

Temporal Existentials?

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1. Introduction

Since at least Partee (1973, 1984), there has been talk about the possibility of assimilating temporal and pronominal anaphora. One might wonder whether there are other analogies between the nominal and temporal domains. Existential constructions are almost always discussed with the category whose existence is asserted being a nominal that refers to individuals (henceforth “nominal individual existential”), as in (1a):

- (1) a. There are [three horses] _{α} [in a certain space] _{β}

But there are also existential constructions where the nominal refers to an amount (“nominal amount existential”):

- b. There are [three cups of water] _{α} [in a certain space] _{β}

A sentence that instantiates (1b), eg. *There are three cups of water in the sink* is relevant for us on the interpretation “There is water in the amount of three cups in the sink”, and not on the interpretation where three cups are sitting in the sink and they have water in them. I will not address the question of whether nominal individual and amount existentials should be reduced to the same category; I will leave that choice, as well as with which theory of existentials this paper should be read as background, up to the individual reader.

This paper investigates the possibility of existential assertions in the temporal domain and potential similarities to nominal existentials like those in (1a,b). I will conclude that, indeed, there are temporal existentials and that they share many properties with nominal existentials. I will also discuss some of their syntactic and semantic properties. We will start by investigating the hypothesis that temporal amount existentials of the sort in (1b) are found with the α -constituent being a category that can refer to an “amount” of time and the (locative) β -constituent determining a time span. In effect, we will be (in abstraction) dealing with a schema like (2):

- (2) There are [3 years] _{α} [in a certain time span] _{β}

The difference between the α -constituents in (1b) and (2) is that there is no presumption that there is any stuff in any randomly chosen space, but of course there is always time in any random time interval (Heim, p.c.).

On a metaphorical level the similarities between *in a certain space* and *in a certain time span* are obvious and will not be further belabored upon at this point. Following what we said about (1b), the α -constituent in (2) is to be understood as “time in the amount of three years”.

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Later in the paper, we will search for a temporal individual existential along the lines of (1a) in the temporal domain and we will see that there is, indeed, reason to believe that this exists as well.

1 Some good candidates for Temporal Amount Existentials

If there is such a thing as Temporal Amount Existentials, we have good candidates in a variety of languages, at least if we are to judge from the morphosyntax. Many languages have matrix clauses that make assertions about time and that use the same morphosyntactic means as nominal existentials¹:

French:

- (36) Il y a cinq livres sur la table
He CL has five books on the table
“There are five book on the table”
- (37) Il y a cinq ans que je l’ai vu
He CL has five years that I him have seen
“It has been five years since I saw him”

Greek:

- (38) echi pende vivlia sto rafi
has five books on-the shelf
“there are five books on the shelf”
- (39) echi pende chronia pu ton idha
has five years that him-saw
“It has been five years since I saw him”

From the translations in the above sentences, we should suspect that English has a temporal amount existential. As can be seen in translations, the relevant English construction uses the copula, widely used as a light verb in English, and also in its nominal existentials. I will start our discussion with the English case and turn to other languages later in the paper.

Throughout the paper I could have given examples from French and other languages that behave quite closely to Greek and English. For ease I will stick to English and Greek, which provides an interesting variation on the theme.

¹ For our purposes, it is crucial that we are dealing with main sentences and not adjunct, as is clearly the case in the following French sentence

- (51) Je l’ai vu il y a cinq ans

See Rigau (2001) for differences between such adjuncts and the matrix temporal existentials. Her paper provides data from several Romance languages.

2. Determining the “locative” constituent

One of the first things we should do is try to find how the β -constituent (the “locative” constituent) of (1,2) is expressed morphosyntactically when the existential assertion would be in the temporal domain. It turns out that we can find what we need in the literature, namely the Extended Now of what are called the Extended Now theories of the Perfect such as McCoard 1978, Dowty 1979, Iatridou, Anagnostopoulou and Izvorski (2000) (henceforth IAI), and others. For the purposes of the present discussion I will use IAI’s algorithm for calculating the Perfect Time Span (IAI’s version of Extended Now). IAI argue that the Perfect sets up a time span, the Left Boundary (LB) of which is set by the adverbial, the Right Boundary (RB) of which is set up by Tense. In the Present Perfect RB is (at) the time of utterance, in the Past Perfect, RB precedes the time of utterance and in the Future Perfect RB follows the time of utterance. Consider the examples (7) (Existential Perfect) and (8) (Universal Perfect):

- (7) a. Since 1990 I have been to Cape Cod three times
 b. There is a time span whose LB is 1990 and whose RB is the utterance time and in that time span there are 3 events of me going to the Cape
- (8) a. I saw the doctor last week. At that point I had been sick for 3 months
 b. There is a time span whose LB is 3 months before the RB, the RB is before the utterance time (specified in first sentence as being last week) and throughout that time span there is an event of me being sick.
- c. In two days I will have been sick for 2 months
 d. There is a time span whose LB is 2 months before RB and whose RB is 2 days after the utterance time and throughout that time span there is an event of me being sick.

In other words, we have here a way of expressing “a certain amount of space/time”. The example in (7) is with *since*-adverbials but there are examples of more adverbials in IAI. There are several ways to express the coming together of Tense and the *since*-clause to form as time span as its RB and LB respectively. For the sake of concreteness, I will assume the following. Many languages, including English, have temporal adverbials that make both RB and LB overt, e.g. *from... to...*. In fact, I have found adverbials like *since*, which cannot take an overt RB to be rare. I will assume that basically *since* is like *from... to...* in that it comes with a second argument which is the RB of the time span it defines. The only difference is that this second argument is a variable and this variable is bound by and gets its content from Tense. In this way, if Tense is Present, RB (the second argument of *since*) overlaps the time of utterance; if Tense is Past, RB precedes the Time of Utterance etc.

The IAI description of a time span will be adopted in the rest of the paper with one change. Instead of existential assertion of the time span (“There is a time span whose LB is .. and whose RB is..”), I will be treating it as a definite (“In the Time span whose LB is... and whose RB is ...”). This does not have any effect on the cases that IAI actually discuss, since existential assertion on something that is uniquely defined (given that we know what LB and RB are) is from many perspectives equivalent to a definite. However, treating it as a definite might avoid potential difficulties in the presence of elements like negation.²

² Thanks to Arnim von Stechow for bringing this up.

2.1 A bit of English...

The relevance of the IAI proposal for temporal amount existentials can be illustrated with a good candidate for such a construction in English, namely, what I will be referring to as the “*since*-construction”³:

- (9) a. It has been two years since I saw him
b. *existential light verb* [five years]_α [in the period since I saw him]_β

LB of the (“locative”) time span of the temporal existential is set by the event described in the *since*-clause. This is fully consistent with the fact that the β-constituent is introduced by *since*, which is, in a way, the English Perfect adverb *par excellence* (McCoard 1978, Dowty 1979 and many others) and which in the framework of IAI has as its sole purpose to set the LB of the Perfect Time Span.

RB of the time span is set by Tense:

- (10) since-construction + Past:
a. I saw him last week. It had been 2 years since I had seen him (last)

since-construction + Future
b. In one week it will be 2 years since I saw him (last)

Effectively then, (9) conveys (11), while “*at*” in (11) should be replaced by *before* for (10a) and by *after* for (10b), as dictated by the contributions of the Past and the Future.

- (11) There are [2 years] [in the time span whose LB is the last time I saw him and whose RB is (*at*) the Time of Utterance]

We should not forget that numerals always come with some vagueness, e.g. in (9-11), “two” could be “at least two” or “exactly two”. Take a look at the following sentences:

- (12) a. If it has been two years since your last check-up, you are entitled to a free exam
b. If there are five horses in your meadow, you should spray for parasites

The sentences in (12) do not say that if you haven’t had a check-up in seven years you’re not entitled to a free medical exam, nor that if there are seven horses in your meadow that you should not spray. However, this is all part and parcel with a having a numeral in the sentence and not a result of the constructions we are investigating.

So we have found a way to compose the “locative” β-constituent of the temporal existential. What about the α-constituent? A familiar behavioral characteristic of existential constructions is the “Definiteness Effect” on the α-constituent (Milsark 1974 and a huge literature after that). It is natural to ask whether we find such restrictions on the α-constituent of our potential temporal existential. It appears that we do:

³ It is also possible to have a Perfect in the *since*-clause:

- i. It has been five years since I have seen him

I will not address this variation.

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- (13) a. *It has been (the month of) January since I saw him
b. *It has been most days of last week since I saw him

The Definiteness Effect, whatever its explanation, is not in itself sufficient for us to decide that we have actually found a temporal existential. There are adjuncts that show Definiteness Effect restrictions:

- (14) a. I saw him a month ago
b. *I saw him the month of January ago

However, the presence of Definiteness Effect restrictions in the *since*-construction is definitely sufficient to raise the suspicion that we are dealing with an existential.⁴

⁴ Specificational sentences of a certain sort show Definiteness Effect restrictions, as do all measure phrases too (*His weight is 60Kgs*). One might say that the existence of Definiteness Effect restrictions in such sentences weakens further the suspicion that the presence of Definiteness Effect restrictions in the *since*-constructions be taken as an indication that we are dealing with an existential construction. However, the opposite is true. Recall that our working hypothesis is the following assimilation with a nominal existential:

- (i) a. There are [three cups of water]_α [in a certain space]_β
b. There are [3 years]_α [in a certain time span]_β

So if we find a certain behaviour present in measure phrases as well, that is far from being a bad thing. On the other hand, one should ask the question, though, of whether the Definiteness Effect restrictions in existential construction (nominal or temporal) and the Definiteness Effect restrictions in measure phrases have the same source. It is possible that very different (combinations of) factors are responsible for the Definiteness Effect restrictions in measure phrases and in existentials. Alternatively, a reduction to a common component in the two types of sentences might be possible. If one were to attempt an assimilation between the two, it might be attempted by assimilating measure phrases to existentials, or, existentials to measure phrases. The latter may not be as outlandish as it first appears. The α -constituent of the existentials in (i) can certainly be said to be “measuring out” the locative β -constituent. As for nominal existentials of the (1a) type, one could conceivably push this line as well:

- (ii) There are [three horses]_α [in the meadow]_β

Sentence (ii) does not convey that all there is in the meadow is three horses. There could also be cows and rabbits, for example, but it does convey that when it comes to horses, there are three. Is this a possible way to measure out a space? Why wouldn't horses be units of measures for space, or, for that matter, for time? We can say things like *The horse I had two horses ago* to talk about the horse I had before I acquired my two most recent horses. This is no stranger than *two Olympic Games ago* or *two nights ago* or *two hours ago*. And one also encounters things like *such and such a place is five cigarettes away*, meaning that the time to reach that place is the time to smoke five cigarettes. This does not just show that that it is possible to measure time in cigarettes but that the line between measuring space and time is blurred.

Of course, even a successful assimilation (in whichever direction) between existentials and measure-phrases does not constitute an explanation for the DE restrictions. It just means we have one thing to explain, not two.

In short, in addition to interpretive issues, we have found Definiteness Effect restrictions and (the choice of) the light verb that are shared by nominal existentials and the *since*-constructions. There some further issues of form that are shared. One is, of course, the bi-argumental structure, visible in (14); we will return to this in a lot more detail later in the paper. In addition, given what else we have found, the presence of an expletive is what we would expect in the matrix subject position of both (14a,b) (although in English but not in e.g. French the form of the expletive is different from that in nominal existentials). Concomitant to the presence of the expletive, we will see that in some languages, there is A-movement to the subject position.

So far then, the hope for finding temporal (amount) existentials seems to remain alive.

It is crucial to point out about the *since*-construction, and in fact all relevant constructions in other languages. A sentence like (9) does not assert that I saw him (at least) five years ago. The occurrence (truth) of the eventuality is not asserted but presupposed. The eventuality is (at) the LB of the time span whose length the assertion of the temporal existential is about. If the eventuality did not occur, the *since*-construction is infelicitous in the way that sentences are that suffer from failure of existential presuppositions.

By this point it should be clear that for any temporal amount existential, if such things exist, there should be a close paraphrase containing a negation. The reason is simple. We saw that a temporal amount existential effectively measures how much time fits in the span bounded at LB by a certain eventuality and at RB by Tense. This in turn means that LB is the last occurring eventuality of the relevant kind:

(15) I saw him a week ago and again yesterday. *# It has been a week since I saw him

And this in turn means that no such eventuality occurred in the relevant time span. This explains the intuition that temporal existentials can be paraphrased with a negated Perfect (*It has been a week since I saw him, I haven't seen him in a week*).

However, it is very important to understand that this is actually an illusion. The possibility of using a negated Perfect to paraphrase a temporal existential is very restricted. A temporal existential can only be uttered if the event of the embedded clause happened. With the negated Perfect it is possible to avoid this requirement. All that a negated perfect like 'I haven't seen him in five years' does, is assert that a period of five years is devoid of any events of seeing him. It only implicates that there was an event of seeing him earlier:

(16) A: Has the patient ever had a seizure?
B: He hasn't had one in the five years that I have been working here. I don't know about earlier.

B': He hasn't had one in the last five years. I don't know about earlier.

Well, all the above may be interesting but expanding it clearly belongs in a different context. The point to be taken away is that maybe the behaviour of measure phrases and the behaviour of existentials is not coincidentally alike and that when in the rest of the paper, I will be talking about making certain temporal assertions look like (nominal) existentials, I will be leaving it open whether the assimilation should be to measure-phrases as well (or instead).

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B'': He hasn't had one in five years. I don't know about earlier.

In a temporal existential, on the other hand, the occurrence of the event at some point in the past is not cancelable. The occurrence/truth of the event is built in as a presupposition of the sentence. The assertion of the temporal existential is about the time of that event, or, the distance of that time from the time interval specified by Tense. In other words, a temporal amount existential consists of an assertion of the size of the time span between LB and RB.

Here are some more arguments that show this point.

The discourse in (16) shows the agnosticism on the part of the speaker with respect to the question of whether there is a seizure at all in the past. This means that the existence of the seizure is not presupposed (or entailed) in the negated Perfect. We can also have the speaker explicitly deny that there was a seizure. As predicted, this is possible with the negated Perfect but not with the *since*-construction, which presupposes the existence of the relevant event.

- (17) A: Has he had a seizure in the last five years?
B: No. In fact, he has never had one
- (18) A: Has it been five years since he (has) had a seizure?
B: No. #In fact, he has never had one.

We can also take the opposite course of action, namely have the speaker assert that there was an event at the relevant time (LB). In the case of the negated Perfect this goes through without problem. In the case of the *since*-construction, it feels like the funny repetition that is brought about when what is being asserted was already presupposed (Stalnaker and many others since).

- (19) He hasn't had a seizure in five years. (But) he had/did have one five years ago.
- (20) It has been five years since he had a seizure. ?? (But/so) he had/ did have one five years ago.

(when we invert the sentences in (20) the discourse becomes fine because then the presupposition follows the assertion.)

In this context, consider also a medical insurance form that has to be filled in at a doctor's visit. You would be surprised to find questions like those in (21):

- (21) a. How long has it been since you have taken illegal drugs?
b. Has it been five years since you have taken illegal drugs?

Sentence (21) is funny because it presupposes that you have done drugs. On the other hand, you would not be surprised to see any of (22):

- (22) a. Have you (ever) taken illegal drugs?
b. Have you taken illegal drugs in the last five years?

Of course, you can find a question like those in (22) followed by one in (21):

- (23) Have you (ever) taken illegal drugs? If so, how long has it been since you have taken illegal drugs?

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And naturally, you would not be surprised to find (21a) in a drug rehabilitation clinic, where it is presupposed that the visitor is a drug-user.

All the above clearly follow from the proposal that the *since*-construction has as presupposition the occurrence of the event (at its LB) but not so the negated Perfect.

Here is how the implicature comes about, step by step.

The negated Perfect has what we will call its weak implicature, namely the implicature for the possibility of a seizure (before/at LB of the Perfect Time span). And it also has what we will call its strong implicature, namely the implicature that there actually was a seizure (before / at LB of the Perfect Time span). We can derive these implicature by interpreting the fact that the speaker has not made a stronger statement than the one that s/he did make. If speaker did not make a particular assertion it is either because s/he does not know whether that assertion is true, or, because s/he knows that that assertion is false.

- (24)
- a. Speaker asserts A (= *Bill hasn't had a seizure in five years*)
 - b. Speaker did not assert B (= *Bill hasn't had a seizure in six/seven/etc years; Bill has never had a seizure*,), B is stronger than A
 - c. If Speaker had been convinced that B is true s/he would have asserted B
-
- d. Therefore, Speaker is not convinced that B is true =
=Speaker permits the possibility that Bill has had a seizure
(= our weak implicature)

We can generate the strong implicature by adding an additional premise:

- e. The Speaker has an opinion about whether B is true or not
-
- f. Therefore, Speaker is convinced that B is false =
=Speaker is convinced that *Bill has never had a seizure* is false=
=Speaker is convinced that Bill has had a seizure
(= our strong implicature)

With the previous tests we cancelled these implicatures as follows. The sentences in (16) cancel the strong implicature (24f) by directly contradicting (24e), that is, by having the speaker explicitly deny knowledge regarding B. Hence the strong implicature goes away and we are left with the weak one (the possibility of an earlier seizure), generated by (24a-d). The sentences in (26), by having the speaker directly assert B, cancel (24b), hence cancel both the weak and strong implicatures.

Finally, we can cancel (24c) by slightly modifying the discourse in (26):

- (25) A: Has he had a seizure in the last five years?
B: No.

In (25B), since the speaker is not asked for more information and s/he does not give it, we can cancel (24c).

To summarize, the negated Perfect at most implicates that there was a prior event, whereas the *since*-construction presupposes that the event occurred. Of course they both have in common that the indicated time-span is free of events of the relevant sort.

2.2 ...and a bit of Greek

Greek has something very similar to the *since*-construction. Consider the following:

- (26) a. echi enan chrono pu idha ton Mano
 has one year/ACC that I-saw the M
 “It has been one year since I- saw Mano”
- b. ine enas chronos pu idha ton Mano
 ine one year/NOM that I-saw the M
 “It has been five years since I saw Mano”

I will be referring to sentences like (26a,b) as the *pu*-construction, as they contain (what is probably the factive complementizer) *pu*. The existential verb can be *have* or *be*, an alternation that is extremely common crosslinguistically (and a choice which arguably exists also for nominal existentials in Greek).

With respect to the main discussion of the paper, it seems to me that (26a) and (26b) should be treated alike. So let me get their few differences out of the way. In both (26a,b) the matrix verb carries “expletive” features, that is, third person singular, no matter what the subject of the lower clause is. The case on the α -constituent is Accusative⁵ in (26a) and Nominative in (26b); this is exactly what we find with nominal existentials too⁶. From now on I will not

⁵ One might object Accusative Case-assignment without a Subject theta-role runs counter to Burzio’s generalization. There are several possible responses to this concern. The first one would be to say that since we don’t know what exactly drives Burzio’s generalization, the existence of potential counterexamples is not truly a worry and anyway other such counterexamples have been reported (Reuland 2000). One could follow Marantz (2000) in the position that no relevant principle exists in the grammar and that the correlation of Accusative Case to the object/theta-role to the subject is the result of a conspiracy of certain independent factors, factors which are simply not at play in the constructions under consideration.

⁶ I should point out that for some speakers it is possible to put agreement on the matrix verb so that it shares features with the lower subject:

- (105) emis echume enan chrono pu idhame ton Mano
 we have one years that we-saw the Mano
 “It has been one years since we saw Mano”

This is entirely impossible when the existential verb is *be*:

- (ii) **emis imaste enan chrono pu idhame ton Mano
 we are one year that we-saw the Mano

be making any distinction between (26a) and (26b). I do not know what the choice of existential verb determines and is determined by. The variation/similarities between *have* and *be* have received a lot of attention and I refer the reader to the relevant literature. Certainly Kayne (1994) convinces one that even adequately capturing the possible dialectal combinations is far from easy. What is relevant for us is that there is a form of the *pu*-construction whose matrix subject is expletive, so that we can continue considering that form in close parallel to the English *since*-construction. In the rest of the paper I will be dealing only with the *pu*-construction whose matrix verb has uncontroversially expletive features and will leave aside whether the existential verb is *have* or *be*. I will be giving the examples with both light verbs and will choose an α -constituent for which the forms in the accusative and nominative are the same.

The meaning of the *pu*-construction, like that of the *since*-construction, involves a time span whose RB is set by Tense and whose LB is set by the event in the *pu*-clause. In (26) we have Present Tense so RB is the Utterance Time. With Past Tense and Future we get the expected results:

(27) *pu*-construction + Past:

- a. Iche/itan pende chronia pu ton iche dhi teleftea fora
 had / was five years PU him had seen last time
 ‘‘It had been beeb five years since she had seen him last’’
- b. RB: before now (LB: last time s/he saw him)

(28) *pu*-construction + Future

- a. Se dhio mines tha echi/ine akrivos pende chronia pu ton idhe teleftea fora
 in 2 months FUT has/is exactly 5 years PU him saw last time
 ‘‘In two months it will be exactly five years since s/he saw him last’’
- b. RB: in 2 months (LB: last time s/he saw him)

The α -constituent can appear in a number of positions, a reflex of the relatively free word order of Greek:

- (29) a. Echi/ine pu ton idha **pende chronia**
 has/is PU him I-saw five years
- b. Echi/ine **pende chronia** pu ton idha
- c. **pende chronia** echi/ine pu ton idha

Similarly, the β -constituent can appear in a variety of places.

‘‘It has been one year since we saw Mano’’

I do not have anything insightful to say about the possibility for (i). In the next section we will concentrate on another Case where the matrix verb inflects for number and person and does so obligatorily, unlike in (i). From now on, when I will be referring to the *pu*-construction, I will be referring to the versions where the matrix verb is third person singular regardless of the features of the lower subject, as in (26a,b).

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There are some variations on the *pu*-construction:

- (30) A: echi/ine pende chronia pu ton idhe teleftea for a (the familiar *pu*-construction)
has/is 5 years PU him saw last time
- B: echi/ine pende chronia apo tote pu ton idhe teleftea for a
Has/is 5 years from then PU him saw last time
- C. echun perasi pende chronia *(apo tote) pu ton idhe teleftea for a
have passed 5 years from then that him saw last time

All three variations show the by now familiar pattern with RB/LB behaviour. Variation A differs from variation B in that B contains a PP, which in turn contains a relative clause. Interestingly, the particle *pu* appears in B as well and here it is clearly the relative clause introducer, which is homophonous with the factive complementizer (for the latter see Varlokosta 1994, Roussou 1994). This raises the question of whether *pu* in variation A is also a relative clause introducer⁷. If it is, it would be the only environment that I know of where the relative clause can appear without the head; Free Relatives in Greek have a totally different formation, see Iatridou and Varlokosta 1998. Alternatively, the reason that *pu* appears in variation A is that it is there as the factive complementizer. Finding the factive complementizer in this environment is not unexpected given that the eventuality is treated as a fact.

Variation C differs from A and B in having the overt verb *pernao* (“pass”), which appears to take the temporal argument as subject and agrees with it in number. In (30C) it is plural but it is singular in (31):

- (31) echi perasi enas chronos apo tote/tin imera pu ton idha teleftea for a
has passed one year from then/the day that him saw last time

Moreover, in the C variation, the PP and relative clause material cannot be missing. That is, if variations A and B are related by the presence/absence of the PP+relative clause, there is no such pair that variation C is a member of. Variation C is most similar to the following English construction (which also shows the known RB/LB behaviour):

- (32) a. Five years have passed since I saw him last
b. One year has passed since I saw him last
c. Five years have passed from/since the time/day that I saw him last

I will therefore consider variation 30C, like the English sentences in (32), not to be good candidates for instantiating the category of temporal amount existentials that we are investigating at the moment.

Variation B, on the other hand seems the partner of the following English sentence:

- (33) It has been five years from/since the time/day that I saw him last

Because the only difference between the *since*-construction and (33) and the *pu*-construction and (30B) appears to be the internal composition of the *since*- and *pu*-clause, I

⁷ That is, assuming that the relative clause introducer and the factive complementizer do not prove to be the same thing.

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will consider (30B) and (31) also potential temporal existentials of the relevant type⁸. I will continue by using only variation A of the *pu*-construction.

3. A Somewhat Perplexing Case

Take a look at the following Greek sentence:

- (34) Echo pende chronia na dho ton Mano
have/1S five years NA see the Mano
‘It has been five years since I saw Mano’

The particle *na* is an INFL-area particle. Its presence is indicative of infinitival or subjunctive-like properties for the clause. I will return to it later in the paper but for now I will just be glossing it as ‘NA’. I will be referring to sentences like (34) as the *na*-construction.

The *na*-construction has been assumed to be a Perfect (Moser). As far as I can tell, the reasons are that the matrix verb ‘have’ is used (which is also the auxiliary in the Greek Perfect); the matrix verb agrees with the subject; there is an obvious paraphrase with a negated Perfect:

⁸ One important difference between the versions A and B/C in (15) regards the possibilities for long distance readings in the clause that describes the eventuality. In the C versions lower readings are predictably available, given the A-bar operator involved in the relative clause:

- (i) Echun perasi 5 chronia apo tote pu I Maria nomizi oti irthe o Kostas
have passed 5 years from then REL believes Maria that came Kostas
(i.e. M believes that Kostas arrived 5 years ago)

The B variation permits a lower reading at least for some speakers, myself included:

- (ii) Echi 5 chronia apo tote pu nomizi i Maria oti irthe o Kostas
has 5 years from then REL believes Maria that came Kostas
(i.e. M believes that Kostas arrived 5 years ago)

On the other hand, variation A does not permit long distance readings:

- (iii) Echi 5 chronia pu nomizi i Maria oti irthe o Kostas
has 5 years PU believes Maria that came Kostas
(only reading: Maria believes something for 5 years)

This difference between A and the B/C versions is significant in that it puts more support behind the possibility that *pu* in the A version is a factive complementizer and not part of a relative clause. If it had been the latter we would have expected long distance readings. With the *since*-construction, I have found conflicting judgments on whether long-distance readings are possible:

- iv. %It has been 5 years since Maria believes that Peter (has) left.

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- (35) Dhen echo dhi ton Mano ta teleftea pende chronia
NEG have seen the Mano the last five years
'I haven't seen Mano in the last five years'

I will argue that at least on one level, nothing is gained by calling the *na*-construction a Perfect⁹. The fact that it does not contain a Perfect Participle is not in itself damning as other reduced verbal forms have been known to function as if they were Perfect participles. For example, in English pseudo-clefts and VP-fronting:

- (40) a. What he has done is [work at MIT since 1991]
b. He said he would work at MIT and [work at MIT] he has (Howard Lasnik p.c.)

This sentence does not contain a participle in the pivot, yet the presence of the *since*-adverbial indicates that the subtree has "perfect-like" properties.

As for the argument that there appears to be a possible paraphrase containing negation and a Perfect, we saw earlier that the possibility for this paraphrase is only an illusion, and an illusion present with all temporal existentials.

So until now we have not seen anything that argued for viewing the *na*-construction as a Perfect. And there is an additional crucial difference between the *na*-construction and the Perfect; the temporal adverbial is obligatory in the *na*-construction, whereas it isn't in the Perfect. It is possible to use a negated Perfect as in (35) to paraphrase (34). It is also possible to use a negated Perfect without a temporal adverbial, as in (37). However, we cannot set up a *na*-construction that is equivalent to (36) by removing *its* temporal adverbial; in other words, (38) is ungrammatical on the desired reading¹⁰:

⁹ I am actually not quite sure what Moser means by saying that the *na*-construction is a Perfect. Clearly, the argument cannot be just morphological.

¹⁰ (28) is grammatical on the relevant reading if one makes a particular gesture with one's hand (circling clockwise at the elbow) which indicates 'many years'. Otherwise, (28) is close to a sentence that is interpretable as a modal:

- (i) echo na dho ton yatro stis 5
I-have NA see the doctor at 5
'I have to see the doctor at 5'

But the Greek construction is not identical to the English *have to* translation. For example, consider the following paradigm, especially comparing b and d:

- (ii) a. 'I must see John in order to understand what he has'
b. I have to see John in order to understand what disease he has
c. prepi na dho ton Yani ya na katalavo ti echi
must see the Yani to understand what he-has
'I must see John in order to understand what he has'
d. * echo na dho ton Yani ya na katalavo ti echi
I-have see Yano in order to understand what he-has

Moreover, it seems to me that it is difficult for the object to be a clitic or clitic-doubled, although (iv) for some reason is better.

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(37) Dhen ton echo dhi
NEG him-have seen
'I haven't seen him'

(38) *Echo na ton dho
have NA him-see

I conclude that we cannot call the *na*-construction a Perfect. I also conclude that it makes good sense to add the *na*-construction to the pool of possible amount existentials.

We saw above that the temporal adverbial is obligatory in the *na*-construction. A fair amount of variation in the choice is permitted (more so than for the *pu*-construction; we will briefly return to this):

- (39) Echo na ton dho a. pende chronia
I-have NA him see five years
- b. apo to 1991 / apo tote
 from 1991 / from then
- c. apo tote pu fagame mazi
 from then when we ate together

Basically there are two types of adverbials that can appear in the *na*-construction. One is the bare amount argument, exemplified in (39a). The other is the propositional *apo*-adverbials, shown in (39b,c), introduced by the preposition *apo*. This adverbial is close but not identical to English *since*. One important difference between them is that *apo* can take a second argument (*apo ... mechri ...*) and in that *apo* is reminiscent of *from...till...* Although it is possible to translate (39a) using the *since*-construction, with (39b,c) this is not possible (***It has been [since 1991] [since I last saw him]*). Instead, I will just paraphrase them respectively as “The last time I saw him was in 1991/then” and “The last time I saw him was when we ate together”

(ii) *echo na ton dho
I-have NA him see
'I have to see him'

(iii) *echo na ton dho ton Kosta
I-have NA him see the Kosta
'I have to see Kosta'

(iv) echo na ton dho stis 5
I-have NA him see at 5
'I have to see him at 5'

Bulgarian behaves the same as Greek in (i-iv) (Roumi Izvorski p.c.)

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As with the *pu*-construction, both the α - and β -constituents can appear in a number of positions (here illustrated with the α -constituent only)

- (40)
- a. Echo na ton dho **pende chronia**
I-have him see five years
 - b. Echo **pende chronia** na ton dho
 - c. **pende chronia** echo na ton dho
 - d. Echo na ton dho **apo to 1991**
I-have him see since 1991
 - e. Echo **apo to 1991** na ton dho
 - f. **Apo to 1991** echo na ton dho

As would be expected by now, with the constituent there is a definiteness effect¹¹:

- (41)
- a. * tin proigumeni vdhomadaha
the past week
 - b. * to 1991
the 1991
 - c. *tis teleftees pende meres
the last five days

And not surprisingly, the *na*-construction's behaviour with respect to the by now familiar RB/LB tests is exactly that of the *since*- and *pu*-constructions. It is clear that RB is determined by Tense, and LB by the eventuality (the tests here are done with a constituent but the same pattern holds with *apo*-adverbials):

(42) *na*-construction + Past

- a. Idha ton Mano tin proigumeni dheftera
I saw Mano the previous Monday
- b. Icha pende chronia na ton dho¹²
I-had/PST five years na him see
“It had been five years since I saw him”
- b'. RB: last Monday --as indicated by Past Tense.
LB: last time I saw Mano

¹¹ (32a,b) become fine if we add the preposition *apo*. However, then we have just switched adverbial category and we have the prepositional adverbial possibility, not a counterexample to the definiteness effect.

¹² Sentence (33a) is used just to help out with the context; it is not entailed by (33b). The same holds for English: the translation of (33b) does not entail the translation of (33a).

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(43) na-construction +Future

- a. Se mia vdhomadha tha echo pende chronia na dho ton Mano
In one week FUT have 5 years see Mano
“In one week it will be one week since I saw Mano””
- b. RB: one week after the time of utterance --as indicated by Future marking.
LB: last time I saw Mano

(44) na-construction +Present Tense

- a. echo pende chronia na dho ton Mano
I-have 5 years NA see Mano
“It has been five years since I saw Mano””
- b. RB: time of utterance --as indicated by Present Tense
LB: last time I saw Mano

I conclude that the *na*-construction should be treated alike with the *pu*- and *since*-constructions. All three constructions are assertions about the size of a time span bounded on the left by an eventuality (whose occurrence is presupposed) and on the right by Tense.

One last point: Earlier in the section, when discussing the differences between the *na*-construction and a (negated) Perfect, I had argued that on one level, there is nothing to be gained by calling the *na*-construction a Perfect. The reason for this hedge should be clear now. Indeed there are crucial differences between the *na*-construction and a Perfect but on another level they do have something in common: they both involve the morphosyntactic expression of a time span whose LB is determined by an adverbial and whose RB is determined by Tense. This is an important common factor and I will return to it again later in the paper.

4. A Similar construction in English?

Consider the following sentence which instantiates what I will be referring to as the *yet*-construction (brought to my attention by Bill Ladusaw):

(45) I have yet to see him¹³

¹³ The verb ‘have’ seems to behave like auxiliary and not possessive have:

- (i) a. Have you yet to meet the director?
b. *Do you have yet to meet the director?

The *yet*-construction seems almost paraphrasable with a negated Perfect (*I have yet to see him/I haven’t seen him yet*). Both the negated Perfect and the *yet*-construction require that the eventuality should in principle be possible:

- (ii) a. #I haven’t met Einstein yet
b. #I have yet to meet Einstein

As in the *pu*- and *na*-constructions, in the *yet*-construction the adverb is obligatory (unlike in the *pu*- and *na*-construction, though, no other adverb is possible here). That is, once we remove *yet* we get something entirely different:

(46) I have to see him

But there are also differences between the *na*- and the *yet*-construction. One important difference is the following: as we said earlier, the *na*-construction contains as part of its meaning that an eventuality of the type described has occurred (at LB) whereas this is not the case for the *yet*-construction :

(47) I have yet to meet a/the person who will defeat me in chess

In this characteristic, the *yet*-construction patterns with the negated Perfect and differently from the *na*-construction (and *since*- and *pu*-constructions).

For our purposes, the most important relevant difference between the *yet*-construction on the one hand and the *since*-, *pu*, and *na*-constructions on the other, is that the *yet*-construction does not make any assertion about the size (or content) of a time span. For this reason I conclude that the *yet*-construction, whatever it is, it is not a temporal existential, at least not of the type that we have been focusing on.

But there are differences between them, one of which is detectable in the following contrast:

- (iii) a. I haven't seen him yet this morning but I don't really expect to see him
b. # I have yet to see him this morning but I don't really expect to see him.

It looks like the felicity conditions (or maybe semantics?) of the *yet*-construction require a higher probability of occurrence of the eventuality than the negated Perfect. A possible counterexample to such a statement, though, is an example like (iv):

(iv) I have yet to meet a/the person who can swim across the Atlantic without help

Is there Raising or Control involved in the *yet*-construction? (i) shows that at least raising is possible (but it may not be sufficient to exclude control, cf Perlmutter's "Two verbs *BEGIN*").

- (v) a. There has yet to be a good solution to this problem
b. *To take his exam he has yet (*yet to take his exam he has)
cf. To take his exam he aims
*To have taken his exam he seems
c. *It is to take his exam that he has yet (*It is yet to take his exam that he has)
cf. It is to take his exam that he aims
*It is to have taken his exam that he seems

And one final datum: When combined with existential *there*, the *yet*- construction can appear with the verb BE:

- vi. There has yet to be a good solution to this problem
vii. There is yet to be a good solution to this problem
viii. John has yet to take his exam
ix. * John is yet to take his exam

5. Enter the Perfect

5.1 Another Temporal Existential?

So far we have been looking at amount existentials. Recall the initial parallel:

- (1) b. There are [three cups of water]_α [in a certain space]_β
(2) There are [3 years]_α [in a certain time span]_β
 (as instantiated by *since*-, *pu* - and *na*-constructions)

But recall that we have another type of nominal existential, an individual existential (since the existence of individuals is asserted):

- (1) a. There are [three horses]_α [in a certain space]_β

Is there a parallel to (1a) in the temporal domain? What would it look like? If the parallel will close, we would expect to find something like (39):

- (48) There are [3 individuals of a certain sort]_α [in a certain time span]_β

Interestingly, there might be something exactly like (48) in grammar. Recall the IAI treatment of the Perfect

- (49) a. I have visited Cape Cod three times since 1990
 b. In the time span whose LB is 1990 and whose RB is the utterance time there are 3 events of me visiting the Cape
 c. there are [3 events of me visiting the Cape] [In the time span whose LB is 1990 and whose RB is the utterance time]

In other words, the Perfect is a temporal existential of sorts as well, where instead of asserting that a certain amount of time exists in a time interval (as the *since*-, *pu*- and *na*-constructions do), the Perfect asserts that certain events exist in the relevant time interval. These events themselves are not set with respect time coordinates. As a result, the participial (non-tensed) forms of the verb are not unexpected. But what also maybe a correlate, is the fact that in so many languages, there are auxiliaries and that they are frequently drawn from the same pool as the verbs in existentials (nominal and temporal).

So here is what we have¹⁴:

- (50) There are three horses in the barn = There are three cups of water in the sink
 I have visited the Cape three times since 1990 It has been three years since I saw him

And now, if we take a favourite theory of existentials, we can attempt to derive certain type-theoretic properties of participles. For examples, if one believes that *horses* in the top left of the equation is a predicate of nominals, than the VP headed by *visited* in the is a predicate

¹⁴ Irene Heim (p.c.) points out that the parallels expand to shared difficulties as well. For example, in *There are three cups of water in the sink* one should make certain that there is no overlap in the measurement as this would yield a wrong measurement with many more cups of water than what we would consider appropriate. Similarly, when we are measuring years in *It has been three years since I saw him*, we should make sure that there is no overlap in the measuring.

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of events. I will not go into this for lack of space and because I do not have a favourite theory of existentials but I hope the point is clear. In the next section we will see some more advantages to viewing the Perfect as a temporal existential.

I should address here a question that comes up often. In discussing temporal existentials and in including the Perfect in the discussion, I proposed the following disjunction:

(51) There are {three years /three events} in a certain time span.

In the light of the assimilation with nominal existentials, presented this disjunction seemed a benefit as it supposedly mirrored the {three cups of water / three horses} disjunction that we see with nominal existentials. But it is also possible to see the disjunction in (51) –any disjunction– as a weakness of the proposal. If one holds this belief it would be a desired result if we could find a common factor in the two disjuncts in (51) so as to get rid of the disjunctive choice. Such a possibility presents itself: it is often claimed that one can always “convert” an eventuality into a temporal interval by taking the interval over which the eventuality holds. If we do this, then (51) would look like this:

(52) There are {three years / intervals corresponding to three events} in a certain time span

With this move we have effectively gotten rid of the disjunction present in (51) as now the only types of things that we can assert the existence of in a certain time interval is temporal intervals. This move may seem advantageous to some. Personally, I am somewhat agnostic on the matter as I find quite convincing the arguments of Glasbey (1992-3) to the effect that the construction of “a temporal entity from [an] event entity] (p. 289) is not all that straightforward and that we should maintain a distinction between events and times¹⁵.

5.2 Some other benefits from seeing the Perfect as a temporal existential

I have argued that the Perfect should be seen as a temporal existential, with the Perfect Time Span being the “locative” (β -constituent) and the eventuality the individual(s) whose existence is asserted (the α -constituent). In this section I will discuss some other results of this view.

Recall the well-known Definiteness restriction that holds of the α -constituent in nominal existentials. Well, we can detect it in the Perfect as well. Repeatable eventualities have no problem appearing in the Perfect. This can easily be seen with verbs of use:

(53) I have painted this house (many times) since 1990.

However, eventualities that by their very nature are unique create quite degraded sentences. This can be seen with verbs of creation and verbs of destruction which have definite objects:

(54) ?? She has written this paper since 1990

(55) ?? The dictator has assassinated his opponent since 1990

What is the contrast between (42) and (43,44) due to? Recall that we are evaluating the hypothesis according to which the Perfect contains an indefinite description of the eventuality. At the same time we know from the nominal domain that we cannot use an indefinite for an item that is definite or unique in context. In other words, when a definite

¹⁵ In this context see also Larson (1999).

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description is warranted, a definite description must be used (Hawkins 1978, Heim 1991 and others):

- (56) A man came in. The/*a man sat down.
- (57) a. I watched a game last night. The /*an /*one umpire was very unfair.
b. I watched a married couple play chess. The/*a/ *one man had no endgame whatsoever.

When the context does not entail uniqueness (and thereby require definite marking), an indefinite must be used. Compare the sentences in (46) to those in (47):

- (58) a. I watched several games over the weekend. An/ one / *the umpire was very unfair
(good only if we presuppose or accommodate that there was one umpire for all the games)
b. I watched many married couple play chess yesterday. A/ one / *the man had no endgame whatsoever.

I propose then that what is wrong with (54,55) is that definite objects of “one-time-only” verbs like verbs of destruction and creation create unique eventualities, which in turn prohibits the indefinite description of the eventuality that is inherent in the Perfect. Further support for this comes from the fact that we can replicate the contrast. Verbs of creation and destruction with indefinite objects are fine:

- (59) She has written many papers since 1990
- (60) The dictator has assassinated many of his opponents since 1990

Even though events of creation and destruction are unique per individual, the plural indefinite objects reintroduce the potential multiplicity (non-uniqueness) required of the α -constituent of the existential.

In case the reader finds it hard to see the contrast under discussion, here are some ways to bring it out:

- (61) a. Have you painted this house since 1990?
b. Has she read this paper since 1990?
c. Has the dictator debated his opponent since 1990?
- (62) ??Has she written this paper / “Girl with a pearl ear-ring”/etc since 1990?
- (63) ?? Has the dictator assassinated his opponent / Bella Smith since 1990?
- (64) Has she written many papers since 1990?
- (65) Has the dictator assassinated many of his opponents since 1990?

Different languages provide additional contexts to bring out the effect under discussion. Consider e.g. Clitic Left Dislocation in Greek accompanied by focus on the (auxiliary) verb:

- (66) to spiti to echo vapsi apo to 1990
the house it have painted from 1990
- (67) ??o diktatoras ton echi skotosi ton andipalo tu apo to 1990
the dictator him has killed the opponent his from 1990

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And we can go further... In nominal existentials, we can have (apparent) violations of the Definiteness Effect with what has been called the “list-reading”:

- (68) A: Who do we have to cast in our play?
B: Well, there is John, Bill and Susan

Whatever the mysterious list-reading is due to, we also find it with temporal existentials and with descriptions of events whose definiteness/specificity does not normally permit them in the perfect:

- (69) A: What has she done since 1990?
B: Well, she has written this paper, she has assassinated her opponent and she has had the fields destroyed

So far then, we have seen arguments to the effect that there is an indefinite description of the eventuality in the Perfect, which is exactly what we would predict if that description is the α -constituent of an existential. In some examples that we saw, the degraded status of a Perfect sentence was the result of unique eventualities associated with definite objects, such as the creation and destruction of definite objects¹⁶. But uniqueness/definiteness can be

¹⁶ A possibly additional point in our discussion of the position that the Perfect contains an indefinite description of the event is provided by contrasts like the following (with special thanks to D. Pesetsky for (ic)):

- (i) a. *Every three-legged cow has been born since 1990 / we last met
b. *Most three-legged cows have been born since 1990
c. *Every student/most students have passed the department's PhD qualifying exam since 1990
- (ii) a. Nobody has died/been circumcised/been born since 1990
b. Many / ten/ exactly ten/at least ten/ at most ten three-legged cows have been born since 1990
c. *No student/many student have passed the department's PhD qualifying exam since 1990

I should point out that though many speakers agree with the contrast in (i-ii), not everybody does. Moreover, there appear to be different judgments depending on what is interpreted as the restrictor of the determiner. For example:

- (iii) *Everybody most people in my Grandfather's class have died since 1990

I found that (iii) became acceptable to speakers when the material in the VP was duplicated in the restrictor. That is, when (iii) is interpreted as *Everybody who has died has died since 1990*.. However, this effect did not hold for everybody. I do not know what causes this effect, nor what is responsible for speakers' variation in (i-ii).

For this reason, the discussion surrounding (i-ii) has been exiled to a footnote. However, assuming for the moment that the contrast in (I-ii) is real, here are some thoughts. The contrast between (i-ii) is obviously reminiscent of the strong –weak distinction. There is no general restriction against strong determiners appearing in the Perfect:

- (iv) a. Everybody has read five books since 1990
b. Every three-legged cow/ most three-legged cows have given birth since 1990

So something else is going on. If QR applies to (iii) (or (i)), we get (v):

- (v) for every person x , [there is an event e , e in the time span 1990-NOW, x is circumcised/ dies in e]

We can now see what is wrong with (v): the indefinite description in the bracketed constituent violates the prohibition against using indefinites with unique events. After all, for each assignment to the variable x in (v), there is a unique event of dying.

If we are correct about (v), we have to find a different structure of (ii). If we were to do (ii) on a par with (I, iii), we would not be able to explain the contrast:

- (vi) for no person x , [there is an event e , e in the time span 1990-NOW, x dies in e]

Instead of (vi), consider (vii):

- (vii) It is not the case that there is an event e , e in the time span 1990-NOW [such that there is a person x , x dies in e]

In (vii), the quantification over persons is contained inside indefinite description of the event (the underlined part). Hence at the level of the indefinite description of the event there is no uniqueness and (vii) faces no such problems therefore. The question is how to derive (vii). In the case of a negative determiner, we would have to decompose it and have the negation part scope over the existential. This has been proposed for nominal existentials:

- (viii) There are no books on the table

So let us look briefly at those proposals. Sentences like (viii) are pivotal in the debate about what the source/locus of the existential quantification is in *there is..* sentences. In Milsark's (1974, 1977) classic proposal, the source of the existential force is in the *there is* part of the existential construction, with the existential assertion being on a set whose cardinality is specified by the determiner. But it has been pointed out by several people (Von Stechow, Heim, Herburger) that this view runs into problems with determiners that are not monotone increasing. Consider the sentences in (ix):

- (ix) a. There are exactly five books on the table
b. There are at most five books on the table.
c. There are no books on the table

The problem is that Milsark's proposal wrongly predicts that (ixa,b,c) can be uttered when there are ten books on table. It predicts this because even when there are ten books on the table it is possible to define a set with exactly five books or with at most five books. And of course the set of no books, the null set, can always be found on the table no matter how many (if any) books actually are on the table.

The account according to which there is decomposition of the negative quantifier avoids this problem, as it would yield for (ixc) the following:

- (x) It is not the case that there is a set s , s a set of books, (members of) s located on the table

contributed by other parameters of the eventuality. For example, even if an eventuality is in principle non-unique, if we make any particular occurrence specific enough, it becomes again unique and therefore close to a definite. One way to do this is to add uniqueness inducing modifiers:

(70) ?? I have seen him for the third time since 1990

The relevant reading for (59) is the one where the third time I ever saw him happened in the period between 1990 and now. The sentence is of course fine on the reading whose paraphrase is *I have seen him three times since 1990*

The question arises whether it is possible to make a description of an eventuality unique by making its temporal coordinates precise and thereby unique. It appears to be so (even though we shall see that there still remain unanswered questions about this pair):

(71) *He has worked on Sunday

(72) a. Even though his religious beliefs prohibit it, he has worked on a Sunday¹⁷

So if we decompose the negative quantifier we can maintain Milsark's original account (and along the same lines we could do (x)). However, even if the decomposition account will work for the negative determiners, it cannot be extended to other determiners that face this problem, e.g. *exactly five*, *at most five* in (ixa,b) (–and it is possible to duplicate such sentences with the existential construction that is the Perfect).

Because of difficulties like the aforementioned, there have been proposals in the literature that look for the source of existential quantifier elsewhere. For example, Herburger (1997) places the source of the existential quantification on the determiners themselves. That is, she disputes the position that weak determiners are not quantificational. According to her, weak determiners are quantificational, their difference from strong determiners being that while the strong ones raise to the IP-level as QPs, weak determiners undergo head-raising to a lower (T-level) position.

I will not evaluate here Herburger's proposal or any other that aims to resolve the problems that (ixa-c) pose for Milsark's account. What is most relevant is that we can recreate in Perfect sentences the problems that are found in the domain of nominal existentials. When it comes to the actual resolution of the problem we can borrow from the relevant literature the best way to deal with (ixa-c). This way may include decomposition for negative determiners and Perfect sentences with negation or it may along the lines of Herburger's proposal.

¹⁷ It is possible that even though adverbs like *on Sunday* do not determine an absolutely unique position for the eventuality on the time-line (the duration of Sunday will permit multiple placements of the eventuality), they may determine a position sufficiently unique to yield a definite description of the eventuality and thereby violate the Definiteness restriction of the Perfect. This is not unreasonable and receives some support from some sentences the likes of which we saw earlier, where +THEN adverbs do appear in the Present Perfect, with the list-reading predicted to be triggered by violations of a Definiteness restriction:

i. I have visited him two months ago, last weekend, and yesterday (so far)

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However, even if the temporal adjunct is indefinite it is by itself not sufficient to save a Present Perfect if other properties make the eventuality unique/definite. Consider the contrast between (72a and 72b):

- (72) b. *He has been circumcized on a Sunday

McCoard (1978) gives us some arguments in favour of the current proposal. McCoard argues against what he called the “Indefinite Past Theories” of the Perfect (“ID theories”). According to the ID approach, the difference between a Perfect and a Simple Past is that the Perfect provides an indefinite Past. For example, on pp 79-80, he discusses the ID theories’ position that the Preterite is definite and the Perfect indefinite as concluded from the contrasts between the (a,b) sentences (sentences and judgements as reported by McCoard)

- (73) a. I went back to visit two months ago
b. *I have gone back to visit two months ago

- (74) a. I went back to visit last weekend
b. *I have gone back to visit last visit

- (75) a. I went back to visit just yesterday
b. *I have gone back to visit just yesterday

McCoard does not take issue with the position that some of the relevant adverbials can be described as definite. Instead, he argues against the ID theories on the basis that these definite adverbials do occur sometimes in the Perfect, and so the definiteness of the adverb cannot be the deciding factor. The following is such a sentence, according to McCoard:

- (76) I have gone back to visit two months ago, last weekend, and just yesterday (so far)

However, sentence (65) is clearly an instance of a list-reading and we already saw that violations of the definiteness restriction accompanied by an ensuing list-reading is a prediction of (and evidence for) the view of the Perfect as temporal existential. In addition the acceptability and meaning of (65) argue that the definiteness of the adverb can be a factor contributing to Definiteness Restriction violations in the Perfect (though we will see later that it does not account for all the adverbs that are unable to appear in the Perfect

The reader may now think that the current proposal has come close to an ID approach, as well as to some of the ideas in Klein (1992). But this is not so. As I said earlier, according to the ID theories, the difference between a Perfect and a Simple Past is that the Perfect provides an indefinite Past. In the current proposal what is indefinite in the Perfect is the description of the eventuality (the α -constituent of the existential) and not the temporal content of the Perfect. My proposal falls squarely under what McCoard would classify as an “Extended Now” theory. However, I hope it is clear how I am predicting that some of the uniqueness/definiteness inducing temporal adverbs will be predicted to not be possible.

The different theories McCoard classifies and discusses were partly proposed to address what after some years Klein (1992) appropriately dubbed “The Present Perfect Puzzle”, namely the surprising fact that even though the Perfect talks about past events it is not compatible with many past-oriented adverbs. Since McCoard’s class of ID theories (and the related proposal in Klein (1992)) are primarily about the Present Perfect Puzzle, and since

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the current proposal has, as we just saw, come close to some of the intuitions behind the ID theories, it is natural to investigate what all the current proposal has to say about the Present Perfect Puzzle. I think that the answer, actually, is not much, at least not by itself. But here are some thoughts on it anyway...

Table 1 is McCoard's famous list of adverbs that can go with the Perfect only (-THEN), the Preterite only (+THEN), or both (\pm THEN):

Table 1.

+THEN	\pm THEN	-THEN
long ago	long since	at present
five years ago	in the past	up till now
once [=formerly]	once [=one time]	so far
yesterday	today	as yet
the other day	in my life	not yet
those days	for three years	during these five years past
last night	today	herewith
in 1900	recently	lately
at 3:00	just now	since the war
after the war	often	before now
no longer	always	
	never	
	already	
	before	

The Present Perfect Puzzle is at least taken to be the question of why the +THEN adverbs cannot appear in the Present Perfect¹⁸.

¹⁸ But what exactly is the domain of the puzzle? We need to determine whether the puzzle holds in non-Present Perfects. For example, the +THEN adverbs are supposed to be acceptable in the pluperfect or the infinitival perfect:

- i. I went there this morning but he had already left yesterday
- ii. He must have left yesterday

Does this mean that the strange adverb restriction does not hold in Perfects other than the Present Perfect (as argued for by among others Giorgi and Pianesi 1997), or should we say that the restriction holds for all the Perfects and that something else is going on in (i, ii)? It seems to me hard to find a conclusive answer at this point but I would like to point out that the second alternative (in which the adverb restriction holds of all Perfects) is possible. The pluperfect is ambiguous between the Past of a Past and the Past of a Perfect and so it is possible that in (i) we are dealing with a Past of a Past and that therefore the appearance of a +THEN adverb should, in fact, be expected. Similarly, sentences like (ii) have been analyzed as a Past combined with a modal, a Past which the morphological component is forced to realize as an infinitival (C.L. Baker, Hornstein).

If this description of (i, ii) is on the right track then we cannot yet conclude that the adverb restriction does not hold at non-Present Perfects. If we could set up a diagnostic where we could be sure that we are dealing with the Past of a Perfect and not the Past of a Past we could then check whether the adverb restriction holds in non-Present Perfects.

Such evidence might be found in the Future Perfect, where there is a strong need (if not a necessity) for what has been called the R-point adverbial (RB adverbial in the terms of IAI) to appear overtly. (In the absence of the adverbial the sentence is understood modally *she must have finished by now*):

I will follow IAI (2001) and references cited there in the position that in a Perfect sentence there are Perfect-level adverbs and Eventuality-level adverbs. The following, then, is a way to break down the puzzle. We need to find out why +THEN adverbs cannot be Perfect-level and we also need to find out why +THEN adverbs cannot be Eventuality-level. In addition, temporal adverbs can be tense-level (only in the Past or Future; Present Tense, as an indexical cannot take further modification; see Hornstein 1991). This means that in addition, we need to find out why +Tense adverbs cannot be Tense-level in the Perfect.

Perfect-level adverbs contribute in specifying the Perfect Time Span. They can explicitly name the Perfect Time Span (e.g. *in my life*). They can specify its length (e.g. *for three years*). They can name LB of the Perfect Time span (e.g. *since the war*). Other adverbs can specify RB as long as the RB is in the Past or Future. The examples are all U-Perfects to ensure that these sentences are Perfects and not covert Pasts:

- (77) At 3:00 I will have been waiting for five hours
- (78) In 2003 she will have been queen for 50 years
- (79) At 3:00 he had been waiting for five hours
- (80) In 1963 she had been queen for 10 years
- (81) Yesterday he had already been sick for 3 days.

In the above sentences, *at 3:00*, *in 1963* and *yesterday* may well be Tense-level: given that these sentences contain Future and Past tenses, tense-level adverbs are possible. In IAI terms, these adverbs modify RB. As we saw, it is Tense that specifies RB and adverbs like *at 3:00*, *in 1963* and *yesterday* in (66-70) further modify the interval that Tense refers to. So they are Tense-level adverbs. One might be tempted to call them Perfect-level since they after all, even indirectly, modify the Perfect Time Span but this would be problematic. In (66-70) they co-occur with Perfect-level (duration) adverbs. Moreover, their sentence-initial placement in the presence of Perfect-level adverbs indicates that there are higher than Perfect-level (see Thompson and IAI for adverb placement in the Perfect). We conclude that some of the +THEN adverbs can in fact, appear in the Perfect as Tense-level adverbs, as long as we are not dealing with a Present Perfect.

What about other Perfect-level adverbs? It seems that any adverb that can be Perfect-level, i.e. contribute to the composition of the Perfect Time Span, is permitted in the Perfect. The puzzle then partly reduces to why the +THEN adverbs cannot be Perfect-level. So let us look more closely at the items in the +THEN column. Actually, we have already seen that some +THEN adverbs can appear in the Past and Future Perfects by modifying tense and thereby effectively modifying RB of the perfect Time Span. We also said why they cannot be RB adverbs in the Present Perfect. As for Perfect-level LB adverbials even a cursory look at the +THEN column makes it clear that they lack the lexical semantics of LB adverbials like *since* and *from..* Similarly, we can easily see that the +THEN column does

-
- iii. She will have finished the book by Monday/ next week etc

And in such sentences it is impossible to in addition put a +THEN adverbial to specify the time of the eventuality.

So maybe the adverbial restriction does hold of the Perfect in other tenses as well, though as I said, I do not find the evidence conclusive one way or the other. Even though the Present Perfect Puzzle cannot be solved without the prior decision of whether the adverb restriction holds in other tenses, for the rest of the discussion I will try to avoid this question.

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not contain any elements that can measure the duration of the Perfect Time span (like *for three years*). However, the +THEN column does contain elements that could in principle “name” the Perfect Time span the way *in my life* of the \pm THEN column does. For example, why couldn’t *in 1900* name the Perfect Time span? There may be an answer to this (see also Dowty 1979 in this context). Recall the IAI (2001) semantics for the Perfect. In the Present Perfect, RB of the Perfect Time span is at the Time of Utterance. If we are now in the year 2001, RB in the Present Perfect is in 2001. It follows that *in 1900* cannot possibly name the Perfect Time span in the Present Perfect:

(81) (*in 1900) She has been sick three times (*in 1900)

One might ask what would happen if we were in the year 1900, or, for that matter, if we were to evaluate the adverbial *in 2001* while being in 2001. The adverbial *in 2001* should not have any different properties when it comes to the +/- THEN distinction than the adverbial *in 1900*. Yet, we see that it can appear in the Present Perfect:

(82) (In 2001) she has (already) been sick three times (in 2001)

Crucially, (82) is a good sentence only when uttered in 2001. We can now understand the contrast between (81) and (82): *in 2001* can co-occur with the Present Perfect as the temporal interval it is/describes is compatible with the placement of RB in the Present Perfect, as long as we are in 2001. Conversely, *in 1900* cannot appear in the Present Perfect because it is not compatible with RB at the Time of Utterance in 2001 (in this context, see also Dowty 1979).

We observe the exact same contrast between the adverbs *today* and *yesterday*. The adverb *today*, as it is compatible with the Present tense (*Today he is sick* vs. **Yesterday he is sick*), can name a Perfect Time span whose RB is at the Time of Utterance. On the other hand, the adverb *yesterday* cannot name a Perfect Time span whose RB is at the Time of Utterance.¹⁹

Considerations like these also exclude other +THEN adverbs (e.g. *the other day* and *last night*.) from the Present Perfect.

Recall where we are. We have addressed the (partial) rephrasing of the Present Perfect Puzzle into the question of why +THEN adverbs cannot be Perfect-level. We have also said that –THEN adverbials are all Perfect-level adverbs. But what about the \pm THEN column? Some of its elements are clearly Perfect-level adverbs, e.g. *in three years* when it measures the length of the Perfect Time span, *in my life* etc. But not all of the \pm THEN adverbs are Perfect-level. For one, in IAI it was argued that *for three years* can sometimes be Eventuality-level, measuring the duration of the eventuality, on the basis of sentences like (73):

(83) She was sick for three years

IAI argued that *for three years* can be Eventuality-level also when it appears in a Perfect. Specifically, it was argued that when *for three years* is Eventuality-level in a Present Perfect sentence it only yields an Existential/Experiential Perfect. When *for three years* is Perfect-

¹⁹ Here is one of the places where it becomes crucial to decide what the status of the adverb restriction is in e.g. the pluperfect but as I said earlier, I am setting aside the question of whether the puzzle applies to the Perfect in tenses other than the Present.

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level it only yields a Universal Perfect. In other words, already one \pm THEN adverb does not have to be Perfect-level.

Moreover, there are elements in the \pm THEN column which **cannot** be Perfect-level and **must** be Eventuality-level. For example, the way we have described Perfect-level adverbs, it is hard if not impossible to imagine that adverbs like *once [=one time]*, *three/many times*, *often (=many times)* can be Perfect-level: they have nothing to contribute to the composition of the Perfect Time span. At the same time, their ability to appear in Preterite (Simple Past) sentences makes them prime suspects for Eventuality-level adverbs, a suspicion which is obviously confirmed by their lexical semantics. Finally, an adverb like *in the past* cannot be Perfect-level if we correctly laid out the problems with *in 1900* and *yesterday* above. This adverb should not be able to contribute to the composition of the Perfect Time span of the Present Perfect, as it should be incompatible with a Perfect Time span whose RB is at the Time of Utterance (as evidenced by its incompatibility with the Present Tense: *In the past he was/*is very sick*). So *in the past* cannot be Perfect-level in the Present Perfect.

All this brings us to the following obvious question: why can't +THEN adverbs appear in the Present Perfect not as Perfect-level but as Eventuality-level adverbs, the way *for three years*, *once*, *three/many times* do? It would actually be quite clear what +THEN adverbs would mean if they were acceptable as Eventuality-level: they would specify the time of the eventuality. For example:

- (84) a. (Since this morning at 8am) I have eaten at 3pm
b. In the time span whose LB is 8am this morning and whose RB is the time of utterance, there is an event of my eating at 3pm
- (85) a. I have been sick with the flu yesterday
b. In the time span whose LB is the beginning of my life and whose RB is the time of utterance there is an eventuality of my being sick with the flu yesterday

If the discussion so far is on the right track, then the residue of the Present perfect Puzzle is why +THEN adverbs cannot be Eventuality-level in a Perfect sentence.

To summarize this very simplified discussion of the Present Perfect puzzle, we saw the following points. If the adverb restriction holds of all the Perfects (i.e. not just the Present perfect) the adverb restriction breaks down to the following questions:

-Why can +THEN adverbials not be Perfect-level in the Present Perfect? That is, why can +THEN adverbials not contribute to the composition of the Perfect Time span in the Present Perfect?

-Why can +THEN adverbials not be Eventuality-level in the Present Perfect?

We also touched on the question of whether +THEN adverbs can be Tense-level in the Past Perfect and we saw that at least some of them can (in the Future and Past Perfects, with examples of U-Perfects to ensure that we were in fact dealing with perfects and not with covert Pasts).

I addressed these questions to a differing degree but most crucially, I answered them differently for different adverbs. It might potentially be considered a disadvantage to have

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such a conspiracy of factors ruling out the appearance of different +THEN adverbials in the Present Perfect. However, it may also be what is going on.

Finally, I should point out that as far as I can tell nothing in what I said makes any predictions about the absence of the Present Perfect puzzle in some languages (Bruegger, Giorgi and Pianesi). Nor do I have anything to say about why in certain languages the Present Perfect puzzle appears in the Active but not in the Passive voice (Comrie, IAI), as in Greek:

(86) ??o Petros echi chtisi afto to spiti to 1963
the Peter has built this the house in 1963

(87) Afto to spiti echi chtisti to 1963
This the house has been built in 1963

But enough about the Present Perfect Puzzle. Let us return to our main narrative.

6. Interim Summary

So far we have found several possibilities for instantiating the category temporal existential. For temporal individual existentials we found the Perfect. For temporal amount existentials we found the English *since*-construction and the Greek *pu*- and *na*-constructions.

(88) There are three horses in the barn = The Perfect
There are three cups of water in the sink *since*-, *pu*-, *na*-constructions

We will see that several interesting complications arise with respect to temporal amount existentials and the rest of the paper will deal with these. All three temporal amount existentials express a time span and make an assertion about its size (or how much time there is in the time span). We saw that their behaviours with respect to LB / RB calculations are identical. We also saw that the first two had extremely similar structures; they both have expletive subjects / “expletive” features on the existential verb, an amount argument as a first argument and an indicative clause as second argument. But what about the *na*-construction? Its matrix subject position is occupied by a non-expletive NP with which the matrix verb agrees. Granted, its first argument is temporal and its second a clause but it is a clause with morphology often associated with the feature “irrealis”. This raises the question of whether we have two different structures in one language that we can call temporal existentials or whether there is an assimilation possible between the *na*-construction and the *pu*-construction? I will argue that such an assimilation is indeed possible. We will be able to attribute most differences between the *na*- and *pu*-constructions to one important difference between them. Similar questions arise in other languages (e.g. Hindi); hopefully the discussion here will help shed some light there as well.

7. A-movement

Let us start by taking a fresh look at the two Greek constructions, both roughly translating as “*It has been five years since I saw Mano*”:

(89) Echo pende chronia na dho ton Mano (the *na*-construction)
have five years NA see the Mano

- (90) echi/ine pende chronia pu idha ton Mano (the *pu*-construction)
has / is 5 years that I-saw the M

I would like to explore the possibility that these sentences have a partially common derivational history, that is, that they start from similar underlying structures. Specifically, consider (81), which contains an existential light verb, an amount argument and an [IP].

- (91) *exist* 5 chronia [IP]

I will be using *exist* for short for *be* or *have*, given that the *na*-construction contains *have* and that there is a choice between the two in the *pu*-construction. The IP contains the eventuality which sets LB, the Tense on the existential verb marks RB, and the amount argument marks the length of the time span, effectively the distance between LB and RB. The rudimentary structure in (81) can fairly straightforwardly be applied to the *since*- and *pu*-constructions (with the items *since* and *pu* introducing the IP)

If the IP is a *pu*-clause or a *since*-clause, the sentence stays more or less transparent to what it was, the subject of *exist* surfacing as an expletive, unsurprisingly. I will argue that if the IP is a *na*-clause, its subject raises to the subject position of the existential verb:

- (92) a. IP=*na* clause ---> raising
b. IP/CP = *pu* (or *since*) -clause ----> no raising

There are several reasons to suspect that (81, 82) are on the right track²⁰. We find support for Raising in the fact that in the *na*-construction the existential verb has the Person and Number features of the embedded subject; such agreement is absent in the *pu*-construction.

- (93) a. echume pende chronia na ton dhume
have/1P five years na him see/1P
b. ine/echi pende chronia pu ton idhame
was/has/3S five years PU him-saw

“It has been five years since we saw him”

In the *pu*-construction, of course, there is no agreement but “expletive” (3rd singular) features. This is expected because for there to be Raising in (83a), the matrix subject position in (83b) should not be assigned a theta-role and should contain an expletive²¹.

One might counter that the *na*-construction cannot possibly contain Raising since the verb of the *na*-clause has overt agreement features as well. This should not worry us, however. Determining finiteness in the Balkan languages is a well-known difficult. There is good reason to believe that even PRO co-exists with agreement on the verb in these languages. It has been argued that the test for “non-finiteness” is not the presence/absence of agreement but the presence/absence of a temporal domain that is independent from the higher clause

²⁰ The actual superficial position of the subject is actually not helpful at all in this debate as subjects can appear in many places in Greek.

²¹ Or possibly not be projected, as has been argued for expletive pro in pro-drop languages (Borer (), Alexiadou and Anagnostopoulou ()) and others. One’s view of the EPP is of course crucial here.

(Iatridou 1988, Varlokosta (1994), Terzi 1993, and many others; Philippaki and Catsimali (1999) for an opposing view; see Alexiadou and Anagnostopoulou 2000 for an overview of the debate on this issue). In general, some *na*-clauses pass this test some not. What about the *na*-clause in the *na*-construction? Its verb cannot be put in the past tense:

- (94) Echo pende chronia na ton dho / * idha /*echo dhi
I-have 5 years na him see-PRS / *saw-PST /have seen

On the basis of (50), I conclude that the *na*-clause of the *na*-construction is as close as Greek has to a non-finite clause and that (as in the context of the aforementioned discussion) the presence of agreement on the embedded verb is not an obstacle in the path to accepting the presence of Raising in the *na*-construction.

Predictably, the embedded verb in the *pu*-construction does carry the past tense:

- (95) echi/ine pende chronia pu ton idha
has/is 5 years that him saw-PST

Looking at entirely different environments, in Iatridou (1988) I suggested that there is no source for Nominative Case when the verb cannot be put in past tense morphology, even though subject agreement is present on all embedded complements in Greek and other Balkan languages. On the basis of this diagnostic, the *na*-clause of the *na*-construction is non-finite, and the *pu*-clause of the *pu*-construction is finite. Since there is no source for nominative in the embedded clause of the *na*-construction, we expect Raising. In the *pu*-construction Raising is not permitted.

What we have seen so far is consistent with there being Raising in the *na*-construction but it is also consistent with there being Control. How can we distinguish between the two options here? Alexiadou and Anagnostopoulou (1999) propose three such tests for Greek.²² I refer the reader to the aforementioned work for justification of the tests; here I just apply them. The judgments reported below are those of Alexiadou and Anagnostopoulou themselves (personal communication for the (d) sentences). I have some difficulties with the control sentences of their tests so I leave my own judgments out). A&A's tests are meant to distinguish Control from Raising, so they are exactly what we need at this point in the discussion. According to A&A's judgments on the d-sentences, the *na*-construction does indeed pattern with Raising. Here are their three tests.

--A nominative anaphor, apparently bound by an object can occur only in unaccusative/Raising environments, such as (96a) as opposed to (96b). Further raising keeps the sentence grammatical, as in (96c). The acceptability of the *na*-construction in (96d) would show that the *na*-construction involves Raising.

- (96) a. o eaftos mu me provlimatizi
myself me worries
b. *o eaftos mu me andipathi
myself me dislikes

²² They apply them to aspectual verbs, where raising would be obligatory since there is no alternation like the one between the *na*- and *pu*-constructions. Also, they themselves admit that it is hard in aspectual verbs to distinguish monoclausality from obligatory raising.

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c. o eaftos mu archise na me provlimatizi
myself started me worry

d. o eaftos mu echi 5 chronia na me provlimatisi
myself has 5 years me worry

--Idioms are acceptable in Raising constructions and not in Control. Again, the *na*-construction patterns with Raising:

(97) a. echun arxisi na mu benun psili st'afia²³
have started me enter fleas in the ears
'I have started becoming suspicious'

b. echun 5 chronia na mu bun psili st'afia
have-PLU 5 years me enter bugs in the ears

--The last test involves alleviation of WCO violations in the presence of a doubling clitic, as in (98a). Control subjects cannot do it (98b) but Raising ones can (98c). Again, the *na*-construction patterns with Raising (98d) (see Anagnostopoulou 1999 for an analysis of this test)

(98) a. I mitera tu *(to) sinodhepse to kathe pedi
the mother his *(him) accompanied each child

b. ?? I mitera tu thelise na (to) sinodhepsi to kathe pedi
the mother his wanted (him) accompany each child

c. I mitera tu archise na *(to) sinodhevi to kathe pedi
the mother his started *(him) accompany each child

d. I gonis tu echun 5 chronia na *(to) sinodhepsun to kathe pedhi
the parents his have 5 years *(him) accompany each child

To summarize, then, there are strong reasons to suspect that the *na*-construction involves Raising.

Before I close this section, let me address some concerns that might arise.

I have argued that even though the embedded clause of the *na*-construction has agreement features on its verb, it does not have Nominative for its subject. In other words, I have argued that a full set of agreement (f-)features is not sufficient for Case. The features must combine with finite T for nominative (and in Chomsky 1995 and others with v for accusative). If this is correct, then within a feature-checking framework like that Chomsky (1995) this would constitute one more case where one DP can check and delete the features of more than one verb (in the *na*-construction, the subject would be checking the features of the embedded verb as well as of the existential verb) as long as and until its own Case feature has been checked.

²³ By A&A's assumption, *psili* is in the matrix subject position.

A further point for discussion is brought up by a proposal in Chomsky (2000), according to which features on the verb as well as Case can be checked without overt movement. This operation “Agree” is subject to locality constraints and does not happen in a SPEC/Head relationship. If Agree is possible, the question is whether there is overt NP-movement in addition (possibly for some other reason, e.g. EPP), or whether Case and agreement features are checked with the embedded subject remaining in the *na*-clause. This means that the string in (89) could, in fact, be the string on which the embedded subject gets Case, rather than (90).

(99) *echi pendē chronia* [i Maria *na ton dhi*]
has 5 years [the Mary *na him see*]

(100) I Maria *echi pendē chronia* [t *na ton dhi*]
the Mary has 5 years [t *na him see*]

How can we check this possibility? The overt position of the subject is not of much help, as Greek can move a fair amount of constituents to a fair amount of positions.

We have to resort to potential Condition C violations. We clearly cannot apply the test to amount argument; we can only run it on *apo*-adverbials. First, let us establish that a sentence-initial *apo*-adverbial can contain a name coindexed with the matrix subject²⁴:

(101) [*Apo tote pu idhame tin Maria teleftea fora*] *echi pai pendē fores sto nosokomio*
since then that saw the Maria last time has gone five time to the hospital
“Since the last time we saw Mary, she has gone to the hospital five times”

Now we should insert the *apo*-adverbial in the *na*- construction of and see what happens²⁵:

(102) *echi [apo tote pu fotografisame tin Maria ya to Pantheon] na kani dhimosia emfanisi*
has from then that photographed the Maria for Pantheon make public appearance
‘since we photographed Maria for Pantheon, she has not made a public appearance’

²⁴ It is *extremely* crucial to have the adverbial phrase contain a phrase. If instead we had something shorter, e.g. *apo ta yēnethlia tis Marias*” (‘since Maria’s birthday’) we would run into the following interesting and mysterious but irrelevant difficulty. Consider English (i), where coindexation between the matrix subject and *Mary* is possible:

(i) Since Mary’s birthday she has been sick many times.

This coindexation is not possible in Greek, Spanish, or Italian but it is in German. Possibly the difference has to do with the pro-drop parameter or, with the fact that possessors are postnominal in Greek, Italian and Spanish. I will not explore this issue further here. For our purposes, we can run the text once more complex material is inserted in the adverbial, where the mysterious effect goes away.

²⁵ Ideally, we would have been able to construct a minimal pair with a *pu*-construction where we would predict there not to be a condition C violation. Unfortunately, it is not possible to find such an example because as we will see later, the *pu*-construction does not take the type of adverbial that is necessary for the test.

In (102) coindexation between *Maria* and the matrix subject is not possible.²⁶

This would seem to mean that there is always raising of the embedded subject (pro) to the matrix subject position because if it were possible for the embedded subject not to raise, there would be a source for (92) to be acceptable. I conclude that there is actual movement to the matrix subject position in the *na*-construction; not just Agree.

Summarizing, we have found good reasons to believe that that the *na*- and *pu*-constructions are very similar but differ in that the former but not the latter contains Raising. But there are additional differences between them. These differences are very interesting in their own right and deserve attention in themselves. In addition, with respect to the hypothesis that we considered in this section, they raise the question of whether they imperil the conclusion about the relationship between the two constructions and our attempt to find a unified structure for temporal existentials. For this not to happen, whatever differences we find we should be able to reduce to the one difference between the *na*- and *pu*-constructions, namely (non)finiteness. I turn to this in the next section.

8. Definiteness, Negative Polarity Items, and other issues.

In this section we will explore further the properties of the temporal existentials we have been focusing on. This will be the main goal of this section. However, in parallel, I will also be discussing certain differences between the *na*- and the *pu*-constructions. They will provide a unique window into the nature of temporal existentials as they are quite similar but not identical structures. They are a good minimal pair, in other words. We will try to understand their differences and also ask the question of whether the patterns that we find can be reduced to the fact that the embedded clause of the *pu*-construction is finite whereas that of the *na*-construction is non-finite.

8.1 Issue and Difference #1

Consider unique events, the likes of which cannot reoccur. Such events are fine in the *pu*- and *since*-constructions but they cause a strange effect in the *na*-construction, not unlike that in (104b)

- (103) a. Echi / ine 5 chronia pu pethane I gata tu
 has / is 5 years that died his cat
 ‘It has been 5 years since his cat died’

²⁶ Clitic-doubling *tin Maria* improves the sentence but this is irrelevant for our purposes as it happens in all condition C violations. Alexiadou and Anagnostopoulou (forthcoming and p.c.) argue that doubled DPs are interpreted quite higher than where they are pronounced. This does not immediately solve our problem because however high *tin Maria* is interpreted inside its clause, it would still remain within the adjunct. However, they suggest (p.c.) that their proposal, in combination with a proposal by Uriagereka according to which discourse old/doubled elements move to a matrix C position, would permit *tin Maria* to pied pipe the entire adjunct to the relevant position at the matrix C. They suggest that such “massive pied-piping” might work along the lines discussed by Cinque 1990). If this proposal by Alexiadou and Anagnostopoulou works out, then we can adhere to the previously reached conclusion that the impossibility for coindexation in (92) shows that the embedded subject moves to the matrix position and that the checking of features in the *na*-construction does not happen with Agree.

b. It has been 5 years since his cat died

(104) a. *#I gata tu echi 5 chronia na pethani
the cat his has 5 years NA die

b. *# His cat hasn't died in 5 years

It becomes obvious what is wrong with (104a,b) once we consider what we need to accommodate to make them good: (104a,b) convey that his cat is able to die more than once.

What do these facts tell us about our temporal existentials and what do we do with this difference between the *na*-construction on the one hand and the *pu*- and *since*-constructions on the other?

I will argue that the answer to these questions lies in the type of description of the event that the embedded clauses provide. Specifically, I will argue that *pu*- and *since*-clauses provide definite descriptions of the event. In other words (105a) is interpreted as (105b):

(105) a. ...since I saw him
b. ... since (the time of) **the** event of my seeing him

Similarly for the *pu*-clause of the *pu*-construction²⁷.

The fact that a definite description is provided should be tied to the fact that *pu*- and *since*-clauses are finite indicative clauses. In particular, *pu*-clauses are marked as factive and factive clauses have often been assimilated to definites.

On the other hand, the *na*-construction does not express a definite description of the embedded event. Instead, it contains a (free choice indefinite) description of the event. This claim about *na*-clauses (in fact other types of subjunctive-like clauses as well) is reminiscent of existing proposals in the literature (Farkas 1985, Tsoulas 1994, Baker and Travis 1997, Manzini 2001). In forthcoming work I discuss details about the different proposals and where my view differs from the others'. For present purposes, the common component will do: all we need to say is that the *na*-clause of the *na*-construction is similar to an NP modified by *any*. So if a *pu*-clause behaves like a *since*-clause in (105), a *na*-clause would be as in (106):

(106)since (the time of) **an(y)** event of my seeing him.

We are now better equipped to understand the contrast between (103a,b) and (104a): It is not possible to describe unique events with (free choice) indefinites. The unacceptability of (104a) is akin to the unacceptability resulting from an indefinite determiner on NPs referring to unique things. In other words, (104a) suffers from what “a father of his” or “any father of his” suffer from.

²⁷ There are two differences between *since*-clauses and *pu*-clauses that might be relevant at this point. To start with, *since* is a Case-assigning prepositional complementizer like *for*. Greek does not have this category. So *since* can take nominal complements (*It has been five years since the wedding*), whereas Greek cannot do this. The other issue is how *pu*, if it is truly just the factive complementizer, can anchor to a time. However, there are many other languages like Greek, e.g. in French, there is also just a complementizer.

To summarize, in this section we gained some further understanding of the nature of the LB clauses of temporal existentials. In addition, we have found and understood an important difference between the *pu*- and *na*-constructions. Moreover, we have met with a crucial point in the issue of whether the *na*- and *pu*- constructions are related, with the former containing A-movement. If what we said in this section is correct then we have reduced the contrast between (103a,b) and (104a) to the one difference between the *na*- and *pu*-constructions that we are permitted, namely finiteness. This in turn means that this first difference between the two temporal existentials does not endanger the hypothesis that there is a unified structure for the two Greek temporal existentials.

8.2 Issue and Difference #2.

The *na*-construction licenses Negative Polarity Items (NPIs) in the embedded clause (NPIs: *to kuniso ap'edo, puthena*):

- (107) a. *echo 5 chronia na to kuniso ap'edo*
 I-have 5 years NA it from from here
 “I haven’t left here in 5 years”
- b. *echo 5 chronia na pao puthena*
 I-have 5 years NA go anywhere
 “I haven’t been anywhere in 5 years”

The *pu*-construction cannot:

- (108) a. **echi 5 chronia pu to kunisa ap'edo*
 has 5 years PU it moved from here
- b. **echi 5 chronia pu piga puthena*
 has 5 years PU went anywhere

Surprisingly, the English *since*-construction, which until now patterned with the *pu*-construction, does license NPIs:

- (109) a. It has been 5 years since he budged an inch
 b. It has been 5 years since I met anybody decent
 c. It has been 5 years since I’ve been anywhere

So we have to explain the difference between the *na*- and *pu*-construction, as well as the difference between the *pu*- and *since* constructions.

I should point out that it is not a general property of all *na*-clauses to be able to contain NPIs. In fact, even the quasi-modal *na*-clauses (referred to in footnote 14) which look quite like the *na*- construction in that they are an argument of the verb *have*, do not license NPIs:

- (110) **echi na pai puthena*
 (s)he-has NA go anywhere
 attempted reading: “she is scheduled to go somewhere”

Within the theory according to which NPIs are licensed in Downward Entailing Environments (e.g. Fauconnier 1974, Ladusaw 1977), we would have to start by showing that the *na*-construction and the English *since*-construction provide Downward Entailing Environments.

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In order for them to be Downward Entailing, the truth of (111a) would have to entail the truth of (111b) and that of (112a) (112b):

- (111) a. Echo dhio mines na fao gliko
I-have 2 months na eat dessert
'It has been 2 months since I ate any dessert'
- b. Echo dhio mines na fao baklava
I-have 2 months na eat baklava
'It has been 2 months since I ate baklava'
- (112) a. It has been 2 months since I had dessert
b. It has been 2 months since I had baklava

So do the a sentences entail the b sentences in (111, 112)?

At first blush, (111a), (112a) can be said to entail the (111b) and (112b) sentences. After all, the last 2 months were dessert-free, therefore they were also baklava-free. This entailment computation definitely captures an important aspect of the meaning of temporal existentials. On the other hand, the a- sentences make reference to the last time I ate dessert and that may not have been baklava, as the b-sentences would require. According to, (111a, 112a) I had dessert two (or more, see section x) months ago. According to (111b, 112b), I had baklava two months ago. Certainly (111a, 112a) can be true without (111b, 112b) being true. This means that the relevant environments are not Downward Entailing and yet they license NPIs. Can we resolve this or do we have to give up hope for the Downward Entailing theory here?

von Fintel (1999) noticed problems of this sort and argues for the following amendment to the Downward Entailing theory of licensing.

(113) "We can define a notion of entailment that will only check whether an inference is truth-preserving under the assumption that all the conventional implicatures and presuppositions of premises and conclusion are satisfied" von Fintel, p. 6

von Fintel calls this type of entailment "Strawson Entailment". So here is what we have. Sentence (114a) does not entail (114b) in the sense that I mentioned earlier, namely, in the case that five years ago I had a brownie, not baklava:

- (114) a. It's been five years since I had dessert
=/> b. It's been five years since I ate baklava

However, recall that the *since* construction (as well the *na*- and *pu*-constructions), has as presupposition that the eventuality in the embedded clause has, in fact, occurred, as it is built in as LB. To check whether there is Strawson-Entailment and whether we can appeal to it to license NPIs, we need to satisfy the presuppositions of the relevant sentences. That is what is done in (115). (115a) provides the environment whose Downward Entailing /Strawson Entailment properties we are checking. In our calculations we should assume the truth of (115b) along with that of (115a). Now we can ask the question whether (115c) is entailed and the answer is that it is.

- (115) a. It's been five years since I had dessert
b. Five years ago I had baklava

c. ----> It's been five years since I had baklava

So von Stechow provides us with a way to apply the Downward Entailing theory to the *na*- and *since*-constructions and thereby account for the licensing of NPIs in them. But what about the *pu*-construction? Shouldn't it be able to license NPIs in exactly the same way, if von Stechow's amendment is correct and if the present proposal about the similarities between the *na*- and *pu*-constructions is correct? Or should we take the NPI-difference as an indication that the *pu*- and *na*-constructions are not as closely related as I said?

In order to avoid imperiling the hypothesis that the two Greek constructions are closely related, we would have to show that the difference in NPI-licensing is reducible to the one difference between them, namely, it should be reducible to the fact that the embedded clause of the *na*-construction is non-finite, whereas the embedded clause of the *pu*-construction is finite with a factive complementizer. As with the difference #1 discussed in the previous section, there is reason to believe that this is possible.

Imagine that Downward Entailment is a necessary but not sufficient condition for NPI licensing. Recall Linebarger's (1987) Immediate Scope Constraint, according to which an NPI can be licensed by Negation only if there is no operator that intervenes between negation and that NPI. This can be accommodated in the Downward Entailing account as well. This is not say that the environment would cease to be DE. That is, the intervention effect of the intervening operators would not be due to the operators breaking or undoing the DE properties of the environment in question. The Immediate Scope Constraint would be an additional, independent condition (to be attributed to some other constraint, possibly locality-related). With respect to the *pu*-construction, we can apply the von Stechow-augmented DE approach and still find it DE. However, the presence of the factive complementizer *pu* is what causes the problem. In other words, a factive-marked complement cannot contain NPIs, even if it is DE. How reasonable is this? Do we have any precedent? Indeed we do. Consider the contrast in (116)²⁸:

- (116) a. It has been five years since I met anybody that liked
b. *It has been five years since the time that I met anybody that I liked

Once we put an overt definite in (116a), as in (116b), the NPI is not licensed. And if we are right in assimilating factivity to definiteness then the unacceptability of (116b) is akin that of NPIs in the *pu*-construction. And this, in turn, means that we have reduced the NPI-difference between the *na*- and *pu*-constructions to the difference of finiteness between them. The hypothesis of the relationship between the constructions can be maintained.

The reader will have noticed that in order to set matters straight with respect to the two Greek constructions, we have created a difference between the *since*-construction, which in itself can license NPIs (e.g. 116a) and the *pu*-construction which does not. This is in conflict with the tendency that we have found that the *pu*-construction and the *since*-

²⁸ We could as an additional argument here that factive verbs cannot contain NPIs in their complement if the licenser is in the higher clause:

- i. Nobody thinks that John ate anything
ii. *Nobody found out that John ate anything.

The intervening factivity could be the problem in ii. Though it is also possible to have an independent account of what environments permit neg-raising, with the latter being blocked in certain cases independently, or in addition to, issues of Immediate Scope violations.

construction behave alike. There are several ways to go from here. We could say that the *since*-construction and the *pu*-construction are not *that* alike and leave it at that. Alternatively, we could say that even though the truth of the *since*-clause is presupposed, the *since*-clause is not a grammaticalization of a factive description of the eventuality. As a result, there would be no intervention effect.^{29 30}

²⁹ Alternatively, we could say that the licensing conditions for *any* and other English NPIs are somewhat different from that of Greek NPIs, as has been argued by Giannakidou (1996, 1999). However, here we should point out that if we said that English *any* is different from Greek NPIs in being licensed in factive environments (so as to get 106a), we would wrongly predict that (106b) is fine too --unless we make a distinction between factives and definites in their anti-NPI-licensing properties. So perhaps the best way to go is to say that the *since*-clause is not grammaticalized as a factive clause.

³⁰ Even though I consider that with the discussion in this section we have sufficiently pushed away any dangers for the proposed relationship between the *na*- and *pu*-constructions that their differing NPI-licensing properties might have posed, in this footnote I would like to briefly discuss an approach to NPI licensing that has been tried specifically on Greek NPIs, namely Giannakidou (1996, 1999). (Putting the issue of the exact NPI-licensing conditions aside, Giannakidou describes two categories of verbs subcategorizing for *na*-clauses. The *na*-clause of the *na*-construction does not fall in either type, judging by the diagnostic tests that she gives.)

Giannakidou (1996, 1999) argues that licensing condition of (Greek non-emphatic) NPIs, is the following (1996, p. 104):

- (i) Nonemphatics are licensed in a sentence S iff (a) S contains a nonveridical operator, and (b) NPIs are found in [the] scope of this operator.

And then we have the following definitions (p.110):

- (ii) a. A propositional operator OP is veridical iff the truth of *Op p* in c requires that *p* be true in some model M(x) in c.

b. An operator OP is nonveridical iff the truth of *Op p* in c does not require that *p* be true in any model M(x) in c.

c. A nonveridical operator OP is averidical iff the truth of *Op p* in c requires that *p* be false in any model M(x) in c.

It is unclear to me what the relevant operator would be in the *na*-construction, but I will put that aside and address the question of whether the environment in the *na*-construction is averidical or nonveridical so as to permit the presence of NPIs. It seems, actually, that the environment is veridical, as (iiia) has the veridical inference (iiib):

- (iii) a. Echo apo to 1991 na dho ton Mano
have since 1991 NA see the Mano

- b. I saw Mano (in 1991)

Similarly for the following pair:

- (iv) a. Echo pende chronia na dho ton Mano
have five years NA see the Mano

b. I saw Mano (5 years ago)

Th same holds for the *pu*-construction:

- (v) a. echi pende chronia pu idha ton Mano
has five years PU I saw Mano
It has been five years since I saw Mano

b. I saw Mano (5 years ago)

So the existence of a veridical inference exists in both the *na*- and *pu*-constructions, so in a way, we would not expect NPIs to be licensed in either one.

Following a proposal of Linebarger's (and Baker's 1970), Giannakidou accepts that a negative implicature can license NPIs. One might say that that is what licenses NPIs in the *na*-construction since after all there is the negative implicature that no event of the relevant sort occurred since 1991 (in (iii)) or in the last 5 years (in (iv)). There are two problems with this, however. The first one is that this would predict that the *pu*-construction should also be able to license NPIs since it also has the negative implicature that no event of the relevant sort occurred in the last five years. To that one might say that the intervening factivity would block the NPI licensing by Negative Implicature. But it is far from clear how that could work given that the negative implicature would be just the statement that no event of a certain sort occurred in the last five years.

However, there is a more important reason for which we cannot appeal to the negative implicature to license NPIs in the *na*-construction within Giannakidou's proposal and that is that Giannakidou herself argues that unlike in English, licensing by negative implicature in Greek "...is a very limited option, and it never overrides the nonveridicality requirement on licensing" (G 1999, p. 409). In other words, a negative implicature cannot license an NPI if there is a veridical inference. Giannakidou supports her position with facts like the following. She says that the NPI in (via) is unacceptable despite the negative implicature (vib), because the sentence has the veridical inference in (vic):

- (vi) a. * Monon I Theodora idhe kanenan
only theodora saw NPI
b. Nobody other than Theodora saw anyone
c. Theodora saw someone.

In other words, even if the *na*-construction has a negative implicature, the fact that there is veridical inference cannot be overcome and so we should not expect NPIs, contrary to fact.

In short, I cannot see how Giannakidou's account could be used explain the differing patterns of NPI behaviour in the *na*- and *pu*-constructions. However, Giannakidou does provide interesting differences between the behaviour and licensing environments of Greek NPIs and English *any* and possibly through there we can find the solution to the question mentioned earlier, of why the English *since*-construction can license NPIs while the *pu*-construction does not, with the two construction otherwise appearing to be quite similar.

In the next section I will address one more and extremely important property that our three temporal existentials constructions share. After that, I will make certain specific syntactic proposals regarding the structures involved.

9. Deriving a common property but in a different way: The last occurrence

In the previous section, I argued that the time span bounded by LB (event) and RB (Tense) is free of any dessert-eating events. In even earlier sections of the paper I described the event at LB as the last event of the relevant sort.

Imagine that the world is as described in (117a). Then all the sentences in (117b) are false.

- (117) a. I saw him in 1995 and I saw him again last week. It is now the year 2000.
- b. It has been 5 years since I have seen him (*since*-construction)
 echi 5 chronia pu ton idha (*pu*-construction)
 echo pende chronia na ton dho (*na*-construction)

How is this meaning of “*last*” achieved? Is there a covert “*last*”? That does not seem a very attractive option. We will see that we can do without such a covert element as well as that postulating it would give us the wrong results.

Let us start with how the meaning of the last occurrence of the eventuality is derived in the *na*-construction. When discussing a difference between the *na*- and *pu*-constructions in section 7 I argued that the *na*-construction (as subjunctive/infinitival like) contains a free choice indefinite description of the event in its *na*-clause. This means that a *na*-construction conveys that there are five years from **any** occurrence of this type of event. This is like the more straightforwardly topological “We are five miles from any gas station”. The latter, of course entails that we are five miles from the nearest gas station. Similarly, being five years from any occurrence of the event entails being five years from the last occurrence of the event. In other words, we can find in the *na*-construction the means to derive the meaning of “last occurrence of the event” without postulating a covert “*last*”.

The *pu*- and *since*-constructions also pick out the **last** occurrence of the event (*I saw him a week ago and again yesterday. *# It has been a week since I saw him*). How do they do it? Postulating a covert “*last*” will not do as in such a case, (118a) would have the status of (118b):

- (118) a. It has been 5 years since his cat died.
 b. *#It has been 5 years since the last time that his cat died.

I have already argued that the embedded clause of the *pu*- and *since*-constructions, as a full indicative CP (in contrast to the reduced infinitival/subjunctive-like clause of the *na*-construction) contains a definite description of the event. This is also supported by the presence of the factive complementizer in the embedded clause of the *pu*-construction and the familiar assimilation of factives and definites. Containing a definite description, the *pu*-, *since*-constructions can pick up the unique most salient occurrence of the event. If there is only one occurrence, there is no problem, as we saw in section 7, when we discussed unique

(That is, if one does not want to pursue the difference that the *since*-construction is not grammaticalized as a factive.)

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events. If there are many occurrences of the event-type but only the last occurrence of the event is salient, there will again be no problem.

But if there is no one salient occurrence, the unmodified *pu*-, *since*-constructions will, in fact, fail to pick out an individual event, just as definite descriptions fail to pick out one referent when uniqueness or salience are not met:

(119) (when there are five books on the table:) #He gave me the book that is on the table

(120) O Yanis echi pandrefti 3 fores. ?? Echi 5 chronia pu pandreftike³¹:

John has married 3 times has 5 years pu he married

“John has been married three times. It has been 5 years since he got married”

If we add an overt ‘last’ in (120), the sentences become fine again, as predicted, since then we have provided a uniquely referring definite description. And there is nothing crucial about the choice of “last” here. The same thing happens when we add an overt “first”. Same results hold for the English *since*-construction.

This is how the meaning of last occurrence is derived in the *since*-, *pu* - and *na*-constructions.

10. Making a tree and exploring further the assimilation in question

10.1 The *pu*- and *since*-constructions

I will continue with the assumption that the *since*- and *pu*-constructions are quite alike. Thompson (19xx), IAI and others argued that in the Perfect, a *since*- adverbial is adjoined higher than the VP and lower than TP. I will assume that the *since*- clause of the *since*-construction is the same as the *since*-adverbial in a Perfect and that it therefore stands in the same position in the tree. I will assume that therefore the *pu*-clause of the *pu*-construction is in the same position as the *since*-adverbial in the Perfect.. Assuming, in addition, that the existential verb, despite its lightness heads a VP in the usual position, we get (121) (where “PerfP” stands for “Perfect Phrase”):

(121)

TP	
T	PERFP
	PERFP SINCE / PU...
VP	
V	5 years
BE	

As before, I will not address the issue of lexical choice of existential verb, whether it is *have* or *be* or some other form. I will be indicating it as “BE” throughout.

The structure in (121) has some advantages but it also poses some difficulties. Let’s look at it in more detail.

In (121), the measure argument is a sister to the existential verb. Given that the sisterhood is a result of Merge, I consider that the question of whether the measure argument is an

³¹ The same holds for the equivalent German construction (Irene Heim p.c.).

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“argument” of the existential verb does not arise; at least not any more than it does in nominal existentials. In fact, as we saw in Greek, where the existential verb is *have*, the measure argument is assigned accusative by it (just as the α -constituent is in a nominal existential):

- (122) a. echi ena chrono pu ton idha
 has one year/ACC pu him-saw
 ‘It has been one year since I have seen him’

 b. echi dhio stilus tis DEI dhipla stin thalassa
 has two poles of the [electric company] next to the sea
 ‘There are two electricity poles next to the sea’

So having the measure argument as a sister to the existential verb is not a problem, quite the opposite, in fact, if we take the Case relationship that is visible in Greek seriously.

As for the time span whose size the temporal existential is an assertion about, it is composed as Tense binds a variable associated (possibly as its second argument) with the *since*-clause.

So far, then, what (121) provides us with is a structural relationship between the α - and β -constituents of the temporal existential. What (121) lacks is what is overtly present in nominal existentials, namely, the preposition that expresses the exact relationship between the α - and β -constituents³²:

- (123) a. There is a horse **in** the yard.
 There is a book **on** the table
 Etc.

 b. *There is a horse the yard
 *There is a book the table

Why would any sentence that instantiates (121) be any better than (123b), the nominal existential without the prepositionally specified relationship of the α - and β -constituents?

To my knowledge, no overt preposition appears in temporal existentials. The absence of the preposition becomes less surprising if we look at how languages treat temporal intervals in general. For example, notice that the interpretation of “in yesterday” proceeds without problem and crucially without a preposition in (124), and how the interpretation is ambiguous between *in* and *throughout* in (125):

- (114) He left yesterday
(115) He was sick yesterday

It appears that in general, temporal intervals are interpreted as preceded by “in” or “throughout (Dowty 1979, IAI) but without any overt marking of this sort. So we should not be surprised when we find the same treatment of the temporal interval in temporal

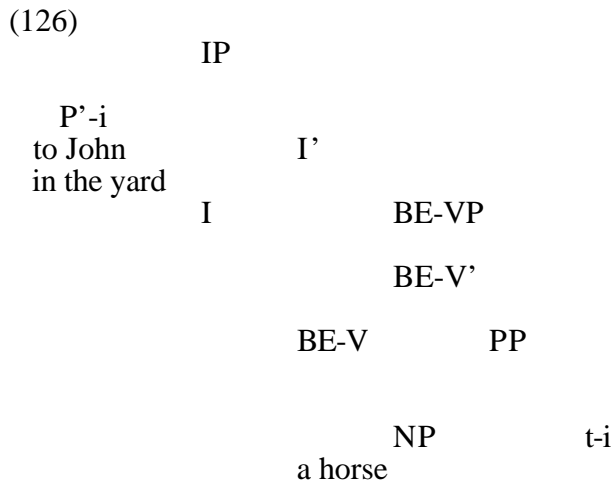
³² If Freeze and Kayne are right in possessives being existentials, then we would have cases where there is oblique Case on the locative, not a preposition.

existentials. In (121), the upper part of the tree composes an interval and the interpretation proceeds further as it would with any interval³³.

I will temporarily conclude, then, that (121) is a good candidate for the *since*- and *pu*-constructions. Before turning to some problems for (121) that the *na*-construction raises, a suggestive similarity.

One of the main goals of this paper is to explore the hypothesis that there are temporal existentials and that they are in significant ways similar to nominal existentials. Although it is far from being conclusive, it is appealingly suggestive that (121) provides a similarity to nominal existentials as discussed in Freeze (1992) and others. Freeze argues that crosslinguistically, locative and existential sentences belong to related paradigms in that in locative sentences an NP is in the subject position and the locative phrase in the predicate (or “other”) position, while in existential (and possessive) sentences, the locative is in the subject position and the NP in the predicate/other position. The verb of such sentences is *have* or *be* and Freeze argues for a particular algorithm for their variation, an issue which, as I said before, I will set aside.

According to Freeze, (126) is a (if not the most) common crosslinguistic structure for existential sentences with the meaning *There exists a horse in the yard* and *John has a horse*:³⁴



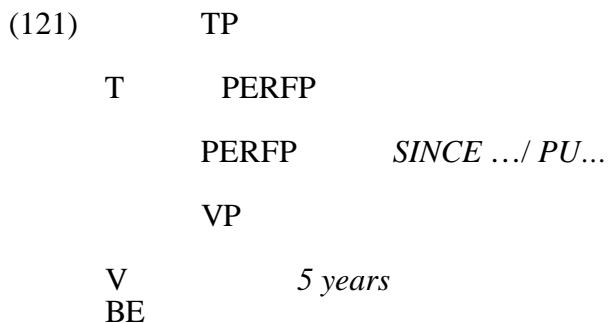
³³ What should this difference between temporal intervals and locations be due to? The DP inside the locative refers to an object (eg *the table*, in *on the table*). The preposition/oblique marking turns this DP into a space with respect to which locative relationships can be asserted. Expressions for time intervals, on the other hand, appear to not need such a mediator. Possibly because they are locations, “spaces” already; possibly because the range of permissible interpretations is much smaller. All there is is *in* and *throughout* and it appears that we are quite happy living with that ambiguity, as in (115). The *in* and *throughout* readings have been cast in terms of existential and universal quantification, see Dowty 1979, Mittwoch (19xx), IAI and many others.

³⁴ Freeze argues that the way that English grammaticalizes the existential construction (with a locative proform) is extremely rare crosslinguistically.

Many of the specifics of Freeze's account will not concern us here. For example, he argues that the constituents *to John /in the yard* move as a P', effectively taking the NP *a horse* out of the government-domain of the preposition, which permits Nominative to be assigned to the NP *a horse*.³⁵ Freeze does not really address the issue of where the existential force on the constituent *a horse* comes from. There have been several proposals about this in the literature, starting with Milsark (1974) and taken up in the work of many afterwards. Whatever the best such proposal is, all that is relevant here is the strong possibility that a structure like that in (126) is the syntactic correlate of the existential semantics. Structures (121) and (126) are remarkably alike. In the upper part of the tree we compose the locative (β -constituent). In the lower part of the tree we have the α -constituent, whose existence in β is asserted. The hierarchical orders are alike and exactly what Freeze argues is the crosslinguistic norm for the structural relations in nominal existentials. The names of the labels are not the same but I consider this a non-difference. The similar "look" of (121) and (126) is by no means a strong argument in the search for identifying possible temporal existentials but it does not harm the hypothesis either.

10.2 The *na*-construction

So far we seen several significant advantages with adopting (121), repeated below, as the structure for the *pu*- and *since*-constructions:



But there is also at least one problem with (121). By hypothesis, the location of the *since*-clause is the location of the *pu*-clause. Recall also, that I have argued that the *pu*-construction differs from the *na*-clause in that the latter contains Raising. In other words, the *pu*-clause of the *pu*-construction and the *na*-clause of the *na*-construction differ in finiteness, but presumably the location of the two clauses is similar. At least, we have not said anything that would lead to the contrary. This means that (121) is also the representation of the *na*-construction, with the *na*-clause structurally located where the *since*-clause is. But the *since*-clause is an adverbial. So if all that we said so far is correct, we would have to say that there is Raising/A-movement to the matrix subject position out of an adjunct, as the *na*-clause would stand where the *since*-clause adjunct does. It is actually not clear to me that Raising out of an adjunct should be blocked as a matter of principle. Possibly there are several factors conspiring to rule out Raising out of some adjuncts and so we would have to see whether these factors are indeed present in the environment under discussion.

³⁵ Kayne (1992) proposes a syntax for *have/be* alternation that is similar to Freeze's in several respects but also differs from it crucially in proposing that the underlying argument of BE is of the form [John's horse] and not Freeze's [a horse [to John]]. Freeze actually mentions languages where the underlying structure is [John's horse], but in his narrative the general form is [a horse [to John]].

One way to avoid the above problem is to have the *since*-adverbial and its Greek equivalents be an internal argument, not an adjunct. This would effectively mean that we are dealing with two internal arguments, since the measure argument would also be an argument. As mentioned earlier, this is also the structure we are dealing with in nominal existentials. On the other hand, it would also be enough to find cases of adjuncts which have argument-like properties in either being able to move to A-positions or in permitting movement out of them. There are several imaginable ways of deriving the desired result of effectively blurring the line between locative adjuncts and arguments. The first way is to follow Larson, Pesetsky and others in the position that the line between arguments and certain adverbial clauses is actually blurred to begin with. Moreover, as Pesetsky (p.c.) points out, in particular in the case of locative adjuncts, the distinction is even less clear as there are cases when they can promote to subject position, as initially discussed by Anderson (19xx) (who also pointed to issues of telicity to further assimilate locatives and arguments):

- (126) a. this bed sleeps three
 b. the table seats three
 c. the garden is swarming with bees

Further arguments for the argumental status of locatives (in particular the locatives in existentials) can be found in the work of Freeze and others researchers of nominal existentials. In addition, the phenomenon of locative inversion (Bresnan and Kanerva 1989, Branigan 1992) also argues for this same conclusion. If these proposals are on the right track, the locative argument in existential constructions moves to subject position as well.

To recapitulate so far: we have found certain similarities between nominal existentials and what I have been referring to as temporal existentials. The β -constituent of the nominal existential is a locative that behaves in some respects as an argument. The hierarchical structures of nominal and temporal existentials is alike, leaving open the possibility that the status of the β -constituents is similar. We have found nothing to argue against this. We can therefore take the additional step and assume that the β -constituent of the temporal existential counts (sufficiently) as an argument as well. If that is the case then Raising out of the β -constituent should be easier to swallow. This permits us to retain the proposed relationship between the *na*- and *pu*- constructions.

There is another way to avoid the apparent impasse of being forced to postulate Raising out of an adjunct. This alternative way involves treating the *since*-clause of the *since*-construction as an adnominal modifier and involves clausal extraposition. There are several ways to think of extraposition, here I will be talking within early proposals (Rosenbaum 19xx) in that extraposition like the one in (128a) involves a (nominal) constituent of the form in (128b), which includes the pronoun *it*, which, (whether an expletive or not), contributes to the meaning of a complex noun phrase like “the fact that p”. Extraposition, then, creates a discontinuous constituent of sorts, when the CP extraposes out of the DP it is in. I will assume following others that the constituent [it that p] first merges with the propositional predicate, as in (128c). Then several possibilities arise. The constituent [it that p] can move to SPEC/IP (128d), from where the *that*-clause can subsequently extrapose, as in (128e). Alternatively, once the constituent [it that p] has moved to SPEC/IP as in (128d), it can stay there and *it* would be deleted (128f).³⁶

³⁶ In another derivation, (118a) can result from (118c) with only the pronominal moving to SPEC/IP, if one permits such movements.

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- (128) a. It is horrible/obvious/etc. that p
b. [it that p]
c. is horrible/obvious [it that p]
d. [it that p] is horrible/obvious
e. [it that p] is horrible/obvious ---> it is horrible/obvious that p
f. [that p] is horrible/obvious

We have seen that *since*-clauses in the *since*-construction set LB, as they do in the Perfect. We made the implicit assumption that given that *since*-clauses are adverbials in the Perfect, they are also adverbials in the *since*-construction. Maybe this assumption was not justified. We know that *since*-clauses can also be adnominals, modifying NP denoting time spans, again setting LB:

- (129) the period/time since John's arrival/ John arrived
the period since John arrived
the period since the war
the 5 years since the war

(Note that even in the adnominal use, the *since*-clause requires a Perfect: *The period since the war has been/ *is/ *was wonderful*)

Let us now explore the possibility that in the *since*-construction, the *since*-clause is not the adverbial that it is in straightforwardly Perfect sentences but instead is an adnominal. Imagine then that parallel to the alternation “the fact that p” / “it that p” that we saw earlier, we can also have the alternation “the period since the war” / “it since the war”. Let us consider the possibility of a constituent like that, which would have a history similar to that in (128) (with the only option missing being (128f)). We could then merge [it since p] as second argument, yielding a two-internal-argument construction as in (130).

- (130) is [five years] [it since John arrived]³⁷

As before, we can Raise the constituent [it since p] to SPEC/IP and then extrapose the *since*-clause to yield *It has been five years since John arrived*. Or, we could Raise the item *it* out of the constituent [it since p]. If the latter is the case then we have the *since*-clause (and *pu* and *na*-clauses) in an argument position, which is what we want. But what if that is not an option and we actually have to go the extraposition route? Are we now forced to postulate movement out of an extraposed clause? Have we gone from the frying pan into the fire?

There is one datum that falls conveniently into place if (130) is followed by movement of the constituent [it since p] to SPEC/IP with subsequent extraposition of the *since*-clause.. Recall that there was reason to believe that *pu* in the *pu*-construction is a factive complementizer. The extraposition story makes it unsurprising that the factive complementizer appears in the *pu*-construction. After all, as a complementizer *pu* appears in other extraposition environments:

- (131) Ine dropi pu p
is shame PU p
'It is a shame that p'

³⁷ This brings up the potential interpretation of “the period since the war has been 2 years long” (for English, not French or Greek where the morphosyntax is clearly existential). As I said earlier, I will not address the question of the relationship between such specificational sentences and existential sentences.

But the question remains, are we forced to propose Raising out of an extraposed clause?

The resolution comes from the fact that we posit extraposition only for the finite clausal arguments of propositional predicates but crucially not for the infinitival ones. Imagine again that we have a propositional predicate like *likely* or a half-composed temporal existential like *be five years*. We are now ready to merge an infinitival IP to yield (132a,b) (example (132b) actually represents the Greek *na*-construction; I will stick to English glosses for convenience):

- (120) a. likely [Margaret to win]
 b. be [five years] [Margaret NA see him]

(Here one could either say that an infinitival clause does not have the option of coming as [it IP], or, that we should not bother to exclude this since Case-considerations about to become obvious conspire to block it.). If the entire infinitival clauses raised as in (118d) (and subsequently extraposed), the NPs *Margaret* would end up without Case. Instead, the subject NP *Margaret* raises (again, probably for EPP reasons) and if the verb is tensed, Case on *Margaret* is taken care of as well. (If not, it raises further up or a Case filter violation ensues)..

- (133) a. Margaret be likely [t to win]
 b. Margaret be [five years] [t NA see him]

In other words, when the merged clause is infinitival, the possibility for the derivation which includes extraposition does not arise: if the clause first moved to SPEC/IP and then extraposed, its subject NP would remain without Case. In short, the CP [*Margaret will win*] is in a different structural position in *It is likely that Margaret will win* (it is extraposed) than the IP [*t to win*] is in *Margaret is likely to win*..

We can now have our cake and eat it too. We can maintain the proposed hypothesis for the *na*- and *pu*-constructions, with the *na*-construction containing Raising. We can do this because we have managed to have Raising happen out of a complement and not out of an adjunct, while at the same time retaining the option of representing the finite *pu* and *since*-clauses in a non-complement (extraposed) position³⁸.

11. Question Marks

This section, as most of the paper, intertwines questions pertaining to the very existence and nature of temporal existentials with issues pertaining to particular properties of temporal existentials in particular languages. This section contains those issues that I understand less.

In section 9 we saw some important differences between the *pu* and *na* constructions but managed to reduce them to the difference of finiteness between them, which permitted us to retain the working hypothesis of a common structure for both. But there are other differences between them, differences, which unfortunately, I am not able to reduce to the difference of finiteness. I will mention them here in the hope that somebody with better imagination or different tools will achieve in sorting them out. Despite the current's paper

³⁸ This difference in position predicts that extraction out of the *na*-clause should be easier than out of the *pu*-clause and this is indeed borne out. I am not including the data here partly for reasons of space but mostly because the empirical results are at most consistent with the conclusion, they don't argue for it: One can always claim that extraction out of the *pu*-clause is harder because of the presence of the factive complementizer.

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inability to explain away these differences, I hope that the working hypothesis for a common structure for temporal existentials remains appealing.

Issue and Difference #3

In the embedded clause of the *na*-construction, the form of the verb is always non-past perfective. Past Tense is out:

- (134) * echo pende chronia na ton idha / evlepa
have-3SG 5 years NA him saw-PRF / saw-IMP

And it remains out when the matrix is past tense. In other words, non-Past is not imposed by some Tense agreement requirement:

- (135) * icha pende chronia na ton idha / evlepa
had-3SG 5 years NA him saw-PRF / saw-IMP

The inability of the Past to appear in the *na*-construction is not a mystery. We already saw that Greek has the Balkan Sprachbund characteristic of lacking agreement-less complements and that more subtle tests are needed to determine (non)-finiteness. We referred to previous research that showed that the possibility for past tense in *na*-clauses co-varies with the presence of a source for Nominative on the subject. We argued that there is Raising in the *na*-construction, which means no source for nominative. We therefore expect the verb to be unable to carry Past tense. In the *pu*-construction, on the other hand, we are dealing with a finite clause, hence we expect Past Tense to be possible.

However, Imperfective morphology is equally impossible. Only the Perfective can appear in the *na*-construction³⁹:

- (136) a. * Echo 5 chronia na ton vlepo
I have 5 years na him see/IMP
b. * echo 5 chronia na ton vlepo kathe proi stis 8
I have 5 years na him see/IMP each morning at 8
c. * echo pende chronia na dhiavazo efimeridha otan trogo/etroga
I have 5 years na read/IMP newspaper when I eat/ate
d. *echo pende chronia na pijeno stin eklisia kathe kiriaki
I-have 5 years na go/PRS/IMP to church each sunday

We will shortly see that the *pu*-construction has no such need for the perfective; it can contain Perfective or Imperfective.

I know of no general requirements of (finite or non-finite) *na*-clauses that would impose perfective. Arnim von Stechow (p.c.) suggests that the need for Perfective in the *na*-construction may result from the fact that its interpretation contains (free choice indefinite)

³⁹ There are environments in Greek where the VP can behave perfectly or imperfectly despite the fact that imperfective morphology is required (Iatridou 2000). Nothing like this is the case in the *na*-construction. The perfective morphology is required and the semantics is only perfective.

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quantification over events. He points out that the Imperfective is in general incompatible with such quantification.

On the other hand, the embedded clause of the *pu*-construction has more flexibility. So far we have only seen examples where the verb was past perfective but the verb in question can also be present imperfective

- (137) a. echi dhio chronia pu dhiavazo tin efimeridha otan trogo
 has 2 years pu I read/IMP/PRS the newspaper when I eat
 b. echi dio chronia pu piyeno stin eklisia kathe kiriaki
 has 2 years pu I-go/IMP/PRS to church each Sunday

And it can be past imperfective:

- (138) a. echi dhio chronia pu dhiavaza tin efimeridha otan etroga
 has 2 years pu I read/IMP/PST the newspaper when I ate
 b. Echi 2 chronia pu pigena stin eklisia kathe kiriaki
 has 2 years pu I-go/IMP/PRS to church each Sunday

So basically all possible combinations are permitted in the embedded clause of the *pu*-construction (present perfective is anyway excluded for all clauses). We will shortly see that the *since*-construction displays a similar flexibility.

Things become more interesting when we look at the interpretations of the relevant sentences.

The *pu*-construction that we have focused on so far contained Past Perfective. Unsurprisingly, in such sentences LB is marked as the occurrence of the (perfectively described) eventuality in the *pu*-clause. What would we expect if instead of Past Perfective we had Past Imperfective? LB should be marked as the occurrence of the imperfectively described eventuality of the *pu*-clause.

The sentences in (138) have the meaning that LB is when I had the habit discussed in the *pu*-clause and that I have not had that habit since then. Both parts of this meaning are consistent with what we have said so far. The imperfective is the aspect that marks generics/habits and therefore the eventuality talked about is a habitual. Moreover the fact that the habit does not hold throughout the time span is also expected given what we have said about the meaning of temporal existentials.. The English version of these sentences is something like:

- (139) a. It has been 2 years since I read the newspaper every morning
 b. It has been 2 years since I went to church every Sunday

Is LB coextensive with the last time I had the habit? In other words, is LB coextensive with when I stopped having the habit? For example, imagine that I had the habit of reading the newspaper every morning from 1991 to 1998 and that from 1999 until 2000 I did not have that habit. If it is now the year 2001, can I utter (139)? I find the judgment subtle, actually. Some speakers have answered this in the affirmative. For others, (139) is utterable only if I

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can ignore that the habit lasted for many years or, if the habit was contained in (or close to) 1999 only.

But there are more complex cases. Contrary to all the interpretations of temporal existentials we have been discussing so far, the time span in (140) is not empty but filled with the eventuality talked about in the *pu*-clause and *since*-clause. LB is the beginning of the habit and the habit lasts throughout the time span, including RB:

- (140) Ine/ echi 2 chronia pu pigeni stin eklisia kathe kiriaki.
is/has 2 years that goes to church every Sunday
“It has been two years that he has been going to church every Sunday”

In (140) RB is the moment of utterance as the sentence is in the present tense but if we switch to the past (as in (141)), the habit stretches up to and including RB. In other words, the time span that is set up is composed in the exact same way as before. The difference is that in the current cases the time span is filled with, rather than empty of the eventuality described in the embedded clause:

- (141) Ton idha persi. Iche 2 chronia pu pigene stin eklisia kathe kiriaki.
him saw last year. Had 2 years pu went to church every Sunday
‘I saw him last year. It had been 2 years that he had been going to church each Sunday’

In (141). the habit started at LB, 2 years before RB and RB was last year. As expected, the sentence asserts nothing about whether the habit continues past RB at the moment of utterance. As can be seen from the translation, the same holds for English.

I will refer to this as the “Universal” reading of the temporal existential, since it is reminiscent of the Universal Perfect, in that the time span set up by the construction is “filled” by the eventuality. In contrast, one can refer to temporal existentials where the eventuality is (at) LB as the “existential” readings.

How and when do we get the universal reading of a temporal existential?

There are two conditions that must be met in both Greek and English: a) the aspect of the *pu*-clause has to be imperfective and b) the matrix tense and the tense of the *pu*- and *since*-clauses must match. In other words, the matrix verb and the verb of the *pu*- and *since*-clauses must be both either past imperfective or present imperfective (or future).⁴⁰

What brings about the universal reading? We cannot go into much detail in this question but here is a possible suggestion. Clearly the Imperfective aspect plays a crucial role, as it is obligatory and there is no requirement for a specific Tense. Imperfective aspect is the aspect used to express simultaneity with or total inclusion of another temporal interval (Dowty (1979), Klein (1994) and many others). Here are some wellknown examples:

- (142) a. I was singing when John walked in
b. I was singing when Mary was working in the garden

⁴⁰ It is unclear to me why in English, in the universal reading of the temporal existential the complementizer must be *that*.. Hans Kamp (p.c.) suggests that maybe the English cases are actually clefts. This would explain the presence of *that*. With respect to Greek, though, something additional would have to be said as there are no clefts with the verb *have* in Greek.

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c. I was working between 3 and 4pm

In (142a,b), we see that the interval of the event of my singing totally includes the interval of John walking in and of Mary was in the garden. In (142c) we see that I was working throughout the interval between 3 and 4pm, as opposed to e.g. *He was in his office between 3 and 4 pm*, which can be said when he was in his office for only 5 minutes between 3 and 4.

The imperfective in *pu*- and *since*-clauses makes the two intervals (the time span set up by the temporal existential and the interval of the embedded eventuality) overlap. It follows that the tenses should therefore be identical as well, since they are what places the intervals on the time-line with respect to the time of utterance. This view does not provide an explanation of the universal readings of temporal existentials but just a place to start. I will not attempt a more satisfactory account here.

Why is there no Universal reading possible in the *na*-construction and does this difference between the *na*- and *pu*-constructions cause difficulties for the hypothesis that the two constructions only differ in finiteness? Not really. We know that the ability of the *pu*-construction to get the Universal reading relies on the ability of the lower verb to carry imperfective morphology. We also know that the embedded verb of the *na*-construction cannot carry imperfective. So the whole issue of the availability or not of the Universal reading in the *na*-construction reduces to the inability of the verb in the *na*-clause to contain imperfective.

Difference #4

Both the *na*- and *pu*-constructions require a temporal adverbial but the choice of adverbials is not the same.

The *na*-construction can take both amount arguments as well as adverbials that mark LB:

- (143) a. echo pende chronia na ton dho
 I have 5 years na him see
 b. echo apo to 1995 na ton dho
 c. echo na ton dho apo to 1995

On the other hand, the *pu*-construction can only take amount arguments⁴¹:

- (144) a. echi pende chronia pu ton idha
 has 5 years that him saw
 b. *echi apo to 1995 pu ton idha
 c. *echi pu ton idha apo to 1995

⁴¹ The *since*-construction, which is quite similar to the *pu*-construction, also does not take LB adverbials:

- i. a. It has been 5 years since I have seen him
 b. *it has been since 1995 that/since I have seen him

What do we do with this difference? And how does the *na*-construction differ depending on whether it takes an amount argument or a point adverbial? I think I will pass the baton on this one as well⁴².

12. Conclusion

In this paper I have argued that it is possible to find close parallels to nominal existentials in the temporal domain. I have not provided any theory of existentials, nor did I argue for any existing one. The issues I brought up connect to the larger questions of finding in the temporal domain semantic distinctions familiar to us from the nominal domain. This is already happening in the domain of anaphora, as well as in the ability to express (in)definiteness in the nominal domain as well as in the verbal domain.

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⁴² Another difference between the *pu* and *na*-constructions was brought to my attention by Alexis Kalokerinos. Unfortunately I don’t know what to do with this one either:

- (i) A: O Yanis ine kala?
John is alright
‘Is John alright?’

B: Ne, echi pende chronia na pathi krisi (na-construction)
yes, has 5 years NA have crisis
‘Yes, it has been five years since he had a crisis’

B’: # Ne, echi 5 chronia pu epathe krisi (pu-construction)
yes, has 5 years PU have crisis

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