

Presupposition Accommodation and Informativity Considerations with Aspectual *still*

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0. Introduction

This paper deals with a newly observed phenomenon which lies at the interface of the semantics and pragmatics of aspectual *still* (as in *John is still asleep*), namely that *still* is systematically infelicitous when the time described by the sentence (or more technically, the reference time) is not given a specific characterization by a temporal adverbial or the utterance context. The main claim I make is this kind of infelicity results from the fact that in such constructions the use of *still* is uninformative.

The analysis, which is couched within a DRT framework (Kamp 1981), also argues for two more general theoretical points. First, I show that the full range of facts regarding felicitous and infelicitous occurrences of *still* cannot be accounted for by using current definitions of the presupposition triggered by it. I propose a modified definition of *still* which, following Ippolito's 2007 analysis, uses one eventuality variable in both the assertion and presupposition of sentences with this particle, but, unlike this theory, does not require the denotation of this variable to be contextually salient. Second, as opposed to what is suggested in many current theories, I show that the data on *still* leads to a view where tense in past tense sentences is not necessarily anaphoric or pronominal, but rather potentially existentially closed and novel.

The novel data is described in section 1. Section 2 gives background about the anaphoric vs. novel characterization of tense and reference times and about the semantics of *still*. After examining some potential explanations of the data in section 3, and pointing out their shortcomings, I turn to my own proposal for the semantics of *still* in section 4, and show how it can account for the novel data. Section 5 examines the compatibility of the analysis with current claims on presuppositions and informativity. Section 6 concludes the paper.

1. The newly observed data: felicitous vs. infelicitous occurrences of *still*

I will be concerned with felicity contrasts exemplified in (1):

- (1) A: How's John?
B: Well, he is (still) unemployed (but we hope he will have a job soon)

B' : Well, he was (#still) unemployed (but now he has a job)

As seen in (1), the *still*-less versions of both present and past tense sentences are felicitous.¹ However, whereas when adding *still* to the present tense (1B) this felicity is maintained, adding it to the past tense (1B') renders it strikingly infelicitous. Similar felicity contrasts are found in other minimally contrasting present/past tense sentences, e.g. (2)-(4):

- (2) A: There is an important meeting tonight.
B: I won't be able to be there. I am (still) ill, and I must rest.
B': I won't be able to be there. I was (#still) ill, and I must rest.
- (3) A: Look at this poor building!
B: Are you (still) living in it?
B': Were you (#still) living in it?
- (4) A: I heard lots of stories about Mr. Smith.
B: Me too. He is (still) very rich.
B': Me too. He was (#still) very rich.

What is the reason for this contrast? No direct answer to this question can be found in the literature on *still* simply because this kind of data has not yet been examined in any theory dealing with this particle. Of course, one might be tempted to stipulate that *still* is simply bad with the past tense, and fine only with the present tense. However, not only is this generalization unmotivated, but, as the felicity of *still* in (5B)-(8B) shows, it is simply wrong:

- (5) A: How's John?
B: Well, I saw him last month. He was (still) unemployed.
- (6) A: Look at this poor building! It was so much nicer in the 1980s!
B: Were you (still) living in it then?
- (7) A: I heard lots of stories about Mr. Smith.
B: Me too. During the war he was (still) very rich.
- (8) A: There is an important meeting tonight.
B: Yes. John came in and told me about it. But I was (still) ill, so I told him that I must rest and that I won't be able to arrive.

¹One may claim here that a past tense answer to a present tense question as in (1B'), is, or should be, infelicitous even without *still*, due to the tense mismatch which could lead to incoherent discourse. However, all my informants accepted such discourses with no problems. One potential explanation of this could be that A is not asking how John is at the moment of utterance, but more generally, how John is 'these days', to which an answer encompassing the near past is relevant. Another explanation might be that the discourse is coherent because B wants to emphasize John's present situation (having a job) by contrasting it with the past (where he was unemployed). Thanks to an anonymous reviewer for pointing out this potential difficulty.

The occurrence of *still* in these past tense sentences is a lot better than in (1B')-(4B') above. The difference between the two types of sentence seems to be related to the specification of the reference time. Intuitively, what all felicitous past tense sentences in (5B)-(8B) seem to share is that their reference time is specified by an adverbial in the previous sentence (as in (5)), in the sentence itself (as in (6) and (7)), or by the eventuality time of the previous sentence (i.e. the time when John told me about the meeting, in (8)). In contrast, no specification of the reference time seems to exist in the past tense (1B'-4B'), and A's utterances in these sentences do not supply any exact specification of that time either.

It should become clear now what the felicitous past tense sentences in (5B)-(8B) share with the felicitous present tense sentences in (1B)-(4B) above: in the latter case too, the reference time can be said to be specified, namely, to refer to the speech time of the sentence. These intuitions can be informally summarized as in (9):

- (9) *still* can only be felicitous in a sentence whose reference time is specified/refers to another time in the linguistic or discourse context.²

The immediate aim of this paper is to explain this novel generalization. In the next section, I examine some background assumptions concerning the two main components of the analysis, namely the characterization of reference times, and the semantics of *still*. In section 4 I show that once these two components are defined appropriately, their interaction leads to a natural explanation of the generalization in (9).

2. Some background: characterizing reference times and the semantics of *still*

2.1. Reference times, eventuality times and speech times

2.1.1 Basics. I follow here ideas developed and used in e.g. Partee 1973, 1984, Hinrichs 1986, Kamp & Reyle 1993, Ogihara 1994, Kratzer 1998. Following the tradition of Reichenbach 1947, these theories analyze the temporal structure of sentences using three temporal parameters: the speech time, the reference time, and the eventuality time.

In simple sentences, the tense node denotes a time argument which stands for the reference time of the sentence, and whose position is determined relative to the speech time.

² As pointed out to me by a reviewer, it is interesting to note that the situation with the perfect construction seems to be the opposite, namely we get infelicity when the reference time *is* specific or anaphoric, as in (i). This 'opposite' correlation with the specificity / anaphoricity of the reference time may worth further exploration.

(i) #John has been sick yesterday.

Specifically, in present tense sentences, the reference time equals the speech time,³ and in past tense sentences, it precedes it.⁴ Locating temporal adverbs update the reference time. For example, in *John woke up at 9.00*, the denotation of *at 9.00* is processed in the beginning and updates the reference time to be a time prior to the speech time, equal to 9.00. The speech time (*now*) is a contextually salient time, and like other contextually salient arguments, its value is supplied by a contextually supplied assignment function g_c (see e.g. Heim 1994).⁵

As for the eventuality time, represented as $\tau(e)$, aspectual factors determine its position relative to the reference time. In simple sentences, the time of eventive/perfective predicates, is taken to be included in the reference time, whereas the time of stative or imperfective (progressivized) predicates is taken to include or overlap it. For example, In (10a), with eventive predicates, the eventuality times of seeing Mary and writing the letter are included in yesterday afternoon, whereas in (10b) the stative / imperfective eventualities of being very ill and writing the letter overlap yesterday afternoon, and may even include that time:

- (10) a. Yesterday afternoon John saw Mary / wrote a letter
 b. Yesterday afternoon John was very ill / was writing a letter

2.1.2 Are reference times necessarily anaphoric/pronominal? Unlike the reference times of present tense sentences, whose characterization is quite simple (equal to the speech time), the situation with past tense sentences is more complicated. Prior 1967 analyzed past tense as existential quantification over times. However, as Partee 1973 shows in her famous example in (11a), taking such a sentence to talk about ‘some time in the past’ would come out wrong, no matter whether we have wide scope negation, as in (11b), which is too strong and seems false, or narrow scope negation as in (11c), which is too weak and seems trivially true:

- (11) a. I didn’t turn off the stove
 b. $\neg\exists t' t' < t \wedge \|\text{I turn off the stove}\|^t$
 c. $\exists t' t' < t \wedge \|\neg\text{I turn off the stove}\|^t$

³ Given this view, the present tense is anaphoric and not merely ‘indexical’. This is part of a general tendency in the modern semantic literature, which assumes that the traditional distinction between anaphoric (or more precisely, co-referring) and indexical (or deictic) uses of pronouns need not be maintained, and does not seem to have real linguistic significance (see e.g. the discussion in Heim & Kratzer 1998, p. 239-242). A similar position regarding anaphoric and indexical uses of tense is held in e.g. Partee’s 1973, 1984, and reviewed in section 2.1.2.

⁴ Heim 1993 and others take this information to be a presuppositional component of tense. For simplicity reasons, I will not attempt to represent this presuppositional status in the DRT-based analysis I propose below (although this is perfectly compatible with what I will suggest).

⁵ Notice that although the use of the term ‘reference time’ in these theories is inspired by Richenbach’s notion, it is not necessarily identical to the Richenbachian usage. In this paper I use the terms as it is used in Partee 1973, 1984, Hinrichs 1986, Kamp & Reyle 1993, Ogihara 1994, Kratzer 1998, and as defined above. Comparing this and the Richenbachian uses of the term is beyond the scope of this paper, but see e.g. Partee 1984 and Nelken and Francez 1995 for some comparisons.

Instead, Partee claims, the reference time of (11a) is anaphoric to a *contextually supplied time*, e.g. the time immediately before I left home. The sentence then asserts that I didn't turn off the stove at that (contextually supplied) time. This parallels nominal anaphoricity of 'free' pronouns, as in *She left me*, where the pronoun *she* is anaphoric to a contextually salient antecedent, e.g. an individual pointed at. In addition Partee shows that tense can have other kinds of antecedents that pronouns are known to have, namely definite, indefinite (i.e. existentially closed) and quantified antecedents, as in (12a-c) respectively:

- (12) a. At 3 p.m. June 21st, 1967, Mary had a brilliant idea
 b. Mary woke up sometime during the night. She turned on the light.
 c. When Mary telephoned, Sam was always asleep.

Following Partee, the view that tense can behave as pronominal/anaphoric is by now standard. What is not agreed upon, however, is whether tense *must* be anaphoric/pronominal. Unlike the supporters of the 'reference time as only pronominal' approach (e.g. Hinrichs 1986, Kratzer 1998, Avrutin & Reuland 2002, Beck 2006 inter alia), there are theories which represent the reference time in some past tense sentences as existentially closed (such as Ogihara 1994, Bonomi 1995, Musan 1997, von Stechow & Iatridou 2002, Pancheva and von Stechow 2004).⁶

I tend to agree with the latter approach, since besides cases where reference times are indeed anaphoric to temporal antecedents, there also seem to be felicitous sentences where no such antecedent is found, i.e. where, using Heim's 1982 terminology, the reference time is novel. One such construction is 'out of the blue' past tense questions, as in (13a) and (13b), discussed in Kratzer 1998 and Partee 1984, respectively:

- (13) a. Who built this Church? Borromini built this church.
 b. Who killed Julius Caesar ?

Kratzer 1998 points out that "...the English question [in (13a)] is acceptable out of the blue. If past tense is pronominal, this is surprising. There is no contextually salient past time in this context" (p. 16). To solve the problem Kratzer suggests that what seems to be a simple past sentence in (13a) is, in fact, a sentence with present tense and perfect aspect (not to be confused with the 'perfect' auxiliary *have*). Thus, the reference time of (13a) is indeed pronominal: it is anaphoric to the utterance time (due to the present tense) and, due to the perfect aspect, it asserts that the event time is over by the reference (utterance) time, i.e. that the event is in the past. This suggestion, however, is problematic if we want to maintain the more intuitive view that sentences like (13a) express simple past, and not present perfect.

⁶ Other theories are neutral with respect to this question. For example, Abusch 1997 assumes that tense can be pronominal, but does not explicitly say whether it must necessarily be so.

Partee 1984 admits that the reference time of (13b) seems to be ‘some time in the past’, but maintains that it is, in fact, anaphoric, and suggests that it is “large, vague, and possibly even irrelevant ...(and)... could potentially be “the whole of the past” ” (p.314). According to her, the reason we understand the killing of Julius Caesar to happen ‘*some time before now*’ is because of the well known condition that the event time is included in the reference time. This explanation, however, would not work for questions with state verbs like “Who admired Julius Caesar?”, which are also understood as asking about a state which took place *some time* in the past. Unlike events, which are assumed to be included in the reference time (here “the whole of the past”), states are supposed to include or overlap it. It is not clear, then, why we necessarily get the existential reading in such cases too.

In addition, the reference time of some negative sentences does not seem to be anaphoric, but rather existentially closed and novel. (14), for example, neither means that John didn’t build that church in a contextually salient past time, nor that there is a contextually salient past time where he didn’t build it, but rather that he *never* built this church, i.e. that there is no past time which overlaps a John-building-this-church eventuality:

(14) John didn’t build this church.⁷

Besides ‘out of the blue’ questions and negative sentences, there are also affirmative past tense sentences, uttered in context, whose reference time seems existentially closed. I believe that (15B), the *still*-less version of (1B’) above, is one such sentence:

(15) A: How’s John ?

B: Well, he was unemployed (but now he has a job).

Although (15B) is not uttered out of the blue, but rather against the context of (15A), this context does not give us any information about the location of the past reference time of (15B). Intuitively, this reference time is novel, meaning ‘some time in the past’, as in (16):

(16) $\exists e, t$ [John-unemployed (e) \wedge $t < n$ \wedge $t \text{ O } \tau(e)$]

There may be two potential objections to this representation. First, one may say that although the context in (15A) does not seem to supply a unique past reference time, the speaker has a certain time in mind which he is referring to when uttering (15B). However, notice that even if the speaker knows that the listener has no way of knowing when exactly John was unemployed, his use of the past tense in (15B) is felicitous. In contrast, if a speaker knows

⁷ Thanks to a reviewer for pointing this example to me.

that the listener has no way of identifying the denotation of the pronoun *She* in *She is nice*, he will not use the pronoun, or else, his use of the pronoun will be infelicitous.⁸

A second objection is that (16) is too weak as a representation of (15B): Clearly the reference time in this sentence is not *any* time in the past. It will not be, for example, an interval in the prehistoric period. Rather, it is restricted by the presuppositions and implications of the sentence, e.g. it is expected to be an interval which appears within John's life time, and most probably when he is already grown up (where being unemployed is relevant). This can be represented in (17), where the reference time is restricted to occur within a relevant period D (the period where John is alive and grown up):^{9,10}

$$(17) \quad \exists e, t [\text{John-unemployed}(e) \wedge t \subseteq D \wedge t < n \wedge t \text{ O } \tau(e)]$$

2.2 The Semantics of *still*

2.2.1 The 'prior time' presupposition and a potential problem with it. Turning now to the semantics of *still*, virtually all theories analyzing this particle (e.g. König 1977, Mittwoch 1993, Löbner 1989, Krifka 2000, Michaelis 1993, van der Aura 1993, Ippolito 2007) take *still* Φ to implicate that Φ *continues* at the reference time of Φ . According to these theories (18), for example, implicates that John continues to be asleep at the speech time:

$$(18) \quad \text{John is still asleep}$$

This intuition is usually captured using an assertion and a presupposition. (18) is taken to assert that John is asleep now, and presuppose that he was also asleep for some time before and up to now. I will henceforth call this latter component the 'prior time' presupposition and will deal a lot with the best way to precisely formalize it. Before doing that, however, let us examine a potential problem for this approach to *still* in general.

As mentioned above, eventualities denoted by stative or progressivized predicates (with which *still* typically occur) are standardly taken to include or overlap the reference time. However, when the reference time is denoted by point adverbials, like "at 6.13", "when the

⁸ In this sense, we may say that the use of past tense in (15B) is similar to the use of a specific indefinite NP as in *John spoke with some/a woman*. The semantic structure of such sentences contains existential quantification over an individual woman. Even if the speaker has a certain individual woman in mind when uttering it, this information is not part of the semantic structure, and crucially, unlike what happens with real pronouns, the felicity of the sentence does not depend on the listener's ability to identify this individual.

⁹ Cf. claims in e.g. Bonomi 1995.

¹⁰ One may also claim that this restriction should not be part of the semantic structure of (15B) at all, but is provided by the pragmatics (e.g. by the need to make a true and relevant assertion). I will not try to determine here which of these two positions should be adopted. I come back to 'restricted' existential quantification over times in section 4.2.4 below.

bell rang”, or even “now”, the intuitions tend to be more restricted: in such cases the states seem not merely to overlap, but to *surround* the point reference times, i.e. to obtain both before and after such points of time. For example, (19a) seems to imply that the writing of the letter started before now. Similarly, unlike the eventive predicate in (19c) the stative predicate in the second sentence of (19b) seems to temporally surround the entering event, i.e. does not ‘move the narrative forward’, (see e.g. Partee 1984, Hinrichs 1986):

- (19) a. John is writing a letter.
 b. John entered the room. Mary was in the living room
 c. John entered the room. Mary kissed him.

Given such observations, some theories (e.g. Moens 1987, Moens and Steedman, Vlach 1981) have taken the temporal ‘surrounding’ intuition to be, in fact, a defining property of stative predicates (sometimes referred to as ‘the superinterval property’). The problem for the approach to *still* described above is that if these theories are right, then the ‘prior time’ presupposition triggered by *still* is wrongly predicted to be trivial. For example, the presupposition that John was asleep before 6.13 (in (20a)) would be completely trivial if the *still*-less (20b) entails that the sleeping state holds both before and after that time:

- (20) a. At 6.13 John was still asleep
 b. At 6.13 John was asleep

Since *still* does not seem trivial in (20a) then either the assumption that the ‘prior time’ presupposition is the only contribution of *still*¹¹, or the assumption that states must surround point reference times, should be rejected.

I believe it is the second assumption which should be rejected, since, as has been shown by other theories, the ‘surrounding’ effect of stative predicates, though intuitively strong, is, in fact, not an entailment. Consider, for example, (21a,b), from Hinrichs 1986 and de Swart and Verkuyl 1999, respectively:

- (21) a. Sue switched off the light. It was pitch dark in the room.
 b. Hilary entered the room. Phil was happy to see her.

Here the states get an “inceptive” or an “inchoative” reading, and they *do* ‘move the narrative forward’.¹² Similar examples are found in Dowty 1986, who claims that the ‘superinterval property’ of statives is a cancelable implicature, and not part of their Semantics.

¹¹ That is, one can claim that *still* has an additional contribution to the semantics of the sentence. This kind of view is found in e.g. Michaelis 1993 and van der Aura 1993, who suggest that *still* also add the implication that the state is expected to cease at the reference time. I deal with this suggestion in section 3 below.

¹² This seems to be related to the understood causal relation between the first and second eventualities in (21) (see Lascarides and Asher 1993).

Even more relevant to us are cases in which the stative or progressive predicates are used with point adverbials or in present tense. Consider, for example, the sentences in (22) (with the stative or progressive predicates underlined for clarity):

- (22) a. We weren't sure whether John will participate in the race or not, but at 2.00, when the gun went off he was running.
- b. The bomb exploded exactly at 14.31 John was inside his room then. That was very lucky – half a second before he was still outside.
- c. We did as much as we could, but at 12.34 John was dead.
- d. The minute I saw her I was disappointed
- e. When John left the room too I was all alone.
- f. John dialed 911 at 17.08. At 17.19 sharp the firefighters were there.

None of these sentences entails that the state denoted by the underlined predicate holds before the time denoted by the point adverbial (e.g. that John was running before the gun went off, that I was all alone before John left the room, etc.). In fact, given the contexts constructed in these examples, such readings would be quite odd. Assuming that states *necessarily* surround point reference times would wrongly predict such sentences to be infelicitous.

Less extreme cases are illustrated in (23). Here the states *can* be understood as surrounding the reference time. But crucially, this is not necessary:

- (23) a. When John heard that his father died he was miserable
- b. (The pilot to the passengers): We are in the air!
- c. Oh no! The baby is awake!
- d. John entered the boss's room at 2.00. At 2.01 he was unemployed.
- e. At 6.13 John was asleep.

(23a), for example, is potentially ambiguous between a reading where John was already miserable when he heard the bad news, and a more salient one where he wasn't (he became miserable as a result of hearing the bad news). Similarly (23b) can be uttered just as the plane takes off, (23c) can be true if the baby was asleep a second ago, (23d) can be true even if a second before 2.01 John was not unemployed yet and (23e) can, in fact, be true even if John was not asleep before 6.13. This is exactly the reason why adding *still* to such sentences they *do* entail that the states hold also before the reference time. For example, adding *still* to (23a) (*When John heard that his father died he was still miserable*) clearly disambiguates it, excluding the reading where John became miserable when he heard the bad news. The same holds for the other sentences in (23).

To summarize, *still* indeed triggers a ‘prior time’ presupposition, and this presupposition is not trivial, exactly because in reality states do not *necessarily* surround their reference time, but only overlap or include it.

We can now turn to a closer and more precise examination of this ‘prior time’ presupposition.

2.2.2 *Two formulations of the assertion and presupposition of sentences with ‘still’*: I will focus here on two formulations of the assertion and presupposition of sentences with *still* found in the literature. First, following Löbner 1989, Krifka 2000 defines the assertion and presupposition of sentences like (18) as in (24), where $\Phi(t)$ is true iff Φ is true throughout an interval t , and $t \propto t'$ iff t' began before t and abuts it (cf. König 1977, Mittwoch 1993):

- (24) a. Assertion: John is asleep (t)
 b. Presupposition: $\exists t' t' \propto t$ [John is asleep (t')]

Using the more detailed temporal framework reviewed above with speech times, reference times and eventuality times, the assertion of (18), which is identical to the assertion of the *still*-less sentence *John is asleep*, will be represented as in (25a), asserting that there is a sleeping eventuality of John whose time overlaps the speech time (now). Given this, the presupposition of (18) in (24b) can be rephrased as in (25b), saying that there is a sleeping eventuality of John whose time overlaps some time prior to and abutting now:¹³

- (25) a. Assertion: $\exists e, t t = \text{now} \wedge \text{asleep}(e, \text{john}) \wedge t \text{ O } \tau(e)$ (=John is asleep)
 b. Presupposition: $\exists e, t' \text{asleep}(e, \text{john}) \wedge t' \propto \text{now} \wedge t' \text{ O } \tau(e)$

A somewhat different semantics for *still* is proposed in Ippolito 2007. (26) is a simplified version of Ippolito’s truth conditions for the sentence *John is still cooking*, where e_1 is a free eventuality variable, whose value is supplied by the context:

- (26) a. “John is still cooking” is defined if $\exists t' < \text{now}$ [$t' \subseteq e_1$ and $\text{time}(e_1)$ is a time where John is cooking]
 b. If defined “John is still cooking” = 1 iff $\text{now} \subseteq e_1$ and $\text{time}(e_1)$ is a time where John is cooking

It is crucial for Ippolito that the eventuality variable in both the presupposition (in (26a) and assertion in (26b) denotes the same (contextually salient) eventuality. According to her, this guarantees the ‘continuity’ feeling found with aspectual *still*:

¹³ It is important to notice that the overlap relation between the eventuality time and the reference time will hold for all sentences with *still*, since, as seen in (i) and (ii), *still* is compatible with lexical stative or progressivised verbs but not with eventive verbs (see e.g. Michaelis 1993):

- (i) John was (still) on the roof/running
 (ii) John (#still) spoke with Mary/ran.

The sentence *John is still cooking* presupposes that there is a time earlier than the speech time such that the running time of a salient eventuality of John's cooking includes this past time, and asserts of that eventuality that its running time includes the speech time.[.....] because the assertion is about that very salient eventuality, the sequence ["Two days ago John was cooking. He is still cooking"] is understood as talking about a single event stretching over two days, for the second clause requires that John's current cooking be salient in the context and that it overlap a past time. (Ippolito 2007: 11)

In contrast, in the reformulation of Krifka's definition in (25) above, the assertion and the presupposition do not necessarily talk about the same eventuality of John's sleeping (or cooking), and the continuity intuition is captured by explicitly using the abutting relation. In addition, unlike Ippolito, who insists that the eventuality argument in sentences with *still* is contextually salient, no such requirement is made in the definition in (25).

3. Some potential explanations of the data

Before presenting my own account of the contrast between felicitous and infelicitous occurrences of *still*, repeated in (27), let us briefly look at some alternative explanations of it:

- (27) A: How's John ?
 B: He was (#still) unemployed
 B': He is still unemployed
 B'': Last June, he was still unemployed

First, one might try to use the contextual saliency of the eventuality argument, required in Ippolito 2007. Ippolito explicitly claims that 'out of the blue' utterances with *still*, where no such contextually salient eventuality is present, are infelicitous:

the sentence [*John is still cooking*] will be felicitous only if the common ground entails that (a) there is a salient eventuality of cooking by John, and (b) the time of this eventuality includes a past time.

Therefore, the sentence *John is still cooking* cannot be felicitously uttered out of the blue. [p 10]

One might want to claim, then, that the reason for the infelicity of *still* in (27B) is that although the sentence is not uttered out of the blue, but against the context of A's question, this context does not supply any salient past eventuality of John being unemployed.

However, given the felicity of (27B') and (27B'') this cannot be right. The only difference between (27B) and (27B') is tense. Crucially, both are uttered against the same context, and in neither of them is there any reference to a salient eventuality of John being unemployed. Similarly (27B'') differs minimally from (27B) in that the reference time is said to be last June (instead of being unspecified). This sentence too does not make the eventuality of John being unemployed any more salient than (27B) does. The problem with (27B), then, has to do with the saliency of the reference time, not that of the eventuality argument.

In general, then, we see that the eventuality referred to by the VP need not be salient in order for *still* to be felicitous. In fact, this can be seen even in completely 'out of the blue'

utterances with *still*. (28) can be the first thing I say to a guest of mine as I open the door for her. Crucially, even if the guest doesn't know in advance that the baby was asleep, (or, for that matter, that I have a baby), she could easily accommodate this information:

(28) The baby is still asleep. Please be quiet !

In addition, we cannot attribute the infelicity of (27B) to a general difficulty in accommodating presuppositions, of the sort which has been claimed for the presuppositions of *too* and *again* (see, for example, Geurts & van der Sandt 2004, Zeevat 2003). The felicity of (27B') and (27B'') indicates that no such general problem is found with *still*. The felicity of (28) also shows the 'prior time' presupposition triggered by *still* can be accommodated like other types of presuppositions, e.g. those triggered by definite (like *the baby*).

Another promising idea is to try and attribute the contrast in (27) to the tendency of sentences with *still* to express surprise that the state (referred to by the VP) continues and hasn't stopped yet.¹⁴ For example *John is still asleep* seems to implicate or presuppose surprise at the fact that John is asleep now, although he was no longer supposed to be asleep. One might want to claim, then, that this kind of 'surprise' implication can only arise when the reference time is specified. For example, it is not surprising that there is a time at which John continued to be asleep, if he was asleep, but it may be surprising now, or at 5 p.m. or when Harry arrived. Perhaps the lack of 'surprise' effect is what causes the infelicity of (27B).¹⁵

However, as has been already noted in e.g. Löbner 1999 and Krifka 2000 inter alia, the 'surprise' effect seems to be cancellable implication of sentences with *still*. Consider (29a,b):

- (29) a. Unsurprisingly, John was still angry this morning. (This was expected given the way he was treated yesterday).
b. Given the fact that you went to sleep so late yesterday night, it is not surprising that you are still very tired.
c. Usually John is still asleep at 7.00 (Unexpectedly today, he is awake)

The sentences in (29) are perfectly felicitous, despite the fact that the 'surprise' implication seems to be explicitly cancelled in them. Thus, as argued in Löbner and Krifka, this kind of component does not seem to be an inherent part of the semantics of *still*, but is a conversational implicature.¹⁶ It would be strange to claim, then, that the striking infelicity of (27B) is due to the fact that this cancellable implicature does not arise. Moreover, as seen in (30), the felicity contrast between past tense and present tense sentences with *still* remains the

¹⁴ See, for example, van der Aura 1993, who formulates this implication as falsity of the asserted state in the 'worlds of expectations').

¹⁵ Thanks to an anonymous reviewer for pointing out this potential explanation.

¹⁶ Both attribute it to the interaction between the semantics of *still* and the Gricean maxim of relevance.

same even in cases in which the ‘surprise’ implication is cancelled. This is unexplained if the reason for this contrast is the existence or absence of the ‘surprise’ implication:¹⁷

- (30) A: How’s John?
B: Unsurprisingly, he was (#still) unemployed.
B’: Unsurprisingly, he is (still) unemployed.

It seems, then, that a different direction is needed in order to explain the infelicitous occurrence of *still*. In the next section I turn to develop such a direction.

4. The analysis

4.1 A modified, DRT style, definition of *still*

Since we will be dealing here with updating reference times in different contexts, it will be very useful to couch the semantics of *still* within a DRT framework, in which such pieces of information are easily represented. I assume familiarity with DRT, and will make the following simplifications and notational decisions: I will use a bracket notation, as in Geurts 1999, in which the variable *e* is used for all eventualities and (ignoring tense for a moment) the DRS of *John ran* will be [e: john-run(e)] instead of the more precise [e,x: x=john, run(e,x)] (or the even more precise [e,x: x=john, run(e), agent(e) =x]). This is because the focus of this paper is on the relationship between times, not individuals. For this reason, I will not try to systematically capture nominal anaphora. For example, I will represent the second sentence of *John left the room. He was tired* as [e: john-tired(e)] (again ignoring tense). I will take the relationship between the reference time and the imperfective eventuality time (e.g. running time of lexical stative and progressives) to be O(overlap) instead of inclusion (\subseteq) (though using inclusion will be just as compatible with my claims below).

For illustration, let us look at the representation of the present tense (31a) in (31b) :

- (31) a. John is asleep
b. [n, t, e: john asleep (e), t=now, tOτ(e)]

¹⁷ One may argue that the ‘surprise’ effect with *still* should be always evaluated with respect to a certain perspective, so that even with explicit adverbials like ‘unsurprisingly’, it is possible to have in mind a perspective with respect to which it is in fact surprising that e.g. John continues to be angry this morning, or continues to be asleep at 7.00 (in (29a) and (29c), respectively). If this direction is taken, however, we should be able to say very precisely why it is that the existence of a perspective for a surprise effect is always possible with specific or anaphoric reference times, but systematically blocked with existentially closed ones.

Such problems may be solved once a precise theory of the surprise effect with *still* is developed. At the present stage, however, this direction does not seem to provide a satisfying way of accounting for the newly observed data described in section 1.

In (31b), the reference time of the clause, namely t , is equated with the speech time (‘now’), since the sentence is in the present tense, and is taken to overlap the eventuality time, since the type of eventuality is stative. After existential closure the sentence asserts that there is a sleeping eventuality of John whose time overlaps the speech time interval (i.e. now).

Having these notational issues in mind, I propose the following modified definition of the assertion and presupposition of *still* (where t_r and t_{ps} stand for the reference time of the sentence, and the time variable introduced in the ‘prior time’ presupposition, respectively):

(32) Assuming a clause Φ , with reference time t_r and a predicate P with an eventuality e s.t. $P(e)$,

(a) *still* Φ is defined iff the universe of Φ has a time interval t_{ps} which meets the following two conditions: $t_{ps} < t_r$, $t_{ps} O \tau(e)$

(b) If defined, then *still* Φ is true iff $[t_r, e: P(e), t_r O \tau(e)]$

Notice that, as in the reformulation of Krifka’s definition in (25) above, here too the assertion of *still* Φ , given in (32b), is equal to the assertion of the corresponding Φ without *still*. Thus, the only thing we have to add to the DRS of a sentence with *still* is the ‘prior time’ presupposition, given by the definedness condition in (32a). Following Geurts’ 1999 notation of underlying presupposed material, then, the DRS of the present tense (33a) will be (33b):

(33) a. John is still asleep
 b. $[n, t, e, t_{ps}: \text{john-asleep}(e), t = \text{now}, t O \tau(e), t_{ps} < t, t_{ps} O \tau(e)]$

(33b) asserts that some eventuality where John is asleep overlaps now and presupposes that this eventuality overlaps some time prior to now as well. Since, using van der Sandt’s 1992 and Geurts’ 1999 terminology, there is no antecedent for the ‘prior time’ presupposition in the context or in previous utterance, it is accommodated, i.e. added to the DRS of the clause.¹⁸

After existential closure, the model theoretic representation of (33b) is seen in (34):

(34) $\exists e \text{ John-asleep}(e) \wedge n O \tau(e) \wedge \exists t' t' < n \wedge t' O \tau(e)$

The proposal is very similar to previous proposals about the semantics of *still*, but it is not identical to them. Specifically, the definition of *still* in (32) follows Ippolito’s 2007 idea that the presupposition and the assertion talk about the same eventuality. In addition, as in Ippolito, the temporal relationship between the ‘prior time’ (t_{ps}) and the reference time is defined as anteriority, and not as the stricter ‘abutting’ relationship used in Krifka’s 2000 definition. On the other hand, given our discussion in section 3, the definition is unlike

¹⁸ van der Sandt 1992 and Geurts 1999 assume that accommodated presuppositions are projected as high as possible. This is irrelevant in (29b) since the home DRS of the presupposition is also the top DRS here.

Ippolito's and like the reformulation of Krifka's definition in (25), in allowing the *e* variable to be existentially closed, and not requiring it denote a contextually salient eventuality.

4.2 Accounting for the data

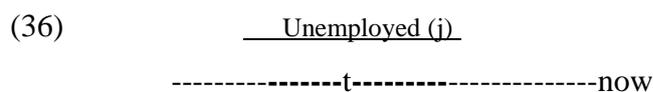
4.2.1 'Still' with existentially closed reference times We are now in a position to explain the infelicitous occurrences of *still* described above. In section 2.1.1 above we suggested that the reference time of the past tense *still*-less (35a) is existentially closed. Assuming, for a start, that the existential quantification is unrestricted, as in DRS (35b)¹⁹, adding *still* (as in (35c)) will give us DRS (35d):

- (35) a. (How is John?) – He was unemployed (but now he has a job)
 b. [n, e, t: John-unemployed (e), t < n, t O τ(e)]
 c. (How is John?) - #He was still unemployed (but now he has a job)
 d. [n, t, e, t_{ps.}: john-unemployed (e), t < n, t O τ(e), t_{ps.} < t, t_{ps.} O τ(e)]

According to (35d), (35c) asserts that an eventuality where John is unemployed temporally overlaps some past time, and presupposes that this eventuality temporally overlaps some time prior to that past time as well. More intuitively, the meaning we get is that a state of John being unemployed continues at some past time.

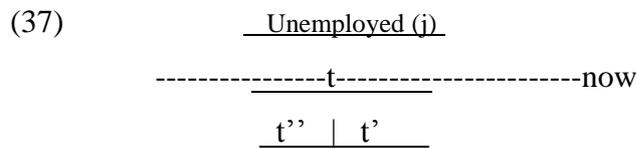
Why is this meaning infelicitous, then? The reason, I suggest, is that it is not informative. Intuitively, if the denotation of *t* is not salient, then saying that a state *P* continues at *t* (the information of the sentence with *still*) does not add anything to saying that a state *P* holds at *t* (the information of the sentence without *still*). More precisely, in such a case, the prior time presupposition of *still*Φ can be met in the *still*-less Φ as well. Consequently the use of *still* is unjustified and thus its presence is infelicitous.

To see this more clearly, consider the schema in (36) for the *still*-less (35a), where there is some past time *t* which temporally overlaps a John-unemployed eventuality. Given the indicated context, the denotation of *t* is not being made salient in any way. We further assume that states are not temporally instantaneous, e.g. that the time of being unemployed is a non-singleton interval:



¹⁹ I deal with the 'restricted' version of such sentences in section 4.2.4 below.

Crucially, this information is enough to guarantee that both the assertion and the 'prior time' presupposition of (35c) (“*John was still unemployed*”) are met. More specifically, given the information in (36) one can automatically infer (37):



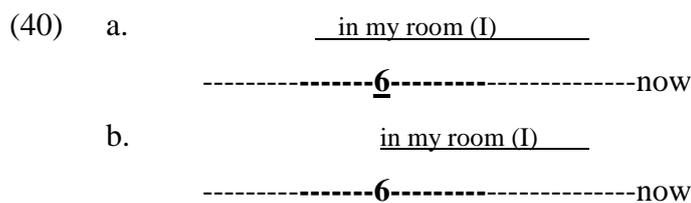
Given the information in (36), we can infer both that (a) there is a past subinterval of t, t' , which overlaps a ‘John-unemployed’ eventuality (namely the assertion of *John was still unemployed*), as well as (b) that there is another past subinterval of t, t'' , such that $t'' < t'$ which also overlaps a ‘John-unemployed’ eventuality, (namely the presupposition of *John was still unemployed*). The result is, then, that by accepting the truth of (35a) (*John was unemployed*), we can automatically infer both the assertion, as well as the ‘prior time’ presupposition of (35c) (*John was still unemployed*). But, crucially, this ‘prior time’ presupposition is the contribution of *still* to the sentence (remember that the assertion of *still p* is just like that of *p*). Thus, if this presupposition, as well of the assertion, are met without *still*, then using *still* is unjustified and vacuous, and hence, infelicitous.

4.2.2 still with point adverbials and punctual reference times. In contrast to the infelicitous presence of *still* in (35c), consider the perfect felicity of this particle in (38a) or (38b):

- (38) a. (How’s John?). Well, a month ago he was (still) unemployed.
 b. At 6.00 p.m., I was (still) in my room.

Here, the reference time is anaphoric to the salient time which is a month before the speech time, and to 6.00 p.m., respectively. We know that states overlap, and do not necessarily surround their reference time (see again the discussion in section 2.2.1). The prior time presupposition, then, rules out the possibility that the state starts only at the point reference time, and ensures that it holds before it. Consequently, the use of *still*, which triggers the ‘prior time’ presupposition is informative and felicitous. For illustration, consider the DRS for the *still*-less version of (38b) in (39) and two possible schemas for it, i.e. (40a) and (40b):

(39) [n, t, e: I-in my room (e), $t < \text{now}$, $t=6$, $t \text{O} \tau(e)$]



(39) requires that the ‘being in the room’ eventuality temporally overlaps the reference time, which, in this case, is 6.00. As claimed in section 2.2.1 above, this is compatible with a case like (40a), where I am in my room before 6 as well, and also with a case like (40b), where I entered the room a second before 6, i.e. when ‘being in the room’ is false before 6.00.²⁰

Adding *still* yields the DRS in (41):

(41) [n, t, e, t_{ps} : I-in my room (e), $t < \text{now}$, $t=6$, $t \text{O} \tau(e)$, $t_{ps} < t$, $t_{ps} \text{O} \tau(e)$]

(41) asserts that some being in the room eventuality overlaps a past 6 p.m. time, and presupposes that this eventuality also overlaps some time before that 6 p.m. time. Once the prior time presupposition is added, then the DRS is now only compatible with a situation like (40a), and rules out a situation like (40b). Thus, there is no way of automatically inferring, on the basis of the *still*-less DRS in (39), the presupposition in (41), namely that I was also in my room *before* 6 p.m.. This information has to exist in the common ground, or else, has to be accommodated by the listener. Thus, *still p* is not equivalent to *p*, since is true in fewer situations than *p*. The use of *still*, then, is informative, and hence, justified and felicitous. The same holds for all the examples with point adverbials (in e.g. (23) above).

Notice that the punctual reference time need not be explicitly supplied by a point adverbial in order for *still* to be felicitous, but can be supplied by context. Clear examples where this happens are present tense sentences, whose reference times are anaphoric to the contextually salient utterance time, as in (23b,c) above, repeated here as (42a,b):

- (42) a. (The pilot to the passengers): We are (still) in the air!
 b. Oh no ! The baby is (still) awake !

As explained in section 2.2.1 above, the *still*-less versions are compatible with scenarios in which the eventuality time starts at the speech time. (42a), for example, can be uttered just as the plane takes off and (42b) can be uttered even when the baby was asleep until now. The addition of *still* excludes these situations and thus its use is informative and felicitous.

There are, of course, other cases of contextually salient times. In a context where we try to remember where we were when Yitzhak Rabin was murdered, the reference time of a sentence like (43) is also anaphoric to that time, so *still* will be informative and felicitous too:

(43) John: I was (still) in my office.

4.2.3 Still with frame adverbials and non-punctual reference times One may hypothesize at this point that *still* is felicitous in e.g. (38), (42) and (43) above because there reference times

²⁰ It is also compatible, of course, with a situation where being in my room equals 6, or ends at 6.

are “short” or punctual so, unlike the reference time in the infelicitous past tense (35c) above (#*John was still unemployed*), they cannot be ‘divided’ into two successive subintervals.

But this hypothesis is refuted by the felicity of *still* with ‘frame’ temporal adverbials, denoting ‘long’, non-punctual times, which can, in principle, also be ‘divided’ into two successive subintervals, as in examples (6) and (7) above, or as in (44) or (45):

(44) In the summer, Anne was (still) writing her book.

(45) Mary was (still) in France in June.

To understand why *still* is felicitous in these sentences, we first have to examine their temporal structure. There are, in fact, two views in the literature regarding the representation of frame adverbials, and as we shall see now, the interpretation and felicity of *still* with such adverbials can help us decide between them.

According to Pancheva & von Stechow 2004, for example, frame adverbials as in (44) and (45) denote time intervals which include or are equal to the reference time of the sentence. Given this view, the *still*-less version of e.g. (45) would have the DRS as in (46). Adding *still* would give us (47), asserting that there is an eventuality of Mary being in France which overlaps some past time t included in (or equal to) June, and presupposing that this eventuality overlaps some time prior to that past time t :

(46) [n,t,e: Mary-in-France(e), $t < n$, $t \subseteq \text{June}$, $\tau(e) \text{O} t$]

(47) [n,t,e,t_{ps}: Mary-in-France(e), $t < n$, $t \subseteq \text{June}$, $\tau(e) \text{O} t$, $t_{ps} < t$, $\tau(e) \text{O} t_{ps}$.]

But if we follow (47), it is not clear why (45), unlike the past tense (35c) above, is felicitous. Following the reasoning described above, here too we should be able to derive the truth of (45) from the truth of its *still*-less version: Once there is some past interval within June which overlaps e , we can always infer that (a) there is a subinterval of that time, also within June, overlapping with e , and (b) there is a successive subinterval of that time, also within June, which overlaps e as well. The use of *still*, then, is predicted to be uninformative and hence, infelicitous, just as in (35c) above. However, unlike (35c), (45) is perfectly felicitous.

One possible conclusion can be that our explanation of the infelicity of (35c) above, in terms of the unformativity of *still* is on the wrong track. I will suggest, however, that this explanation is correct, and instead, it is the DRSs in (46) (and consequently also (47)) which are wrong. The main independent reason to suggest this is that a DRS like (46) does not correctly capture the interpretation of sentences like (45): Taking the reference time in this sentence to denote some time which is included in or equal to June, as in (46), is compatible with asserting that Mary was in France from June 17th to June 24th (a time within June), and

presupposing that she was also in France before that time, e.g. from June 13th to June 17th. But the real presupposition of (45) is that Mary was in France before June, i.e. at least during the last day(s) of May. This is evident from the infelicity of (48):

(48) #Mary was still in France in June. She arrived there on June 13th.

A better representation of (45), then, should take the denotation of the adverbial to be identical to the reference time, as suggested in e.g. Kamp & Reyle 1993, and Artstein 2005. E.g. (49) and (50) would be the DRS of (45b) without and with *still*, respectively:

(49) [n,t,e: Mary-in-France(e), t<n, t=June, τ(e)Ot]

(50) [n,t,e, t_{ps.}: Mary-in-France(e), t<n, t=June, τ(e)Ot, t_{ps.}<t, τ(e)O t_{ps.}]

(50) asserts that an eventuality of Mary being in France overlaps some past time which is June, and presupposes that this eventuality also overlaps some time before *that June*. This DRS is supported both by the interpretation of (45), since it correctly captures the intuition that (45) presupposes that Mary was in France (at least some time) at the end of May, as well as by the felicity of *still* in it: Assuming the DRSs in (49) and (50), the presupposition triggered by *still* cannot be derived from the truth of the *still*-less version: Although it is true that we can ‘divide’ the reference time, i.e. June, into two succeeding intervals (e.g. June 1st to 15th, and June 16th to 31th) these two subintervals would not correspond to the intervals in the presupposition and assertion of (45), respectively, because the former requires that being in France overlaps a time before June (and not before *part of* June). Crucially, this kind of information cannot be inferred from the *still*-less version, and must be supplied by the context, or accommodated. Hence, the use of *still* in (45), as well as in other sentences with frame adverbials, is informative and felicitous.

Finally, just like punctual reference times, which need not be explicitly referred to by point adverbials, but can be anaphoric with contextually salient punctual times (e.g. in present tense sentences), non-punctual reference times too can be supplied not only by frame adverbials, as in (44) and (45), but also by a contextually salient ‘periods’. Consider, for example (51) and (52) in the indicated contexts:

(51) (Context: we are in a history class dealing with the middle ages)

The lecturer: Don’t forget that the church believed in ghosts (then)!

(52) (Context: we are in a middle of a conversation about John’s sabbatical many years ago.)

John: I was an associate professor (then).

In the indicated contexts the reference time of these sentence is $t < n$, $t = \text{the middle ages}$, and $t < n$, $t = \text{my sabbatical}$, respectively. Thus, both sentences can be paraphrased by adding the adverbial *then* to them. We predict, then, that adding *still* to such sentences will be felicitous, even without the addition of an explicit “then”. This prediction is borne out:

- (53) (Context: we are in a history class dealing with the middle ages)
 The lecturer: Don't forget that the church still believed in ghosts !
- (54) (Context: we are talking about John's sabbatical many years ago.)
 John: I was still an associate professor.

Since in both cases the reference time is anaphoric to the contextually salient period, *still* is informative and felicitous. It triggers the presupposition that the state holds also before that period, i.e. that the church believed in ghosts before the middle ages, and that I was an associate professor before my sabbatical as well, respectively.

4.2.4 'Still' with restricted existentially closed reference times In section 4.2.1 above we concentrated on the unrestricted DRSs of (55a) and (55b):

- (55) a. (Context: How is John?) He was unemployed
 b. (Context: How is John?) #He was still unemployed

However, in section 2.1.2 above we examined another, restricted, version of the existential quantification over times in sentences like (55a), seen now in DRS (56):

- (56) $[n, e, t: \text{John-unemployed}(e), t < n, t \in D, t \text{ O } \tau(e)]$

(56) says that some past time t , which is in a relevant period D (e.g. when John is alive and grown up), overlaps a John-unemployed eventuality. Adding *still* will now give us (57):

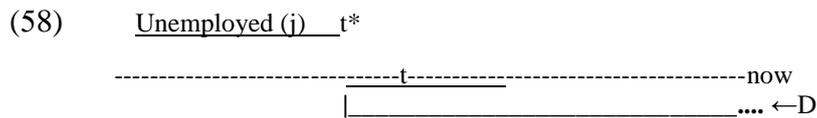
- (57) $[n, t, e, t_{ps}: \text{john-unemployed}(e), t < n, t \in D, t \text{ O } \tau(e), t_{ps} < t, t_{ps} \in D, t_{ps} \text{ O } \tau(e)]$

(57) says that some past time t , inside a relevant period D , overlaps some John-unemployed eventuality and that some time t_{ps} , prior to t , which is also in that period D , overlaps this eventuality as well.²¹

²¹ Notice that I assume that if the reference time of the assertion is contextually restricted, so will be the 'prior time' in the presupposition. This seems reasonable in light of similar patterns in other constructions. Suppose, for example, that the context for (ia) is the situation in the Physics department in our university, so 'some first year students' is understood as 'some students in the Physics department'. In such a case, (ib), with the presupposition trigger 'too', will be interpreted in the same context, and crucially, the presupposition that other students besides the first year one failed will be subject to the same contextual restriction, i.e. the other, presupposed, students who failed as well will be also considered students in our Physics department:

- (i) a. Some first year students failed.
 b. Some first year students failed too.

Assuming (56) to be the representation of (55a), however, may pose a problem for the analysis developed in this section. Specifically, it is not clear anymore that we can account for the infelicity of *still* in (55b) in terms of its un informativity, as we did with the unrestricted version of this sentence in section 4.2.1 above. This is because, given (56), there seem to be a situation, schematized in (58), where the *still*-less (55a) is true, but where the truth of (55b), with the prior time presupposition triggered by *still*, cannot be derived from it:



In the situation in (58), the domain restriction D is a closed interval which starts at the last point of the period during which John was unemployed. So there exists a past interval t which lies in D and overlaps $\tau(e)$, which makes the *still*-less (55a) true. But from this it doesn't follow anymore that (55b), with the 'prior time' presupposition is true, because there exists just one moment, t*, which is in D and at which John was unemployed. If the situation in (58) is indeed compatible with the *still*-less (55a), then, we wrongly predict that adding *still* to the sentence *will* be informative and felicitous, since this will exclude situations like (58).

I believe, however, that a situation like (58) is in fact *incompatible* with the *still*-less (55a) under its 'restricted' reading (i.e. with the DRS in (56)), and thus the potential problem for the analysis of *still* does not arise. The reason has to do with the nature of the restricting period D in (56). As explained in section 2.1.2 above, this restriction is supplied by the presuppositions of (55a), namely that John is alive at the reference time, together with the real world knowledge that John can be unemployed only when he is grown up (where being unemployed can be relevant at all), in order to avoid saying something which is false or irrelevant. Given this, the schema in (58) describes a situation where John's unemployed state starts before he is alive and / or before he is grown up, and ends exactly when this period (namely D) starts, which is unreasonable.

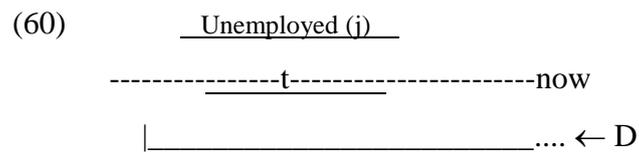
A situation like (58) *could* pose a problem for the theory if (a) the denotation of t was included in D and (b) the restriction D was a salient period independently supplied by the utterance context (and not by the presuppositions of the sentence). But this does not happen: as explained at the end of section 4.2.3 above, as long as a certain past period (e.g. the middle ages, my sabbatical, etc.) is contextually salient, it functions as though it is referred to by an explicit frame adverbial, i.e. the reference time is understood as anaphoric with this period, (i.e. $t=D$) and not as included in it ($t \subseteq D$). In such case, as we have seen, the addition of *still*

triggers the presupposition that the eventuality denoted by the VP temporally overlaps also a time before this whole period D (and not as included in it, as in DRS (56)).

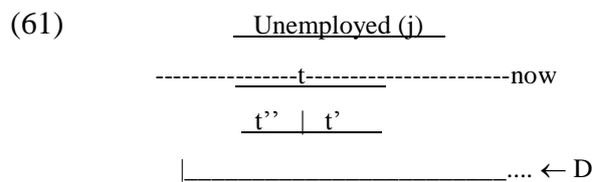
What we have in restricted version of (55a) is different: the restriction on the existential quantification is not a contextually *salient* period, but rather a *relevant* temporal domain, whose characterization as relevant is dependent on the presuppositions of the sentence and on the nature of the state denoted by the VP (in this case the unemployed state). The difference between the two types of restrictions can be tested by examining the effect of adding the adverbial “then” to the sentence: Unlike, e.g. (52) above, which can be naturally paraphrased using “then”, adding “then” to (55a) either sounds odd, or indicates the existence of a more elaborated context than the present one:

(59) (Context: How is John?) He was unemployed (#then) (but now he has a job)

Given these considerations, a more reasonable schema for (55a) is (60), where the time where John is unemployed is properly included in D (the period where he is alive and grown up):



Crucially, as with the unrestricted version of (55a), here too we can always ‘divide’ the reference time of the *still*-less version of the sentence into a past time t' , and a past time prior to t' , t'' , both overlapping the stime of the unemployed eventuality. This is seen in (61):



In such a case too, then, we can infer both the assertion and presupposition of the version with *still* from the *still*-less version, so the infelicity of *still* is accounted for.

4.2.5 ‘Still’ with familiar existentially closed reference times Based on the comparison between the felicitous and infelicitous sentences above we may want to suggest that *still* can only be felicitous when the reference time is not existentially closed. A closer examination, however, shows that this generalization is still not precise enough. Consider (62):

(62) John opened the door. Mary was (still) undressed. (So she told him to wait in the living room)

In (62), the past tense sentence with *still* appears after another past tense sentence. Partee 1984 discusses similar discourses without *still* (as in (11) above) and argues that the reference

time of the second sentence is anaphoric with the existentially closed time of the first one, in a similar manner to the way pronouns (like *it* in (63)) can be anaphoric with an existentially closed nominal antecedent. Following this approach (62) would have the DRS in (64):

(63) Pedro owns a donkey. He beats it.

(64) $[n, e, e', t, t', \underline{t}_{ps} : \text{john- open-the-door } (e), t < n, \tau(e) \subseteq t, \text{mary-undressed } (e'),$
 $t' < n, t' = \tau(e), \tau(e') \cap t', \underline{t}_{ps} < t', \tau(e') \cap \underline{t}_{ps}.]$

According to (64), the first sentence in (62) asserts that there is some opening the door eventuality by John whose time is included in some past time t . This eventuality time supplies the reference time for the second sentence, which says that there is some Mary-being-undressed eventuality whose (past) time overlaps the time where John opened the door. The reference time of the second sentence, then, is indirectly anaphoric with the existentially closed time of the first sentence. A similar thing seems to happen with discourses like (65):

(65) John was still unhappy. His grandmother gave him a candy, but it didn't help.

Here *still* felicitously appears in a past tense sentence which is the first in the discourse. Intuitively, though, the reference time of the first sentence is nonetheless anaphoric, or more precisely cataphoric: it is supplied by the eventuality time of the second sentence. This is very similar to cataphora in the nominal domain, as in (66), or (67) cited in Geurts 1999:

(66) When he saw me, John was really surprised.

(67) The doctor kept warning him but he would never listen, and now Harry's dead.

Geurts suggests that in cataphoric cases like (67), the reference to the pronoun *him* is accommodated, in a similar way to the accommodation of standard presuppositions. I assume that a similar thing happens with (65)²².

The interesting point, then, is that in both (62) and (65), the reference time of the past tense sentence with *still* is indirectly interpreted as existential, but nonetheless, *still* is felicitous. Given the discussion above, the reason should be clear: Since the reference time of the sentence with *still* is anaphoric, or cataphoric, to another time (albeit an existential one), the use of *still* is informative and hence felicitous: For example, the *still*-less version of (62) is compatible with a situation where Mary finished taking off her cloths just as John opened the door. When the presupposition triggered by *still* is added, this situation is excluded.

²² The difference is that in (65), we accommodate a time, not an individual, and that the co-referring expression is not definite or a proper name, but existentially closed, namely the existentially closed eventuality time of the second sentence.

In general, then, the precise feature which distinguishes infelicitous from felicitous uses of *still* in past tense sentences is not the existential/non-existential interpretation of the reference time, but rather the novel/anaphoric one.

4.2 One eventuality, not two, in the presupposition of still The examination of the data above supports Ippolito's 2007 claim, adopted in definition (32), that the assertion and presupposition with *still* make use of one eventuality. Consider again (68):

(68) (How's John ?) He was (#still) unemployed.

Suppose that instead of (32), the definition of the assertion and presupposition of *still* was (69), where the presupposition of *still* makes reference to a new P eventuality, different from the one referred to in the assertion, and the temporal continuity between the presupposed and the asserted eventuality (which in Ippolito are captured by using a single state), is guaranteed by using Krifka's 2000 abutting relation:

- (69) Assuming a clause Φ , with reference time t_r and a predicate P with an eventuality e s.t. $P(e)$,
- (a) *still* Φ is defined iff the universe of Φ has a time interval t_{ps} , and an eventuality e' , which meet the following conditions: $P(e')$, $t_{ps} \alpha t_r$, $t_{ps} O \tau(e')$
- (b) If defined, then *still* Φ is true iff $[t_r, e: P(e), t_r O \tau(e)]$ (where e and e' refer to different eventualities).

Adopting such a definition of *still*, and assuming that the (unrestricted) DRS of the *still*-less (68) is (70), the DRS of (68) with *still*, would be now (71):

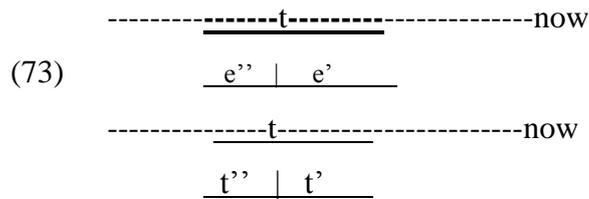
(70) $[n, e, t: \text{john-unemployed}(e), t < n, t O \tau(e)]$

(71) $[n, t, e, \underline{e'}, \underline{t_{ps}}: \text{john-unemployed}(e), t < \text{now}, t O \tau(e), \underline{\text{john-unemployed}}(\underline{e'}), \underline{t_{ps}} \alpha t, \underline{t_{ps}} O \tau(\underline{e'})]$

(71) asserts that some John-unemployed eventuality e overlaps a past time t , and presupposes that another such eventuality, e' , overlaps a time t' prior to and abutting t . The addition of *still* here, then, triggers not only a new temporal variable time t' , but also a new P eventuality variable e' , whose denotation is different from the original e variable in the assertion.

The crucial point is that, unlike what I claimed above, when using (71) it is not clear that the truth of (68) with *still* can be derived from its *still*-less version. Assuming that there is a past eventuality e , as in (72), it is not clear that we will be ready to automatically infer from it the existence of two successive past eventualities in that time, as in (73):

(72) $\underline{\hspace{1.5cm} e \hspace{1.5cm}}$



For example, assuming that John was continuously unemployed from January to June, we would not tend to say (74) or (75):

(74) Between January and June John was unemployed twice.

(75) John was unemployed from January to the end of March, and he was unemployed from the end of March to June.

One continuous state, then, is not automatically seen as two successive states (unless something changes in the characterization of the states besides their running times). Thus, if the assertion and presupposition of *still* involve two eventualities, deriving the truth of the *still* version of (68) from its *still*-less version is not guaranteed, so we cannot explain the infelicity of the former.

An observation which may further support the ‘one eventuality’ approach is the fact that substituting infelicitous occurrences of *still* with the particle *again* leads to much better results. Compare the reactions of B and B’ in (76):

(76) A: How’s John?

B: Good. He was (#still) in America (but now he is back).

B’: Good. He was in America (?again) (but now he is back).

The reaction of B’ is a bit odd in the context of A’s question, where there is no indication that John was in America before, and accommodating this piece of information requires some effort (cf. Zeevat 2003). Nonetheless, informants are much more comfortable with this answer (we could imagine A reacting by “Oh! I didn’t know he was in America before!”) than with the answer of B with *still*, which raises strong reactions of confusion. This may be because the presupposition and assertion of *again* indeed involve *two* P eventualities, in this case, eventualities of being in America (see, e.g. Ippolito 2007, van der Sandt and Huitink 2003). Thus, unlike what happens with *still*, the existence of the presupposed eventuality cannot be inferred on the basis of the assertion alone, and the felicity of *again* can be accounted for.

Finally, the ‘one eventuality’ approach to the semantics of *still* is further supported by the felicity of this particle in (77), with a frame adverbial:

(77) In June Mary was (still) in France

Assuming, as we did above, that the DRS of the *still*-less version of (77) is (78), if we adopted a definition of *still* involving *two* eventualities, would yield the DRS in (79):

(78) $[n,t,e: \text{Mary-in-France}(e), t < n, t = \text{June}, \tau(e) \text{Ot}]$

(79) $[n,t,e,t_{ps}, e': \text{Mary-in-France}(e), t < n, t = \text{June}, \tau(e) \text{Ot}, \underline{t_{ps} < t}, \underline{\text{Mary-in France}(e')}, \underline{\tau(e') \text{Ot}_{ps}}]:$

(79) asserts that some eventuality e where Mary is in France overlaps some past June, and presupposes that some other such eventuality, e' , overlaps some time prior to and abutting that June. Crucially, this DRS is compatible with a discontinuous stay of Mary in France, e.g. with a situation where Mary arrived in France from May 24th to the end of May (which is a time prior to and abutting June), left France, and came back to France from June 23th to June 29th. In such a case, it is true that a being in France eventuality overlaps June, and that a being in France eventuality overlaps a time prior to and abutting June, as (79) requires. The problem is that (77) would be infelicitous in such a case, since it presupposes that Mary continuously stayed in France from some time before June to at least some time in June.

Similar argumentation can be used to show that defining *still* in temporal terms only (as in Krifka's original definition in (20) above), without using an event based semantics, is not enough. Applying this definition to (77) will give us (80), asserting that the sentence 'John is in France' is true at a time which is last June, and presupposing that there is some time before last June in which this sentence is true as well:

(80) a. Assertion of (77): $\text{John is in France}(t) \wedge t = \text{last June}$

b. Presupposition of (77): $\exists t', e t' \propto t [\text{John is in France}(t')]$

Since (80a) can hold if John was in France only part of June (e.g. from June 19th to June 26th), the problem is, again, that (77) is wrongly predicted to be felicitous in a case where John was in France from May 23rd to May 31st, left France and returned on June 19th. In contrast, using an event based semantics with one eventuality in the assertion and presupposition of *still*, as done in Ippolito 2007 and adopted here, makes the right predictions.²³

²³ A potential counterexample to the event based analysis of *still*, pointed out by an anonymous reviewer, is (i):

(i) There is still a guard at the gate.

(i) is felicitous even if the guards change regularly, as long as we have temporal continuity. Assuming that events are individualized by their participants, it would be problematic to maintain that we have one eventuality here, which overlaps both the speech time and a time prior to it, as done in this paper. Notice, however, that a similar problem is raised by *still*-less sentences as in (ii):

(ii) Between 3 and 8, there was a guard at the gate

(ii) too can be felicitous if there was one guard from 3 to 6, who was replaced by another guard from 6 to 8. But if indeed having different guards necessarily means having different eventualities, we wrongly predict that (iii) would also be felicitous in this situation, (*twice* seems to indicate a plurality of events, see Rothstein 2004):

(iii) Between 3 and 8, there was a guard at the gate twice.

But (iii) is infelicitous in this scenario. It can become felicitous if the two different eventualities are characterized not only by different participants, but also by temporal discontinuity. In other words, despite the changing of the participants in (ii), it seems to talk about one eventuality, namely one where there was some guard or another at the gate. It seems to me that the same thing happens in (i).

4.2.7 Still in negative sentences The felicity of *still* with a familiar reference time vs. its infelicity with novel times is found not only with positive sentences, as in the examples above, but also in negative sentences, as in (81):

- (81) (How's John?)
- a. Well, it isn't true / it isn't the case that he was (#still) unemployed
 - b. Well, it isn't true / it isn't the case that he is (still) unemployed

This, however, raises a potential problem for the analysis suggested above: Presuppositions are known to project out of the scope of negation. One would predict, then, that negative sentences with *still* will be *felicitous* even if their reference time is novel, since the problem of un informativity should not arise here: Unlike the examples above, in (81a) the 'positive' presupposition can *not* be inferred from the truth of the negated *still*-less assertion. As seen from the infelicity of (81a), however, this expectation is not borne out.

One simple solution of this problem could rely on the fact that a typical conversational use of negated sentence as in (81) is to reject a contextually salient positive counterpart. If I utter the *still*-less version of (81b) I seem to reject a contextually salient alternative saying that John *is* still unemployed. Given this line of thought the infelicity of *still* in the negated (81a) could arise because negation indicates the existence of an infelicitous salient *positive* counterpart in the context, namely “#John was still unemployed”.

But there is also another direction for explaining the infelicity of *still* in the negative (81a). Consider first the negated present tense (81b). (82) gives the DRT of the *still*-less version of this sentence. (83) gives the DRS of the negated sentence with *still* in three stages:

- (82) [$\neg[e: \text{John-unemployed}(e), \tau(e) \text{O n}]$]
- (83) a. [$\neg[e, t, \underline{t_{ps}}: \text{John-unemployed}(e), \tau(e) \text{O n}, \underline{t_{ps} < n}, \tau(e) \text{O} t_{ps}]$]
- b. [$\underline{t_{ps}}: \underline{t_{ps} < n}, \tau(e) \text{O} t_{ps} \neg[e: \text{John-unemployed}(e), \tau(e) \text{O n}]$]
- c. [$\underline{t_{ps}}, e: \text{John-unemployed}(e), \underline{t_{ps} < n}, \tau(e) \text{O} t_{ps} \neg[\tau(e) \text{O n}]$]

(82), the DRS of “It isn't true that John is unemployed”, says that there is not John-unemployed eventuality which overlaps now. Following e.g. Geurts's 1999, in (83a), the first stage in interpreting the *still* version of this sentence, both the assertion and the presupposition are under the scope of negation. In (83b) the presupposition projects, i.e. is outside the scope

It is, of course, challenging to understand this pattern, but this is beyond the scope of the present paper. One possible direction is that what we have here is the necessary summing of two eventualities into a single one (what Rothstein 2004 calls S-summing).

of negation, in the top DRS²⁴. This is not enough, though, since the top DRS contains now a free eventuality variable (violating Geurts’ ‘properness’ constraint). This is fixed in (83c), by introducing the *e* variable and its predicate in the top DRS. (83c) says, then, that there is an unemployed eventuality which overlaps a time (t_{ps}) before now, and it is not the case that this eventuality overlaps now as well. This is graphically schematized in (84):

$$(84) \quad \text{Unemployed (j)}$$

$$\text{-----} \underline{t_{ps}} \text{-----} \text{now}$$

Turning now to the negated *past* tense (81a), we get the following DRSs:

$$(85) \quad [\neg[e, t: \text{John-unemployed}(e), t < n, \tau(e) O t]]$$

$$(86) \quad \text{a.} \quad [\neg[e, t, t_{ps}: \text{John-unemployed}(e), t < n, \tau(e) O t, t_{ps} < t, \tau(e) O t_{ps}]]$$

$$\text{b.} \quad [t_{ps}: t_{ps} < t, \tau(e) O t_{ps} \neg[e, t: \text{John-unemployed}(e), t < n, \tau(e) O t]]$$

$$\text{c.} \quad [t_{ps}, e, t: \text{John-unemployed}(e), t < n, t_{ps} < t, \tau(e) O t_{ps} \neg[\tau(e) O t]]$$

According to (85), the DRS of the *still*-less version of (81a) (“It isn’t true that John was unemployed”), there is no past time *t* which overlaps some John-unemployed eventuality. The interpretation of the version with *still* (“It isn’t true that John was still unemployed”) is given again in three stages. In (86a) negation has scope over both the assertion and the presupposition. In (86b) the presupposition projects and is placed outside the scope of negation. Notice that at this stage both the eventuality variable as well as the time variable *t* are free. This is fixed in (86c), according to which there is a John-unemployed eventuality which overlaps some time t_{ps} prior to some past time *t*, and it is not the case that this eventuality overlaps the past time *t* itself. This is graphically schematized in (87):

$$(87) \quad \text{Unemployed (j)}$$

$$\text{-----} \underline{t_{ps}} \text{-----} \underline{t} \text{-----} \text{now}$$

This reading, however, leads to a problematic effect of negation in (81a). When we negate a sentence with a presupposition trigger the assertion should come out false, and the presupposition alone should survive. Now, the original, non-negated, assertion in the past tense (81a), with or without *still*, is that there is a past time where John was unemployed. Thus negating this assertion should mean that there was *no* time where John was unemployed. This is what indeed happens when negate the *still*-less version (as in (85)). However, when *still* is present we end up with truth conditions which make this assertion *true*, and not false: given the DRS in (86c) and the schema in (87), there *is* a time in the past in which John was

²⁴ I am neutral here with respect to whether the presupposition is actually ‘transferred’ to that position or not (see e.g. Geurts 1999 for discussion).

unemployed. The result is, then, that we use negation, which is supposed to negate the assertion, but does not manage to do that. This may be the source of the infelicity of (81b).

To summarize, in both positive and negative sentences the felicitous presence of *still* depends on an anaphoric or familiar reference time. However, unlike the infelicity of the positive “He was still unemployed”, the infelicity of the negated version does not seem to result from non-informativity, but rather has to do with the fact that the distinction between the assertive and presuppositional components concerning projection over negation is lost, and that negation does not manage to do the job it is supposed to do.

5. Compatibility of the present analysis with current theories of presuppositions

In the sections above we developed the idea that *still* is infelicitous in sentences like (88B’) since in such a case the prior time presupposition can be trivially inferred from the truth of the *still*-less version in (88B) and hence its use is uninformative:

- (88) A: How’s John ?
 B: He was unemployed
 B’: #He was still unemployed

I would like to finish this paper by examining the compatibility of this claim with current theories of presuppositions. I will focus here on three general suggestions which may be seen as raising problems for the analysis above.

First, a general assumption in the literature, which goes back to e.g. Stalnaker 1978, is that presuppositions are *supposed* to be trivial (relative to the common ground). It is unclear, then, why the triviality of the presupposition in (88B’) leads to infelicity. This may be seen as all the more problematic in view of the recent literature that claims that certain presupposition triggers are *obligatory* whenever they are allowed (what is called *Maximize Presupposition*, discussed in e.g. Sauerland 2006, Percus 2006 and Schlenker 2006).

On the other hand, theories like van der Sandt 1992, Geurts 1999 or Beaver 2001 posit ‘informativity constraints’ which exclude uninformative accommodation of presuppositions. On the surface this kind of requirement may be seen as the one violated in the case in (88B’). However, the ‘Informativity constraints’ suggested in these theories are based on the Gricean maxim of quantity (according to Geurts 1999) or manner (according to Beaver & Zeevat (to appear)). As is well known, and as Geurts 1999 himself emphasizes, such maxims, and the informativity constraint based on them, are defeasible, and many times breaking them leads to some conversational implicatures. This is not what happens in (88B’): as long as the reference time is novel the uninformativity of *still* does not lead to a conversational implicature, but to

infelicity which seems strikingly stronger than the result of typical violations of Gricean maxims. If a Gricean-based informativity constraint is indeed the one violated in (88B'), then the hopeless infelicity of such sentences is unexplained.

A closer look, however, shows that none of these suggestions actually covers cases like (88B'), so these potential problems do not arise in the first place.

First, though it is true that presuppositions are trivial given the common ground, this is not what the analysis above suggests with respect to cases like (88B'). Instead, the 'prior time' presupposition in such a sentence can be trivially inferred from the truth of the *still*-less version in (88B), which is *not* part of the common ground. In fact, this *still*-less version is not uttered at all. It is a *potential* alternative to (88B').

For a similar reason, the Gricean-based 'Informativity constraints' are not applicable to our case. Consider, for example, Geurts' 1999 version of the constraint, in (89):

(89) Informativenss: φ_{i+1} must be informative, i.e. φ_{i+1} may not be entailed by φ_I .

In (89) S_i is a sentence uttered by a speaker, with $DRS\varphi_i$, extended by a hearer to a $DRS\varphi_{i+1}$. This is supposed to account for infelicity in cases where *existing context* entails the information conveyed in a new sentence added to this context. But as we have just seen, this is not what happens in (88B'), which can be inferred from a potential alternative.²⁵

Finally, though 'Maximize Presupposition' does deal with *potential* alternatives, it does not apply to (88B') either. Consider Schlenker's 2006 formulation of the principle:

... *Maximize Presupposition* has the following properties:

- (i) The principle is triggered by certain *lexical items*, which have a pre-determined presuppositional scale.
- (ii) *Maximize Presupposition* only compares Logical Forms whose assertive components are *contextually equivalent* [...]
- (iii) Among the competitors, *Maximize Presupposition* selects the Logical Form that carries the strongest presupposition compatible with the common ground [...]:
 - a. F carries a stronger ps, than F' just in case: $\{w \in W: F \text{ is neither true}^{(w)} \text{ nor false}^{(w)} \text{ in } w\} \subset \{w \in W: F' \text{ is neither true}^{(w)} \text{ nor false}^{(w)} \text{ in } w\}$
 - b. *Maximize Presupposition* selects among a set of presuppositional alternatives in C (which by definition have the same assertive components relative to C) *that sentence which has the strongest presupposition possible without yielding a presupposition failure in C* (p. 1-2)

There are two reasons why the case in (88B') is not covered by this principle. First, as seen in clause (i), *Maximize Presupposition* is relevant when the two alternatives involve 'lexical items which have a pre-determined presuppositional scale' (.g. *believe* and *know*). In our case, on the other hand, only one of the alternatives contains such a lexical item which triggers a

²⁵ In addition, unlike the kind of infelicity dealt with in van der Sandt's and Beaver's constraints, no subDRS is entailed by the main DRS in the infelicitous cases with *still* above (these have no subDRSs to start with).

presupposition, namely the version with *still*, and the second alternative is simply the same sentence without this lexical item (which itself has no presuppositions).²⁶

Second, although indeed both the *still* and the *still*-less versions of (88B') have the same assertive component, as required in (ii), they actually do *not* differ in their presuppositional strength as required in (iii), since the set of worlds where these two versions are neither true nor false is, in fact, equal: Clearly, the set of worlds where the *still*-less version is neither true nor false is empty, since this sentence carry no presupposition at all (If there is a past interval which overlaps a John-unemployed state this sentence is true, and if there isn't such an interval the sentence is false). Crucially, though, the same holds for the version with *still*: as long as there is a past interval which overlaps a John-unemployed state both the assertion and the presuppositions are true, since, as we have shown above, in such a case it is true that such an interval exists, and it is true that there exists an interval prior to it, which also overlaps such a state. If, on the other hand, no past interval overlapping an unemployed state exists, the sentence is simply false. Put in other words, despite the presence of *still* in the sentence, in such past tense sentences there is no truth value gap at all. Thus none of the alternatives here carries a stronger presupposition.

This discussion has two important implications. The first is that the *Maximize Presupposition* principle is not supposed to apply to cases like (88B'). Thus, the fact that *still* is not obligatory in such sentences is not a problem. Second, the fact that the infelicity of *still* in such sentences is so strong is perhaps due to the fact that *still* turns out, in fact, to be *doubly* uninformative in (88B'), namely uninformative both with respect to the content and to the status of the 'prior time' claim: Not only the content of the claim can be inferred from the *still*-less version, *still* does not even add the information that the status of this claim is presuppositional.

6. Summary

The goal of this paper was to explain so far unnoted and unanalyzed infelicitous occurrences of aspectual *still*. I showed that when *still* appears in past tense sentences whose reference time is novel and non-anaphoric, the truth of the assertion and the 'prior time' presupposition this particle triggers can be both inferred from the truth of the minimally contrasting *still*-less

²⁶ The fact that the principle does not apply to such alternatives (with and without *still*) can be seen from the fact that *still* in the present tense (i) is not obligatory, even if the speaker knows that John was unemployed before now as well:

- (i) How's John ?
He is (still) unemployed.

counterpart. Moreover, in such cases the presuppositional status of the ‘prior time’ claim is lost, despite the presence of *still*. Hence the use of *still* in such sentences is uninformative, and thus unjustified and infelicitous.

Besides the analysis of the novel data, the paper has several more general implications. First, as far as the semantics of *still* is concerned, the data analyzed here supports Ippolito’s 2007 claim that the assertion and presupposition of *still* make use of one eventuality argument, but in contrast to Ippolito’s theory, suggests that this eventuality argument need not be contextually salient. Second, the analysis has implications for the research of the tense and temporal structure of clauses. I claimed that the interaction of *still* with frame adverbials supports the view that they denote intervals identical to the reference time of the sentence, rather than including it. I also argued that the contrast between felicitous and infelicitous cases of *still* can only be explained if, contrary to many current analyses, we assume that past tense is not necessarily anaphoric, but can be represented as a new variable bound by existential closure. In fact, given the analysis above, the felicity or infelicity of *still* in past tense sentences can be seen as a diagnostic for determining whether or not the reference time in such sentences is anaphoric or not.

Further research should check whether the infelicity of *still* discussed above is part of a larger pattern of uninformative uses of presuppositions triggers (like *already* or *anymore*) or particles in general.²⁷ In addition, the interaction of *still* with other tenses and aspects (e.g. future tense, and perfect aspect) should be compared to its interaction with the simple past.

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²⁷ One parallel which comes to mind is suggested in Chierchia 2006. Similarly to the kind of argumentation proposed above, Chierchia argues that the ungrammaticality of NPIs like *any* in positive sentences (as in **I saw any student*) is due to the fact that the main contribution of *any* is domain widening, which, in positive sentences is “purposeless” and uninformative. Chierchia, however, is well aware of the fact that this intuitive explanation is not enough since it is not clear “why pragmatically driven conditions, which usually can be overridden, give rise...to unsavable grammaticality contrasts” (p. 538). The paper attempts to answer this question by using Chierchia’s Recursive Pragmatics approach. Further research should check whether this kind of formal framework can be used to explain the infelicitous case of *still* as well.

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