

Cyclicity effects in the development of presuppositions

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Abstract:

The idea of cyclicity in language change has intruded the analysis of a variety of linguistic phenomena (cf. e.g. van Gelderen 2009 for multiple case studies). While morphosyntactic and to some phonological factors have traditionally been at the forefront in the literature on cycles, truth-conditional semantic aspects have also been addressed from the point of view of cyclicity (Ladusaw 1993, Eckardt 2006, Deo 2009, Gergel 2009, Yanovich 2017, Beck 2020) more recently. However, presuppositional meanings have not been considered systematically (or barely at all) thus far with regards to cyclicity. The aim of this contribution is: (A) to show that significant semantic change and effects familiar from the literature on linguistic cycles exist in presuppositional marking; (B) to pave the way towards the derivation of predictions how such effects are to be accounted for in terms of theoretical modelling and follow-up empirical verification. I propose to account for the range of presuppositional cyclicity effects by making use of two opposing tendencies that can be motivated independently of cyclicity, namely drawing on Eckardt's (2009) *Avoid Pragmatic Overload* and a diachronic adaptation of Heim's (1991) *Maximize Presuppositions*.

1. Introduction

The starting observation of this paper can quickly be illustrated via configurations like the toy example in (1), from a multitude of several other configurations and readings, some of which we will cover in what follows.

- (1) a. Ron and Jane are together **again**.
- b. Ron and Jane are **back** together **again**.
- c. Ron and Jane are **back** together.

I use (1a)-(1c) as an introductory type of example simply because they are all available structures and meanings in Present-day English. The propositions conveyed through (1a)-(1c) express similar, for some speakers even identical pieces of information about the state of the world, i.e. Ron and Jane are united in some sense or another. What is more – and crucial for current purposes: such utterances also have a similar not-at-issue meaning: they all presuppose that Ron and Jane had been together at an earlier time interval, which must of course be distinct from the present. For simplicity, we can assume a standardly used entry under which an earlier event (including all eventuality types) is presupposed to have held. Under vanilla assumptions, this is a repetitive reading, the lexical entry for which can be rendered in a simplified fashion as in (2) (cf. Beck & Gergel 2015, Zwarts 2019 for pertinent recent discussions)¹:

$$(2) [[\text{again}_{\text{rep}}]] = [[\text{again}_{\text{rep}}]] = \lambda P. \lambda e: \exists e' [e' < e \ \& \ P(e')]. P(e)$$

At the very least descriptively, this is, however, not the only reading of *again*, as is well-known since Dowty (1979). But for so-called structural approaches of *again* and related adverbs (in

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¹ Note that I am making no claim that *back* and *again* should be synonymous in general or that they will ever necessarily be in the future (cf. e.g. Beck & Gergel 2015 for their independent entries regardless of the new observations in this contribution). The observation is a context-dependent one to illustrate cyclicity in presuppositions in an accessible way and with a phenomenon that can be observed today, before going into historical changes in the course of the paper (most of which have also not been noted as such to my knowledge).

the wake of von Stechow's 1996 analysis of German *wieder*), this is the only entry required, which can alternatively be applied with lower scope in relevant contexts to derive what is called a restitutive reading. For lexicalist approaches following Fabricius-Hansen (2001), among others, these are genuinely distinct readings (cf. e.g. Zwarts 2019 and references for a range of such readings in Dutch). In the case of English, e.g. Beck & Gergel (2015) and Gergel & Beck (2015) have argued that both the structural and the lexical analysis that we just alluded to have their respective place due to specific restrictions, but at different historical periods. From the historical perspective of cyclical developments, it is also not relevant for now to make an immediate decision for or against the superiority of one or the other theoretical account wholesale, as the problem that we will cover in this paper is more general. It applies to substantially more meanings than the one captured in (2), including for *again*, but notably also beyond iterative adverbials altogether, so that the analytical specifics of decompositional adverbials are secondary. We will be concerned with covering some first descriptive coordinates of possible presuppositional cyclicity, rather than possible decompositionality. The theoretical questions that will emerge as most relevant from the investigation will on this occasion not be tied exclusively to particular analyses of individual items, but to the more wide-ranging question pertaining to the volatility vs. persistence of the presuppositional nature in lexical items. Nonetheless, I will illustrate (as a byproduct of a brief original corpus investigation) that cyclicity effects can also trail one another in a certain sense and indeed on distinct readings. I will show that they have done so in the case of *again* precisely on a reading suggested in the diachronic accounts. Specifically, in section 4, I will illustrate how *back* and *again* also reinforced one another at a time when *again* could still mean *back*.

Beyond noticing cyclicity on a reading of *again* which the adverb had at a historical time span (itself in addition to the cyclicity effect it has today and illustrated in (1)), I want to show that the way presuppositional items of different types are expressed over time can be prone to effects that are very familiar from the vast literature on linguistic cycles (cf. van Gelderen 2009, 2011 for overviews, even if the possibility of cyclicity in presuppositions has not been studied in such literature). Therefore, I take the key claim to be just as relevant and in need of research as it is basic, due to its character as a claim of existence:

(3) *Cyclicity effects in the developments of presuppositional triggers exist.*

I use the clumsy term 'cyclicity effects' because with current research (cf. e.g. the collection of contributions in van Gelderen 2009), I do not see linguistic cycles in their totality to be a linguistic primitive in any sense, but rather (interesting) epiphenomena, the awareness of which can then be helpful in uncovering deeper or underlying mechanisms of change. Quite often such effects thus can (and on the current view: should) be derived from more basic factors, whether structural, phonological, semantic-pragmatic, or processing-based in nature. In line with the topic of the paper, my focus is on semantic factors, but some brief interface observations will equally be made.

By starting out from iterative elements like *again*, I discuss data that buttress the claim that cyclicity phenomena indeed exist and have existed in the history of English (and other languages), so that, for instance, a former well-established and high-frequency adverb like *eft* ('again' throughout Old and early Middle English) has not only occasionally been offered company in the corpus by the once-newcomer *again* ('newcomer' on its adverbial function, not as a cognate preposition, cf. Beck & Gergel (2015)), but it has also been eventually completely ousted by the latter. With much of the Jespersonian literature (cf. also possibilities of so-called broken cycles), we cannot take replacement to be a necessary condition for the existence of a cycle. Compare the often-cited French negative cycle with *ne* in fact still surviving in standard French. Many reinforcing attempts - whether in presuppositions or elsewhere - go either

completely unnoticed or do not make it to full cycles in the sense of replacements. But the fact that replacements occasionally also happen can be an additional indication of cyclicity effects.

A proviso: the specific goal in this contribution is not to develop another full-fledged corpus study, even if I consider that to be an important goal in general and I will add a few original corpus-based observations as well. (For those less familiar with historical linguistics, corpus studies on presuppositions are oftentimes labor-intensive, usually more so e. g. than in the area of syntax, as they often require time-consuming checking of explicit and implicit contextual clues. For example, important corpus studies such as Delin (1992) or Spenader (2002) – which have been conducted synchronically, i.e. without a need to additionally engage with the complications of earlier stages of the language – already make interesting claims (unrelated to cyclicity) but notably only on the basis of very few tokens (e.g. 50 – Delin 1992: 293). Although they can technically use several corpus updates and extensions (cf. e.g. the currently DFG-funded project ‘Decomposing decomposition’ following such a goal), the relevant samples for *again* and *eft* of e.g. Beck & Gergel (2015), and Gergel, Blümel & Kopf (2016) together with the studies summarized there should largely serve their purpose. They are primarily concerned with the derivations and ratios of different (sub-)readings of one and the same item and will stay in the background for current purposes. So, what is there to be done?

I will concentrate on two issues that I take to be just as relevant (as corpus building or experimental verification for that matter, where possible, an issue that I will also touch on in section 4.3) to make my more general point: (A) Cyclicity effects go beyond the competition between the iterative readings of *again*; in effect, they reach well into several and unrelated directions, also beyond the sub-class of iteratives within the large family of presupposition triggers. (B) Cyclicity itself is not a primitive but composed of other developments. I will therefore especially seek to set up an initial theoretical space of possibilities for ascertaining from which principles cyclicity effects in the historical area of presuppositions can be derived.

The paper is structured as follows: I will carry on with the general exploration of possibilities for presuppositions under conditions of language change in section 2. Section 3 will subsequently present the two major ingredients of the proposal: a strengthening tendency (here formulated as a cumulative maximization of presupposition signaling) and a weakening tendency (to be associated with Eckardt’s 2006 *Avoid Pragmatic Overload*, even though I will claim that the need for presuppositional loss must exist beyond overload situations in which multiple meanings are available). Finally, section 4 takes first steps to outline diagnostics of delimiting the divisions of labor between increasing vs. weakening tendencies in the marking of presuppositions that can contribute to cyclicity effects. This will happen in terms of the timing of co-occurrence, the frequencies of use, and – as an outlook – experimental verification.

2. An assessment beyond *back* and *again*

In this section, I illustrate that presuppositional change (2.2) and cyclicity (2.3) can be observed in multiple areas, also beyond the specifics of *back* and *again*. But first, the claim needs to be contextualized, i.e. via a reasonable expectation of stability discussed in 2.1.

2.1. Null hypothesis (to be updated): possible expected stability of presuppositions

Just like in any – also entirely non-presuppositional – linguistic area in which cycles have been observed, presuppositions are no exceptions in that (i) it is perfectly conceivable and sometimes attested that that no significant change occurs at all or (ii) that changes do occur, but without any connection to cyclicity. For instance, even for the family of the Romance languages, from which the case of the French (and occasionally Catalan) negative cycle is most copiously invoked, there is a multitude of (and presumably, most) current standard varieties which

preserve no traces of such a cycle in their currently spoken versions, e.g. standard Italian, Portuguese, Romanian, Spanish. Unsurprisingly then, given that presuppositions in most cases represent strongly lexically triggered entailment patterns, we can assume, that it is the default case that (i) or (ii) should hold for them as well. A priori, there is no general obvious reason why speakers would either entirely forfeit or change their markers for signaling the states of affairs that they take for granted or as easy to accommodate in a routine conversation. As I will discuss in section 3, there is also corroborating evidence from language acquisition that at least some presuppositions are strongly anchored in infants' mental representations from an early age on and this appears to hold even for readings on which the corpus evidence shows only extremely scarce positive evidence according to current studies (cf. Xu & Snyder 2017). Clearly this is in stark contrast with implicatures, which have widely been claimed – since Noveck's seminal work (cf. Noveck 2001 for discussion) – to take time to be properly established by children.

Historically, such an expected stable picture can also be found. It cannot be illustrated with iteratives in English or German, because the currently used major items (*again* and *wieder*) are both innovations – and independently of one another, as they are not cognates – originally meaning *against* (Fabricius-Hansen 1983, 2001). But let me simply mention three cases in which presuppositional meanings have persisted for several centuries.

A first illustration of stability can be given by considering certain presuppositional verbs e.g. in Romance, such as the cognates of the factive verb *regret* and phasal verbs such as *continue*. While English borrowed and replaced such items after the Norman conquest (so in a certain sense it has already also had them for several centuries), in multiple Romance varieties the cognates of such items have existed for even longer. Note here too, that the claim is *not* that all presuppositional verbs across Romance have survived across time, but that there are considerable stretches of stability. For example, a classical case of a Latin factive verb that did *not* survive in most Romance varieties is *scire*, 'know', where the cognate is only available today in Eastern Romance to my knowledge, e.g. Romanian (*știe*). The Western Romance languages utilize the variants of *savoir* ('know', French), *saber* (Spanish), etc., which are not cognates of *scire*. A similarly mixed picture on the surface appears in Germanic. English is a representative of a language that has replaced some of its items from Old English, but due to a large extent to extraneous historical reasons, as mentioned through contact with Norman French. While Romance lexis has been borrowed from Romance as in the case with *regret* and *continue*, the verb *know* itself goes back to Old English roots (*þace* the fact that *witan*, 'know', from Old English has been lost – compare the still available German cognate *wissen*) and similarly verbs like *begin* or *start* have been attested throughout recorded history. German is naturally even more conservative in the areas of factive predicates as it was not affected by the Norman French influence and it could largely preserve the original roots. Of course, the area of emotive factives is one that expectedly sees the creation of new items more frequently than other factives, but this can in part be assumed to be due to the well-known drive of expressivity in language change (e.g. Labov 1998). English shows here in the longer term not only once more that fashionable items can and have been imported (e.g. *surprised*, *excited*, among many others), but also that various creative word formations patterns within English have been possible and they have existed throughout centuries as well (e.g. *happy* or *sad* – cf. OED).

While the patterns involved in their totality are already complex enough within one language and a typological contrast is clearly not in the scope of this paper, let me only mention that paths of stability within factive predicates of different types are not unique within the Indo-European languages. Hungarian, for instance, shows that some of today's factive verb roots such as *tud*, 'know' or *kezd*, 'begin' have been attested for centuries (Benkő 1993), while others have been recruited slightly more recently (e.g. *fejez*, 'end', originally from 'head').

Overall, then, factive predicates are a case in which many cases of stability can be observed if we factor out possible expressivity in recruitment and language contact situations. As a

postscriptum to factivity, notice a new diachronic question that emerges, largely orthogonal to the narrow plot of cycles, but I believe still of interesting relevance for connecting diachronic and synchronic considerations. A surprising fact in view of recent approaches to factivity being viewed as a rather gradual process (cf. e.g. Degen & Tonhauser 2022 and references for discussion), is that historically, we do not seem to witness immediate changes e.g. from *believe* type verbs to *know* type verbs or vice-versa. Given the confines of this paper, it is of course possible that such cases exist. The point here is to place the diachronic question on the table as well, as this has been done in other areas of semantics.² If such transitions (viz. from factive to non-factive or vice-versa) do turn out to be infrequent (compared to other transitions within presupposition triggers, which certainly exist in relative abundance even if we just look at the most familiar languages for the semantic linguistic community – cf. 2.2 ff. below), then an explanandum arises for current synchronic theories suggesting a gradual character of factivity.

To return to our current plot, a second case point for illustration purposes with regards to the relative stability of presuppositions is the German word *auch*, ‘too’, with cognates in most Germanic languages. While English has lost the cognate of *auch* which it also had in Old and Middle English (*æc*, *éc*; cf. section 2.3. below for discussion of this point of *change*), German has preserved it. Thus *auch* still represents the major way of expressing additive non-scalar presuppositions. The additive trigger goes back to a common Germanic stock and has been attested on a mostly similar meaning across several languages including Old High German, Old English, Old Frisian, Old Saxon, and Old Norse (OED – 2022). The following Old High German from Tatian – borrowed from Axel (2007) and adapted to also include the antecedent of the beggar relevant for our purposes – makes the point:

- (4)... arstarp ther betalari [...] / arstarp **ouh** ther otago...
 died the beggar [...] died also the rich-man...
 ‘The beggar died. [...] The rich man also died.’
 (Old High German, T 363, 11, cf. Axel 2007:135)

Crucially, while some of the lexical material from (4) has naturally changed in Modern German (e.g. the word for the ‘rich man’), the marker of additivity is still *auch*, i.e. the cognate of *ouh*. The current point is not to go into all the facets of OHG *ouh*. For instance, it might not only have had the pure additive meaning but also an adversative layer (visible from Latin contrasts in many translated examples). Furthermore, one can never ignore the so-called downtoning processes that have affected German particles, including *auch* – cf. e.g. Dittmann (1980) and references for discussion – quite possibly from early on. However, the fact that a common core meaning of additivity has been continuously available and broadly documented across several related languages (old and new) and that Modern High German *auch* still is the main trigger of additive presuppositions, speaks to the idea that presupposition triggers can indeed be – and in such cases are – preserved in their core functions over very long periods of time. Hungarian *is*, ‘too’, similarly has a long line of stability (cf. Benkő 1993). If we want to generalize in tentative manner, then we can note that non-scalar additives can be persistent, unlike the scalar additives, which are well-known to change considerably – cf. section 2.2.

Third – to return to iteratives, but this time from a non-Indoeuropean perspective – it’s also possible for them to stay relatively stable. Consider the Arabic adverb *thaniyaten*, ‘again’. The following example from the 8th c. (Mohammad Babli, p.c.) shows a repetitive reading:

- (5) fa ʕareda ʕali-hi laben-en fa lem yaqbel

² To mention but one case in which theoretical analyses and diachronic (as well as partially acquisition-based) claims meet: the classical theoretical literature in the spirit of Kratzer sees epistemic and deontic modals as rather similar and ultimately context-based. And phenomena of language change, typically from deontic to epistemic readings have been widely discussed (cf. Gergel 2009, Cournane 2017, among many others).

then offered(3 P-M-SG) on-him milk-INDF then not accept(3 P-M-SG)
 fa ʕareda ʕali-hi **thaniyaten**
 then offered(3 P-M-SG) on-him again
 ‘Then he offered him some milk but he refused then he offered him milk again’.
 (muntakheb el kalam fi tafsiir el ahlam, the Selected Speech in
 the Interpretation of Dreams, Tafsir Muqatel Ibn Suliman, WD 731 AD, P 182)

This is still proportionally the most predominant reading in current Arabic varieties, even if other iterative readings, such as the restitutive one, have also become available (Gergel, Babli & Puhl 2021). The crucial part is that the adverb has preserved very similar iterative meanings centered around the repetitive for several centuries, since its earliest attestations. Hence we are dealing with a trajectory marked by large portions of continuity, as discussed in more detail in Gergel, Babli & Puhl (2021).

From the selection of items in this subsection it should have become clear that continuity is certainly an option in the histories of presupposition triggers. In particular, factive and phasal predicates seemed to be the resilient candidates, an issue that may perhaps related to their underlying conceptual nature. Also noteworthy is the resilience of some non-scalar additive markers. Finally, even iteratives can sometimes stay relatively stable for long periods of time. Next, it’s time to turn to the other side, when triggers in diachrony do not stay still.

2.2. Changing (the markers for) what’s given?

Once one becomes aware of the (putatively default) stability of presuppositions, it is unavoidable to notice that many key markers of presuppositions *have* changed, and in fact often drastically so, compared to earlier stages. In addition to multiple changes in iteratives, which I will return to with some specifics, English has indeed also adopted innovations in the areas of additives, phasal verbs (*stop/continue* type), scalar additives (*even*), and several other developments including the rise of clefts, the latter having been extremely infrequent and most likely of a different type in Old English (Los & Komen 2012, Trips & Stein 2012). While it can rightly be argued that the phasal verbs of English have been an accident due to the heavy lexical borrowing from French (cf. Ingham (2018) and references there for the breadth and possible causes of the development, independently of presuppositional markers), the other changes cannot easily be attributed to such obvious causes.

German, while it did not undergo the major more general shifts that the English lexicon did due to French influence, still established, for instance, new markers of iterative or scalar additive presuppositions (Eckardt 2001, Eckardt & Speyer 2014). Similarly, a very cursory look at the ancestor of the Romance languages, Latin, should suffice to realize that words such as *iterum*, *etiam* (for ‘again’ and ‘too/even’ respectively) to name but two, have clearly been replaced in the vast majority of Romance languages. Not to mention the fact that the classical null realization of definiteness in Latin, as a typical case of presuppositional class, has been replaced by overt markers across present Romance, even if the patterns of how the definite article has been introduced differ in interesting morphosyntactic ways.

Beyond Indo-European it is not too hard to detect changes in presuppositional markers either. Consider Hungarian once more, where the marker of additivity *is*, ‘too’, has been relatively stable as it has stayed within a typologically common pattern of near-homonimity with the conjunction *és*, ‘and’. But a look at the ... dictionary, reveals that the same item together with the particle *még*, ‘still’ (inter alia), has made an interesting career by giving rise to *ismét*, ‘again’ in Modern Hungarian.

All in all: despite possible theoretical expectations one might have (and some cases of empirical stability indeed as seen in the previous subsection), there is just as good of an empirical motivation from existing changes to cast doubt on the assumption that

presuppositions stay stable in their entirety. At the very least, as other parts of living languages, they also clearly change. What we need to see is whether cyclicity effects may also be detectable as a subclass amongst the attested changes in presupposition triggers.

2.3. Further cases of potential cyclicity effects

Despite what may be the expected and often encountered stability of presuppositions discussed in 2.1., there is not only a large body of change in presuppositions (some of which have briefly been exemplified in 2.2.), but there is also a (clearly proper) subset of changes that offers indication for cyclicity effects. In this subsection, I thus continue the general illustration of the trajectories of triggers and point out a few such more specific cases of change.

Cyclicity effects and even co-occurrence of iterative items can be witnessed in more cases than in the current versions of *again* and *back* introduced at the very beginning of this article and they are attested both in the records of current and earlier languages. An additional case in point is the adverb *eft*, ‘again’, in Old and Middle English. Gergel, Blümel & Kopf (2016) mention that the two items co-occurred within their collected sub-samples of *eft*, starting with the third sub-period of Old English (the readings of *eft* itself and not co-occurrence were at the center of the study). From a corpus-technical perspective, Old English is subdivided into four subperiods, just as is Middle English. As for co-occurrence, consider (6), where I illustrate the phenomenon:

- (6) se hrem fleah ða ut & nolde **eft ongean** cyrran
 the raven flew there out and neg.wanted again back turn
 ‘The raven flew out and didn’t want to return/come back again.’
 (YCOE – O3, cootest, Gen:8.7.337-8)

A likely interpretation of (6) is that the raven did not (want to) return and the two items *eft* and *ongean* reinforce one another. Of course, theoretically possible is also the reading in which the two items each contribute their own meaning, i.e. the raven didn’t want to return yet another time. The pattern from such examples is clearly reminiscent of modern ‘again’+‘back’ reinforcement patterns in returnative contexts, even if the two are not identical. But when one extends the scope of the search, it is possible to find earlier examples of co-occurrence as well, which diverge from modern patterns, as I show in (7).

- (7) hi [...] gewendan **eft ongean** þone cyning,
 they turned again against the king
 (YCOE – O2, coorosiu, Or_1:12.33.23.648)

The sentence from the Old English version of Orosius in (7) exemplifies co-occurrence at a stage where *ongean* did not mean ‘back’ but clearly still meant ‘against’. For the details of how and why an item originally conveying ‘against’ was recruited to convey the sense of ‘back’ and later ‘again’, see Beck & Gergel (2015). From the current perspective, we add that both the ‘back’ meaning of *again* and sporadic co-occurrences have existed earlier than had been previously noted. And the gist for the purposes of cyclicity: *eft* (the original item meaning ‘again’ and extinct today) and *again* showed some cyclicity effects, which resemble those of ‘back’ and ‘again’, but naturally only from the points in time when *again* (i.e. its numerous spelling variants) could mean ‘back’ in the first place. Note the fact that it is not a singularity of English that such meanings often reside on the same items. Not only does Zwartz (2019) shown in great detail how this can happen in synchronic terms, but diachronically, e.g. Latin *rursus*, translatable as both ‘back’ and ‘again’ makes the same point from a non-Germanic background. I leave it to further research to investigate in which specific cases, meanings

residing on similar items did (or did not) show cyclicity effects. I can see – consistently with the claim of existence of this paper – no *necessary* condition for cyclicity to hold, but a sufficient body of evidence that it appears in processes of semantic change in presuppositions.

Additives are another case in point that can, and in fact sometimes do, display cyclicity appearances. While PDE has *too*, alongside *as well* and *also* as its best-known representatives of non-scalar additives, the standard OE item was *æc, éc*; (and several other spelling variants, as always in medieval times), which lived on well into Middle English times, but not up to the present (recall from section 2.1. that English is unlike the majority of the Germanic languages in having lost its original non-scalar additive). The question from the perspective of the current plot is whether the item ever interacted with *too*. As it turns out, one of the earliest attestations of *too* in its adverbial function in the OED is based on an example from a translation of Boethius (by king Alfred or a commissioned writer). Crucially, we find *to* together with the original adverb *eac* in the relevant example:

- (8) Ða styriendan netenu..habbað eall þæt ða unstyriendan habbað,
the moving animals have all that the unmoving (ones) have
and **eac** mare **to**.
and also more as well.

(Ælfred tr. Boethius *De Consol. Philos.* xli. §5, OED)

There is no trace of a word-by-word character of this translation from Latin into Old English. The Latin version is phrased differently (it does not contain an additive, and I will hence not consider it further for current purposes).

For the purposes of comparison and understanding from a synchronic perspective, where intuitions are available: Old English *to* was quite like the German preposition *zu*. It would be ungrammatical to insert *zu* into a similar configuration to replace *auch* in Modern German. So, *zu* is a directional preposition (similar to *to*) and not an additive. Prima facie, there may seem to be no obvious or intrinsic reason in the item (*zu*) that would make it particularly relevant to be recruited for a change towards an additive. Recall, also, that German has preserved the age-old non-scalar additive *auch*, ‘too’.

However, on closer inspection there is evidence in German that could help us understand at least one way how such a process – i.e. a transition from a directional preposition to an additive – could be facilitated. Clearly, this does not mean that a replacement process will (or will not) ever be triggered in German; but let’s see where a possible bridge towards an additive could (and where it could not) be construed. There are a number of constructions in which *zu* is added usually to an abstract anaphoric element, so that the overall meaning of ‘additionally’ comes out. The result are typically composite adverbial expressions. A very standard and expected example (from the perspective of the original meaning of the directional) is of course the verb *kommen*, ‘go’, as shown in (9).

- (9) **Hinzu** kommt die Tarifsteigerung.
there.to comes the tariff.increase
The tariff increase comes additionally/on top.

But notice that (9) is not about physical motion in a literal sense (only in a metaphoric one). Going a step further, there are also apparent compound adverbial expressions containing *zu* which do not require a verb of movement (even in a metaphorical sense) and which come rather close to an additive, such as *zudem*, ‘to.that’ (or in a different order of the morphemes *dazu*, ‘that.to), which can modify all sorts of predicates which not related to movement. An example such as (10) (from the standard *Duden* dictionary) should make the point.

- (10) Es war kalt und regnete **zudem** (noch).
 it was cold and rained to.that still
 It was cold and additionally it was raining.

Notice also, incidentally, that *dazuzählen*, ‘that.to.count’ can mean, among other things, to add (e.g. a number or an amount). More importantly, while internally more complex, such expressions (as e.g. in (9)) are at least on their way of being presuppositional, i.e. projective in the classical contexts. For example, negating (9) would yield that the tariff increase is not to be considered, but there is another increase or some other relevant entity – which is precisely the presuppositional hallmark of an additive. *Zudem* in (10) is quite difficult to construe in a context under the scope of negation, which is indicative of PPI status. This, too, is a common (if not necessary) feature of additives, including *too* in Mainstream Modern English (cf. its counterpart NPI *either* under negation). So, it seems that such expressions have a strong potential of functioning similarly to additives. The reason why at first glance *too* and *zu* seemed so distinct is a syntactic one: *zu* indeed cannot appear on its own in the relevant contexts and requires an overt demonstrative or similar item as exemplified above. Conversely, English *to(o)* (i.e. in its spelling variants) allowed a higher syntactic flexibility already from Old English onwards. English prepositions have allowed, for instance, preposition stranding, so that they could appear ‘objectless’ on the surface, i.e. in their immediate vicinity. German prepositions are much harder to construe in such ways syntactically. Moreover, Beck & Gergel (2015) suggest that *again* – on its transition from meaning ‘against’ to ‘back’ may have had a zero anaphor construal (similar to German *dagegen*, ‘that.against’ with the exception, of course, that the latter is overt). If such tendencies of incorporating covert ‘that’s have existed more widely, then they clearly offered themselves as an additional facilitating factor in the smoother transition from former prepositions to adverbs in English compared to German. The latter strikingly keeps the overt requirement and has multiple prepositions with necessarily overt demonstratives even for very similar additive meanings like ‘additionally’. While – starting out from the development of *to(o)* – I focused on the preposition *zu* showing that if additional material is included, it can come close to additives semantically, there are also other elements, based on different prepositions and touching on additivity (e.g. *überdies*, ‘over.this’ or *außerdem*, ‘outside.that’).³

A further interesting case of partial cyclicity effects is also the one evidenced by the presuppositional quantifier *both*. Even though Old English *ba* would mean ‘both’, there are a few instances in which the quantifiers appears to be strengthened by the numeral *twa*, ‘two’, which is exactly its presuppositional restrictor according to the standard analysis (Heim & Kratzer 1998). The OED already gives examples as the following ones:

- (11) Sorgedon ba twa, Adam and Eue. (OE *Genesis* 765)
 (12) Æðered and Ælfred his broðor..hi butu geflymdon. (a1100 *Anglo-Saxon Chron.*
 (Laud) anno 871)
 (13) Heo sleateð a dun boatwo hore earen. (a1250 (▶ ?a1200) *Ancrene Riwe* (Nero)
 (1952) 94)

³ Only a brief selection of facts can be shown here that I believe can have counterparts in other languages. For example, Syrian Arabic has also developed an additive from an original prepositional element that still requires an additional argument in Standard Arabic, as Mohammad Babli (p.c.) points out to me:

- (i) Darast-u **kama** darast-a (Standard Arabic)
 studied-NOM(1P-SG) like studied-ACC(2P-SG)
 I studied like you studied.
 (ii) Mehemd bedu yisafer we ana badi asafir **kaman** (Syrian Arabic)
 Mohammad wants travel and I want travel too
 Mohammad wants to travel and I want to travel too/as well.

While this doubling did not give rise to entirely new items in English, a similar development in several Romance varieties gave rise to new quantifiers, such as Romanian *amândoi*, ‘both’, literally originally composed of the quantifier for ‘both’ and the numeral ‘two’. While the new quantifier is not transparently decomposable into its parts any longer in the language, earlier varieties of Italian have also shown the development (e.g. *amendue* in the writings of Dante) and so do e.g. certain varieties of Spanish with *ambos dos*, ‘both two’ (even if the form is prescriptively frowned upon as redundant – precisely due to the fact that the new quantifier is still transparent in Spanish and the ‘two’ element does not contribute any additional information).

3. Two building blocks needed

Having shown phenomena involving cyclicity effects, in this section I present the two major theoretical ingredients of the proposal to account for the claim made. In any cyclical development, two forces can be expected to be at work: a weakening and a strengthening one. Once we have seen that presupposition triggers can undergo change and cyclicity effects, there is no reason to expect otherwise in their case. We may expect weakening tendencies to affect those triggers which are already in place and reinforcing tendencies to become visible especially in the recruitment of new triggers that must of course fit the contextual conditions of use.

An interesting task becomes to identify what exactly the two major forces are in the case of presuppositions and formulate reasonable hypotheses what kind of more general principles will explain them. At the same time, two things are noteworthy (and in line with the previous observations of this paper): first, that the two tendencies need not exclude each other, neither in the general case for cycles nor in the one that we are inspecting for presuppositions. In fact, they may well be expected to interact in most cases. And second, there can be e. g. phonological or syntactic factors which could, of course, act for a myriad of other reasons (which can also be unrelated to presuppositions) and ultimately bias in certain ways competing carriers of presuppositions (cf. Gergel 2017 for discussion why, for instance, *again* may have had a syntactic advantage over *eft* during intermediate time periods when they interacted as adverbs). The area of meaning will remain central in this contribution. I will identify the two tendencies and motivate them independently of cycles. I will begin with the latter, i.e. the potential weakening part.

3.1. Losing presuppositions?

I will start out – for simplicity – from the assumption that presupposition triggers at a given stage in a given language are mostly lexically determined items. That is, children or occasionally other learners of the language will have learnt them and in particular their not-at-issue functions in their acquisition process. While the assumption could theoretically also be questioned, there is also some clear empirical justification for it. There is an increasing amount of evidence that presuppositions are different in acquisition from other processes at the interfaces of meaning. Compare e. g. implicatures or metaphors (see Grigoroglou & Papafragou 2018 for a literature review on the latter phenomena in acquisition). Implicatures and metaphors – by contrast – tend to be acquired late and with considerable difficulties, even when design and task-related questions are factored out. By contrast, the presupposition of *again*, for instance, is acquired accurately from a very early age onwards (Bill et al. 2016, Xu & Snyder 2017). This smooth acquisition processes includes the restitutive coverage of the adverb and is even more surprising because the restitutive reading is comparatively speaking infrequent in Present-day English usage data. This holds not only in diachronic corpora with a Modern English component (Beck et al. 2009, Gergel & Beck 2015), but also in specific child-

directed data (Xu 2016, Xu & Snyder 2017). In German, where the adverb *wieder* has a very similar range of meanings (von Stechow 1996), evidence has also been adduced that the acquisition of quite fundamental processes – such as the proper entailments in change of state verbs – is in fact facilitated by the use of *wieder* (Wittek 1998). A possible interpretation of Wittek’s conclusion is that, being a prerequisite on which other key semantic acquisition processes, such as event culmination, can build, the relevant presupposition is even more fundamental in a relevant way in the acquisition process. What we may conjecture is that the process of ordered acquisition proposed in Snyder (2007) for a series of morphosyntactic phenomena also needs to apply to a large extent in the area of compositional construction of meaning. In a nutshell, if a construction B requires a construction A as a prerequisite, then A will also be acquired earlier than B. Thereby, a further argument emerges concerning the early and stable acquisition of a presuppositional adverb.

Given the reported robustness of triggers already at the time of acquisition, it *may* then seem a moot point to wonder how presuppositions could become less understood in some sense or another - and how they could thus be weakened. But not all triggers are alike and in acquisition, similarly to historical linguistics, the research on presuppositions lags beyond the one on implicatures (cf. e. g. Traugott & Dasher 2002 or Eckardt 2006 for relevant insight). One possibility in view of theoretical research that draws lines between different classes of triggers is that those items that are more pragmatic than semantic might also be more prone to weakening effects. While this does not apply to *again*, it could theoretically be the case that the Old English version of *again*, *eft*, was different in nature in some sense. This is not entirely straightforward, but the fact that *eft* is reported by sources such as the OED and the OED to also have had multiple discourse meanings, could perhaps lend some hypothetical ground to such an idea. If discourse uses are more pragmatic and arguably less reliably learnt by children, then they may also be more volatile diachronically and prone to change.

A more fundamental way of capturing presuppositions in change is proposed by Eckhardt (2006, 2009). She points to another way how presuppositional meanings - according to her quite in line with implicatures - could be eroded over time: namely via a principle of *Avoid Pragmatic Overload* (APO). In situations in which too many side-messages arise, speakers are thus claimed to drop some, in order to keep the load of pragmatic inferences manageable. A processing interpretation of Eckhardt’s ideas could be that under certain conditions, presuppositions can, after all and as a null-hypothesis regardless of their status (weak/strong), be weakened as well. I do not have anything to add to this consideration per se, but crucially Eckardt’s interesting line of thought offers a rather principled way of potentially approaching the issue of cyclicity as well. Ultimately, however, given the dynamic nature of change, it is of course an empirical question, whether a weakening strategy of this type is tenable or not. In section 4.3 I will discuss initial experimental evidence that certain weakening tendencies can be observed in simulated learning processes of presupposition learning, even though I will argue that they need not be tied to the principle of APO. Finally, we may observe that a principle such as APO may equally be cogent from a broader perspective on language change: while morphological impoverishment (notably of inflectional paradigms) has often been invoked to have the potential of being a syntactic trigger (see e.g. Koenenman & Zeijlstra 2014 for a recent instantiation of this hypothesis), it might be an interesting parallel if pragmatic impoverishment was the main player for semantic change. As interesting as this is, it cannot be the only player in town when it comes to cyclicity in presuppositions – this is what we turn to next.

3.2. Strengthening: how and why?

We can start the argument in a similar way as for the potential weakening factors discussed in 3.1. above: in a situation of perfect acquisition, there will barely be any need to reinforce

presuppositions either. If speakers within a conversational situation are in agreement about something like the Stalnakerian *Common Ground* and they have already opted for explicitly marking such agreement by using a designated marker (namely, say a cognitively well-recognized presupposition trigger), it would seem to go against any information-theoretic or other considerations of language economy or informativeness if they decided to mark such an existing and already overtly marked agreement about what is to be taken for granted (or accommodated as such) yet another time. But again reality does not seem to stay on the idealized ground.

First, as mentioned, the more general ways of acquisitional and historical change in presuppositions are under-investigated. Therefore, it cannot be ruled out, for instance, that if the benefit is a type of expressivity or further specification that is perceived by language users as particularly advantageous (of high utility), such additional (and otherwise apparently useless) marking will be utilized after all.

Second, by connecting observations regarding cross-linguistic as well as especially historical variation, we can construct an argument that mechanisms of introducing presupposition triggers in situations in which they had not been used before must exist in natural language. Such mechanisms can then be extended to also apply to potentially arising cycles. The argument is as follows: domains which have no overt trigger at a time t_1 can often be observed to be marked with an overt trigger at a later time t_2 . A classical case in point: in the majority of the Romance and Germanic languages, for which ample diachronic documentation is available (cf. e. g. Crisma et al. 2011, Carlier & Lamiroy 2018, Demske 2020 to name but a few recent discussions) interesting paths of change have been observed in the developments of article systems. While several domains of usage have been only gradually been encroached on by the use of an overt trigger, the overall tendency appears to be clear: languages which did not make use of a designated definite determiner, such as Latin, gave rise to follow-up languages which do have designated determiners, such as all current Romance languages. The power of the argument increases if we consider that the recruitment and syntactic details turned out to differ considerably (see, e.g., the pre- vs. post-nominal determiners in Western vs. Eastern Romance, respectively). The puzzle is in fact as real in these cases as in others of competition between triggers. It is perfectly conceivable (and currently attested: cf. e. g. Russian) that a language can derive uniqueness or existence presuppositions in most or even all instances in which, say, English uses the definite article simply from contextual clues. There is hence no ‘need’ for such an overt marker in such a language. And nonetheless, multiple well-attested languages developed precisely such markers in places in which they had apparently not been required. This means that a tendency to increase presuppositional marking in the domain of articles can also be observed. The observation can be made in more cases. For instance, clefts in the history of English are a presuppositional construction which has essentially increased its domain of application (Jespersen 1937, Los & Komen 2012, Trips & Stein 2012). It appears, then, that the increased marking of presuppositions can receive considerable boosts diachronically.

Having illustrated the basic empirical case (viz. that presupposition marking can increase over time), it is time to ask if more general pragmatic mechanisms can derive this tendency. I suggest that a diachronic version of *Maximize Presuppositions* can be invoked to do the job. Using the backdrop of general developments such as those in determiner systems or clefts Gergel (2020) ties it to Heim’s (1991) well-known synchronic principle of maximizing presuppositions and suggests the following diachronically:

- (14) MaxPMoT (*Maximize Presupposition Marking over Time*): Increase the signaling of presuppositions over time by using presupposition triggers when possible and appropriate.

This does not entail an increase in the quantity of presuppositions per se, but just in the degree to which they are marked.

Overall, then, I have argued that there are ways – essentially motivated independently of cyclicity, but quite in line with tendencies expected in cyclical developments – to derive both decreasing and increasing tendencies that are required for cyclicity in presuppositions.

4. Towards determining the timing and possible prevalence from the two tendencies

Having set on the table two major principles from which cyclicity effects can be derived (viz. weakening e.g. via APO and a diachronic maximization of presuppositions), it is time to also sketch out a general space how the interaction of the two could be tested. I will outline three strategies how this can be done in future work: beginning timing issues, posterior frequencies, and processing/experimental verification.

4.1. Initial timing of co-occurrence

For ease of presentation, let PSPT₁ be an original (in retrospect ‘old’) presupposition trigger and PSPT₂ as a new, contender trigger conveying a similar meaning. It appears cogent to make the following prediction:

- (15) If a cyclical development in presupposition is triggered by a weakening principle (such as APO) applying first, then one will first expect a change of meaning in PSPT₁, so that it is no longer presuppositional in the relevant respect (possibly going together with other changes of meaning). The rise of a contender item PSPT₂ is expected to show later in the records and in particular visibly after the original item PSPT₁ has lost ground in terms of its relevant meaning.

And conversely:

- (16) If a cyclical development in presupposition is triggered by a strengthening principle (such as MaxPMoT) applying first, then one will expect the rise of the contender item PSPT₂ relatively quickly (upon any type of recruitment and actuation of change). Weakening of the earlier trigger PSPT₁ (in the sense of loss of its presuppositional meaning) will only be expected to show later under this scenario.

The starting point on the first scenario, (15), is that a certain burden (as the one based on overload postulated by APO or some other similar tendency for that matter) is eroding a particular presuppositional meaning and – as a consequence – this erosion affects usage patterns of the original trigger PSPT₁. In this scenario, we must make the auxiliary assumption that the pertinent meaning is functionally perceived as relevant. That is: speakers want to convey such things, regardless of through which item. The assumption is not trivial, as it is perfectly conceivable that certain highly specialized presuppositions might not be necessarily ‘needed’. But for the items we are considering in this paper, this seems a reasonable starting assumption given that the language(s) investigated and some of their relatives typically make use time and again of such items. Given that the community will gradually shift from using PSPT₁ with the presuppositional meaning, it is natural that if another item PSPT₂ exists that comes close in meaning, this will over time be recruited to fulfill the possible gap and this will show in frequencies eventually.

As far as the converse situation in (16) is concerned: Illustrating the scenario of such a prediction is easiest in cases in which the language has zero marking for a particular presuppositional meaning (say, zero definite determiners), and then it gradually increases the

distributional use of a PSPT₂ (say a demonstrative etc.) to convey precisely the meanings of the relevant determiners which had previously been conveyed from contextual clues alone. Certain contexts of exhaustification could presumably also serve the purpose, if some type of exhaustification becomes to be marked to a higher extent as overt (e.g. through *only* or clefts to different extents). The auxiliary assumption that was required on the first scenario is not needed in this case. Furthermore the argument should in principle also be transferable to cases that do not start out from zero marking of a presuppositional meaning. What happens is that speakers appear to want to mark the relevant meaning originally expressed through PSPT₁ more clearly or in a slightly different way and thus add PSPT₂ creatively to their inventories. And crucially: this happens while PSPT₁ still has its original meaning. It's just that (for whichever reason) PSPT₁ has not been found to be marked with maximal clarity or force.

Comparing A and B comes down to the following: First, identify periods of initial increase in the marking of a presuppositional trigger PSPT₂. Second, see if an original trigger PSPT₁ for the same meaning has shown clear signs of erosion (i.e. loss of the relevant meaning) that predate the increase in usage of PSPT₂.

4.2. Frequencies at non-initial stages

The methodological point discussed for the situation in 4.1. above can be useful in cases in which details about the relatively incipient stages of changes are reasonably assumed to be known, so that the initial basic sequencing can be determined. It can certainly be sharpened in several ways. However, overall it may turn out to be too idealized in practice in many cases. The reason is that the incipient stages of any change are often hypothesized about, but empirically hard to pin down (due to the well-known actuation problem of change) and this holds especially for changes that are distant in time. For several such changes it is possible that a new item has been recruited before the diachronic semanticist's window of observation (i.e. the one of useful and available broad/reliable data) begins.

Will it then be futile to look at how different factors impact on a cyclical development in presuppositions that is already in progress? I claim not and suggest that frequencies of use can be informative also for the 'standard' case, i.e. the one in which the window of observation is not the initial one. One immediate reason for this is that even if researchers did always have insight into the incipient stages of a change, the weight of the different factors – e. g. weakening vs. strengthening ones – can very well change and it should be useful to monitor anyways. The second reason is empirical, as non-initial observations are easier to come by. To illustrate how frequencies can be telling, I show certain new facts about the co-occurrence of *back* and *again* for several centuries during most of the Early as well as the Late Modern English period.

Let's reconsider the interaction of *again* and *back*. While from the interaction that I have presented at the beginning of the paper, the repetitive meaning might seem prominent (the state of being together is presupposed to have held at an earlier time in our initial examples), there had been several reinforcing patterns in the history of English, crucially also on counterdirectional readings. That is, we will next be looking at how *back* intruded on the territory previously occupied by *again*, but this time on the meaning [[back]] rather than [[again]]. A related piece of background is that *again* could convey a meaning like [[back]] well into the EModE period. According to the Oxford English Dictionary (OED) and the Middle English Compendium (MEC) *back* (in its variant forms including e.g. *bak*) is attested as an adverb since Middle English, but the vast majority of its early attestations comes either from Early Modern English, in the case of the OED, or the very transition period (1400's) in the MEC. I see no reason to question the genesis of *back* during Middle English times (going back to Old English morphemes), but to illustrate my point regarding non-initial stages, I will present a small corpus study I conducted on Early and Late Modern English, which I summarize next.

For Early Modern English, the frequencies of *back* in the PPCME2 corpus (Kroch et al. 2004) – calculated per tokens rather than words for simplicity – are the following:

	E1	E2	E3
Hits <i>back</i> in total of tokens searched:	36/33883	72/41453	113/30279
Frequency:	1.06%	1.73%	3.73%

The co-occurrence patterns with *again* within the tokens that contain *back* are as follows:

	E1	E2	E3
<i>Again</i> in hits <i>back</i> :	10/36	20/72	32/113
Frequency:	27.77	27.77	28.31%

The frequencies of use are increasing during EModE (compare E1 vs. E3). What we can also observe is that *back* was joined by *again* remarkably in almost a third of its occurring cases in the corpus throughout the period (E1, E2, E3).

Let us next consider the Late Modern period (LModE, Kroch et al. 2016), for which the figures are the following ones:

	18 th c.	19 th c.	(beginning) 20 th c.
Hits <i>back</i> in total of tokens searched:	240/77048	384/86134	117/ 15501
Frequency:	3.11%	4.45%	7.54%

The co-occurrence patterns with *again* in Late Modern English are as follows:

	18 th c.	19 th c.	(beginning) 20 th c.
<i>Again</i> in hits <i>back</i> :	27/240	36/384	4/117
Frequency:	11.25%	9.37%	3.41%

From these figures, two observations emerge. First, that the frequency of use of *back* itself continues to be on the rise (i.e. it rises in LModE as well, as it did in EModE). Second, that the ratio of instances of *again* still co-occurring with *back* during LModE is clearly on the decline compared with EModE.

A possible conclusion from the facts of this inquiry is that if the adverb *again* (originally meaning *back*) had lost its presupposition early (say as early as *back* came into the picture during Middle English), then it would be very odd to still find it in such high co-occurring patterns as those of EModE. Therefore, this kind of evidence indicates that presuppositional loss cannot have been a triggering and decisive factor in this particular case.

4.3. Experimental testing

A third way of discerning the two major expected tendencies in presuppositional cyclical developments is through experimental verification. This method has the disadvantage of being typically outside of actual processes of change – and hence, necessarily artificial to an extent that depends on the experimental design. At the same time, it offers the prospects of distilling more specific types of cognitive information than those that could have been obtained by observing the conundrum of actualized changes, in which alterations in presupposition interact with typically several other changes in meaning, but also structure and usage patterns. Experimental work towards greater insight in diachrony has already been conducted from different perspectives – cf. e.g. Zhang, Piñango & Deo (2018), Fedzechkina & Roberts (2020),

Fuchs, Deo & Piñango (2020), Gergel, Kopf-Giammanco & Puhl (2021), Puhl & Gergel (2022), among others, for a variety of approaches and methods at the intersection of diachrony with experimental testing, even though these studies have not been geared towards specifically capturing issues in the rise vs. fall of presuppositions over time. A study that has made an initial attempt at the core issue, and on which I therefore base my brief outlook here is Gergel, Dampfhofer, Puhl & Onea (forth. – GDPO hereafter).

GDPO raise the question whether presuppositions are more likely to be lost or gained in the process of semantic change and do so on the basis of the duality presupposition attached to the cardinality of the restrictor set (or characteristic function thereof) in a quantifier such as English *both* or *beide* in German (cf. Heim & Kratzer 1998 for the standard assumption). But while the language used in the relevant experiments is constituted by varieties of German, the actual quantifier is neither *both* nor *beide*, but a nonce word utilized to minimize the effects of language specific previous knowledge of the participants. This entails a two-phase design, namely that the specific word (*gure*) had to be first learnt, and then, only during the second phase, re-learned, i.e. re-interpreted. GDPO anchor the implementation to the simulation of a situation of dialect contact to increase the verisimilitude of re-learning. Consultants were confronted with the fictitious situation of a remote community of German (realized in actual practice through recordings that were indeed also remote geographically from their native varieties) and in which they had to undergo the learning of the relevant item (alongside fillers, naturally). Upon successful learning they were introduced to the second phase in which – consistently with an inter-subject design – they either (i) re-learned the original word meaning *all* as *both*, or vice versa, i.e. (ii) they re-learned the word that for them had originally meant *both* after the training phase as *all*. In the latter case, they would lose a meaning that is ultimately presuppositional. In the former case, they would ‘gain’ a presupposition, namely the cardinality of two being required of the pertinent restrictor set. The design included a sociolinguistic stimulus in the sense that consultants would follow a more prestigious speaker of the community to ascertain a new meaning as compared to the original one they had been trained for by a more outdated speaker. Ultimately, according to GDPO, the loss of the potential presupposition in the specific case study turns out to be easier and cognitively faster as a learning process than the addition of the presupposition.

The preliminary result reported indicates a tendency that is clearly more in line with loss rather than increase in presuppositional status, even if this has not been tied to any type of overload in the experiment. Of course, a number of restrictions apply so that testing more items will be imperative.

5. Conclusion

I argued in this paper that despite some stability (e.g. in phasal and factive verbs or in some non-scalar additives), significant semantic change can be observed in presuppositional systems. My main claim has been that cyclicity effects exist and I have subsequently pointed out two pragmatic principles from which the driving force could be derived: one that points to a tendency to reduce presuppositionality and another that points to a tendency to increase its signaling through triggers. There is no final judgment if one is interested in the primacy of one tendency over the other. Pending further research and detailed case studies, there is also a likelihood that larger generalizations may still not be wholesale but depend on a number of factors such as the particular type of item inspected and the exact window of observation.

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