination *need to tell*. If you want to compliment somebody, you may equally well say *I don't need to tell you that you are beautiful* or its positive counterpart *I need to tell you that you are beautiful*. The message stays the same. Even the question *Do I need to tell you that you are beautiful?* serves to convey the same compliment. The verb *tell* by itself does not appear to be factive, and this predicts, correctly, that a minimal simplification of (32) is not acceptable:

(33) *There is not enough space, as I didn't tell you.

The problem, then, is why *need to tell* is factive, whereas *tell* is not. Presumably, the combination *not need to tell X* implies that *X* already knows what he does not need to be told, a somewhat idiomatic meaning enrichment that creates a factive context.

The factivity effect is related to the function of *as*-parentheticals as a sort of evidential (Rooryck 2001, Simons 2007, Diewald & Smirnova 2011). That is to say, we typically use an *as*-clause to indicate some reason to trust our claim in the matrix clause. We appeal to the knowledge of the hearer by *as you know*, or *as we all know*, and we may indicate the source of our information by *as my mother told me*, and so on. Internal negation would destroy the evidential value of the clause, since it is of no conceivable interest to state where information does not come from, or who does not believe it. I believe this is the true reason why *as*-clauses do not suffer internal negation gladly.

For the hedging construction, we may note a similar phenomenon. Internal negation is no good:

- (34) a. Fred did not marry Sue, that I know/*that I don't know.
b. The police did not kill this suspect, that we are/*aren't aware of.
c. Nobody died in the collapse, that we are aware/*unaware of.

Whether it is possible to construct examples with acceptable internal negation, akin to (32a,b), remains to be seen. I have so far been unable to come up with convincing examples. I should note, however, that the hedging construction is not so much an evidential creature, as a pragmatic downtoner. Factivity, for instance, does not seem to come into play. A sentence such as (34a), in spite of the presence of the factive verb, does not present the content of the main clause as a fact, but rather as something the speaker is not entirely sure about, in the same way that a phrase like *as far as I know* or *to the best of my knowledge* would. Let's assume that the *that*-clause in (34a) is interpreted as the set of propositions that the speaker knows, and that this set is stated to be compatible with the proposition expressed by the main clause. That is to say, that Fred did not marry Sue is compatible with what I know, for instance because I have not heard otherwise, and I should have heard about the marriage if it had taken place. If the proposition is not merely compatible with what I know, but actually part of what I know, then by Gricean reasoning, in particular the maxim of Quantity, I should use a different, more informative, statement, such as (34a) without the hedge, or (35):

- (35) I know that Fred did not marry Sue.

Let us now return to the matter of internal negation in hedges. If the hedge in (34a) means that the content of the main clause is compatible with what the speaker knows, then the ungrammatical negative counterpart should signify that the content of this main clause is compatible with what the speaker does not know. However, the set of propositions that a speaker does not know is generally not consistent in the sense that there are models which make all of them true. For rational knowledge we expect that a belief set is consistent, at least up to certain computability limits. Stating that a given proposition p is consistent with a set of propositions Q requires that Q itself is consistent. But if we ignore for the moment the possibility of omniscience, there will always be propositions such that an agent neither knows p nor $\neg p$. So both p and $\neg p$ are part of the set of propositions the agent does not know, yielding an inconsistent set. Hence it makes little sense to state that a proposition is consistent with what an agent does not know. In section 6, I present an analysis in which consistency is an important requirement.

4.3 Preferred subjects

There is a striking difference in preferred subjects between the hedging construction and parenthetical *as*-clauses, as the following examples illustrate:

- (36) a. #Sugar is a preservative, as I know.
b. Sugar is a preservative, as you know.
c. Sugar is a preservative, as he knows.
- (37) a. Sugar is not carcinogenic, that I know.
b. #Sugar is not carcinogenic, that you know.

- c. Sugar is not carcinogenic, that he knows.

Whereas the *as*-parenthetical avoids the first person subject, the hedging construction sounds odd with the second person subject. The oddness of (36a) is presumably due to the fact that the statement without the *as*-clause already conversationally implies (by Grice's Maxim of Quality) that the speaker holds it to be true, i.e. considers it to be part of his or her knowledge, thus rendering the conventionally implied content of the *as*-clause (if we follow Potts 2002a,b, 2005, but see Griffiths 2015 for an alternative account) superfluous.¹⁸ Note that with other predicates than *know*, a first-person subject is fine:

- (38) a. Sugar is a preservative, as I don't need to tell you.
b. Sugar is a preservative, as I discovered on the Internet.
c. Sugar is a preservative, as I know now.

For hedges, first person subjects are excellent, and in fact the most common type in our corpus data (cf. Table 3 below) but second person subjects on the other hand may sound decidedly odd. However, restating (37b) as a recap question makes it just fine:

- (39) So sugar is not carcinogenic, that you know of?

Corpus data line up with these intuitive judgments, as Table 3 illustrates.

¹⁸ It is fine to conjoin a first and second person subject, or to use a first person plural subject:

(i) Sugar is a preservative, as you and I know.

(ii) Sugar is a preservative, as we all know.

Similarly with further embedding:

(iii) Sugar is a preservative, as you know that I know.

Table 3: Types of subjects in the hedging construction

	English		Dutch	
Subject	N	%	N	%
1 st pers. sg	186	78	128	90
1 st pers.plur.	10	4	3	2
2 nd pers.	9	4	5	4
3 rd person	34	14	6	4

All 5 Dutch cases with a second person subject were part of questions. Of the 9 English cases of second person subjects, 8 were hedges in questions. Number 9 is a rare case of a sentence uttered by two speakers:

- (40) A: They don't rape and kill.
 B: - That you know of.¹⁹

I claim that the pragmatic function of hedges is to limit the validity of a claim by some agent stating that it is true as far as that agent knows. Agents typically have privileged information about their *own* information states (hence the dominance of first-person subjects), and may have information from others. To limit the validity of a claim by restricting it to what the hearer knows requires prior insight into what this hearer knows, but if this information has been shared, it is mostly not necessary to mention it again, unless as a recap or, as in (40), as a reminder that knowledge may be inaccurate or insufficient. Third person subjects in the hedge construction are not unusual in novels, where they fit in with omniscient narrators which can look inside the heads of their characters, compare:

¹⁹ Elmore Leonard, *Djibouti*, Orion, London, 2011, p 48.

(41) 'Is Mrs. Lydgate at home?' said Dorothea, who had never, that she knew of, seen Rosamond.²⁰

(42) His leather boots had never been near any work that scuffed them, that Rand could see.²¹

This makes the hedging construction sensitive to point of view. It is striking, in this connection, that quantified and indefinite subjects are mostly out of the question, in contrast with *as*-parentheticals:

- (43) a. #Sugar is not carcinogenic that everybody knows.
b. Sugar is a preservative, as everybody knows.
c. #Sugar is not carcinogenic that at least 4 people know.
d. Sugar is a preservative, as at least 4 people know.
e. #Sugar is not carcinogenic that a friend of mine knows.
f. Sugar is a preservative, as a friend of mine should know.

This observation is most likely linked to the point-of-view issue. The precise nature of this restriction will require a wider study into the relation between subject types and point-of-view. I just note here that subjects with the determiner *any* are OK in the hedge construction, in spite of the fact that they are indefinite:

- (44) a. Sugar was not carcinogenic that anyone knew.
b. Fred had not attended the meeting that anyone could recall.

²⁰ George Eliot, *Middlemarch*. Oxford University Press, Oxford, 1975 [1871], p 460.

²¹ Robert Jordan, *The Eye of the World*. Orbit, London, 2011 [1990], p 499.

5 Attachment

Potts (2002a: 641-2) presents some evidence for what he terms the Sisterhood Restriction: *as*-clauses are syntactically sisters of IP. In the case of a complex sentence such as (45), this leads to an attachment ambiguity:

(45) Alan claimed that cryptography is a blast, as you mentioned.

One reading of this sentence is that you, the addressee, mentioned that Alan claimed that cryptography is a blast. In this reading, the *as*-phrase is attached to the top IP node. Another reading involves you mentioning that cryptography is a blast, but without any reference, on your part, of what Alan claimed. This reading corresponds with attachment at the level of the embedded clause.

For the hedging construction, we can try to make similar sentences. Note that the position of negation now becomes crucial. Low attachment at the level of an embedded clause is easy to do with local negation:

(46) Alan said that cryptography is not a lot of fun, that he could see.

This example does not have a reading whereby the hedge modifies the top clause. This is to be expected if it is a polarity item. High attachment would be incompatible with polarity licensing since the negation is in a lower clause.

However, when we put the negation in the higher clause, I can only get the higher reading, whereby the hedge modifies the top clause. This reading makes sense

with the hedge *that I recall*, and would be odd with the hedge *that he could see*, which would fit better with the subordinate clause.

(47) Alan didn't say that cryptography was a lot of fun, that I recall/??that he could see.

However, when the matrix predicate is a NEG-raising verb (Horn 1978, 1989, Prince 1976, Collins & Postal 2014), a lower attachment reading seems possible:

(48) Alan didn't think that cryptography was a lot of fun, that I recall/that he could see.

Sentence (48) with the hedge *that I recall* could mean that as far as I recall, Alan did not think that cryptography is a lot of fun, or, with the other hedge *that he could see*, it could mean that Alan thought that cryptography, at least as far as he could see, was a lot of fun. This would be a low attachment reading. So while the hedges may be attached either high or low, just like *as*-phrases, they require that the negative element that licenses them is either clause-mate, or, when it is in a higher clause than the hedge, that it should be equivalent to a lower negation, as would be the case with NEG-raising. This makes the hedging construction one of the strict types of polarity items, similar to *until* or what Collins and Postal (2014) call the *JACK* class of minimizers, compare:

- (49) a. *Alan didn't say that Fred knew jack about cryptography.
b. Alan didn't think that Fred knew jack about cryptography.

Note however a slight complication. Unlike regular *say*, the combination *can say*, though not precisely a NEG-raising predicate, seems fine with embedded *jack*:

(49) c. Alan can't say that Fred knows jack about cryptography.

While this sentence does not mean the same thing as (49d) below, which would fit with a NEG-raising analysis, it does seem to be pragmatically equivalent to (49e):

(49) d. Alan can say that Fred doesn't know jack about cryptography.

e. Alan believes that Fred doesn't know jack about cryptography.

The observation concerning (49c) extends to the hedge construction:

(49) f. Alan can't say that Fred ever surprised him, that he knows of.

6 Analysis

I assume, on the basis of the preceding discussion, that the hedging construction denotes a set of propositions. For example, *that I can see* will denote the set of propositions p such that *I can see p* is true. This set, I require to be consistent (cf. the discussion in 4.2 above), in the sense that if p is part of the set, $\neg p$ is not, and vice versa if $\neg p$ is in the set, then p is not. I assume that the hedging construction is

attached to the VP, and that the VP initially contains the subject.²² This VP is interpreted as a proposition which is taken to belong to the set denoted by the hedging construction. For a sentence such as

(50) Fred is not drunk that I can see.

this yields the following analysis, where (51) contains the semantic derivation, in a bottom-up fashion, and Figure 1 the corresponding syntactic tree.

(51) CP: $\lambda p[\text{can-see}(I,p)]$
 VP3: $\text{drunk}(f)$
 VP2: $\text{drunk}(f) \in \lambda p[\text{can-see}(I,p)]$
 VP1: $\text{drunk}(f) \notin \lambda p[\text{can-see}(I,p)]$
 IP: $\text{drunk}(f) \notin \lambda p[\text{can-see}(I,p)]$

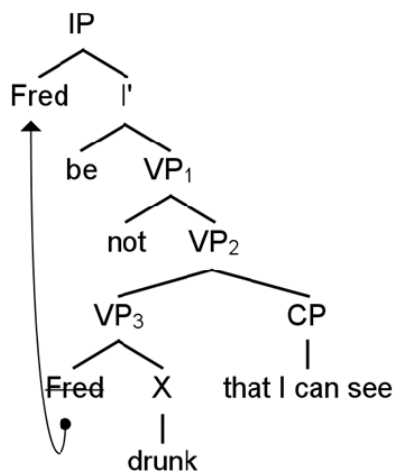


Figure 1: tree corresponding to sentence (50)

To make sure that the construction is not used in affirmative contexts, we need to appeal to a global property of the hedging construction. Negative polarity items are

²² Alternatively, we could use the Derived VP Rule of Montague grammar to derive the same result without internal subjects. The VP +hedge would then translate as $\lambda x[\text{drunk}(x) \notin \lambda p[\text{can-see}(I,p)]]$. This alternative is preferable for quantificational subjects that scope over negation.

often used to either strengthen or mitigate an utterance (cf. Kadmon & Landman 1993 for the strengthening effect of *any*, Israel 1996, 2011 for discussion of mitigating or weakening NPIs, and Hoeksema 2010a for a discussion of global and local requirements on PPIs and NPIs). In the case of hedging constructions in general, it is reasonable to state that they serve to mitigate, not to strengthen. This mitigating effect may come from “weak” verbs, that only weakly commit the speaker to the truth of a statement, as in

(52) Fred is drunk, I think/suppose/guess.

However, in the hedging construction we are studying here, the verbs are strong. They do not tone down at all. Take

(53) Fred is not drunk. I know this.

In (53), the second sentence strengthens, rather than weakens, the claim made by the first sentence. Taking toning down to be the main function of hedging constructions, we require negation to undo the strengthening effects of such strong verbs such as *know* and *see*. Sentence (50) states that I have no visual evidence for Fred being drunk. This leaves open the possibility that he is not drunk, as well as the possibility that he is. Clearly, this is a substantial weakening of the statement *Fred is not drunk*. Without the negation, this sentence would state that I have visual evidence for Fred being drunk. But that is not a weakening of the claim that Fred is drunk.

The mitigating requirement is a constructional property. It does not follow from the compositional semantics of the individual words, and needs to be stipulated,

in much the same way that we need to stipulate of *a whit* that it is a strengthener and of *a tad* that it is a downtoner (Bolinger 1972, Israel 1996).

A reviewer noted that unlike *as*-parentheticals, the hedging construction allows for binding pronouns by quantifiers outside of the hedge. Potts (2002a: 664) argues convincingly that sentences such as the following do not have the relevant reading indicated by the indexation:

(54) *No hiker₁ was, as she₁ admitted, prepared for the freezing temperatures.

That is to say, (54) does not have the binding option that is readily available for (55):

(55) No hiker₁ admitted that she₁ was prepared for the freezing temperatures.

In the case of the polarity sensitive hedging construction, binding by external quantifiers is possible:

(56) Neither man₁ needed assistance that he₁ was aware of.

Under our analysis, the hedging construction is in the scope of the quantifier and not presupposed. Hence nothing should stand in the way of variable binding.²³

²³ But see footnote 4 for some complicating issues in French and Spanish. Here, we must assume that syntactic structure need not line up with scope of negation if we want to maintain our claim that the hedge scopes under negation.

7 Conclusions

Hedges such as *that I know of* in *The train is not late, that I know of*, form a hitherto undocumented polarity sensitive construction that can be found in a great number of European languages. Internally, such hedges resist negation, in ways reminiscent of parenthetical *as*-clauses, and other parenthetical constructions. Externally, they require the presence of negation or other type of nonveridical context, such as questions (at least in some languages), the scope of weakly negative elements such as *few*, *seldom*, *little* and the scope of restrictive adverbs such as *only* and its counterparts in other languages.

On the basis of a small corpus of English and Dutch occurrences of the hedge construction, the distributional properties and internal structure have been outlined, including the types of subjects it contains, the variation range of verbs to be found, and the negative-polarity contexts that are attested in the material.

The hedge construction can only modify assertions or questions, not embedded sentences such as comparative clauses or conditional clauses, showing a pattern identified for polarity-sensitive particles such as *yet* and *either* by Levinson (2008).

In addition, a number of restrictions were discovered regarding the subject of the hedge clause (in particular: universally quantified and indefinite subjects are ruled out, second person subjects are limited to questions), which point to a strong pragmatic effect of point of view, but still require further study.

A compositional analysis of its syntactic and semantic properties is presented and similarities as well as differences with *as*-parentheticals are outlined. The ban on internal negation is explained as a consistency requirement.

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