Perspectives in Causal Clauses[*]

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Introduction

It has been observed that perspectival elements such as logophoric pronouns (Clements 1975, Culy 1994, i.a.) and anaphors exempt from Condition A (Thráinsson 1976, Sells 1987, i.a.) can appear in some adjunct clauses like causal clauses.

(1) **Kofi$_i$** dzo *ela* bena Ama kpɔ **yè$_i$**.
Kofi left because COMP Ama saw LOG[1]
'Kofi$_i$ left because Ama saw him$_i$.' [Ewe, Culy 1994: 1072]

(2) **Takasi$_i$** wa [Yosiko ga mizu o **zibun$_i$** no ue ni kobosita *node*] nurete-simatta.
Takasi TOP [Yosiko NOM water ACC REFL GEN on LOC spilled because] wet-got
'Takasi$_i$ got wet because Yosiko spilled water on him$_i$.' [Japanese, Sells 1987: 466]

This observation is puzzling given the distribution of such perspectival elements: according to Clements, logophoric elements refer to the "individual whose speech, thoughts, or feelings are reported or reflected in a given linguistic context" (Clements 1975: 141); in other words, they must occur in attitude contexts (Anand 2006, Pearson 2015, i.a.). But at first glance, nothing indicates that causal clauses introduce attitude contexts: (1) and (2) do not contain any of the familiar attitude verbs like *think* or *say*.

The goal of this article is to show that on closer scrutiny, adjunct clauses such as causal clauses do in fact qualify as attitude contexts, and that's why they can license logophoric elements. The fundamental reason is that a causal relation is a mental

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[1] The following abbreviations are used in example glosses: ACC: accusative; COMP: complementizer; COP: copula; GEN: genitive; LOC: locative; LOG: logophoric pronoun; NOM: nominative; REFL: reflexive; TOP: topic. As is standard, the star (*) is used contrastively: starred sentences are significantly more degraded than corresponding sentences without a star. Unless otherwise noted, the English data come from elicitation judgments from a few native speakers of English (mostly my students and colleagues).

construct that must be established by a reasoning individual – which I will call the "causal judge".

In most cases, the attitude holder of the superordinate clause, typically the speaker, is the causal judge: in *A because B*, it is usually according to the attitude holder of A that the cause of A is B. But in some cases, in particular when A describes a volitional event or an experience as in (1)-(2), the causal judge can include an event participant in A (e.g. the volitional event participant or the experiencer in A, Kofi and Takasi in (1)-(2)). In such cases, we find logophoric elements coreferent with that event participant in the adjunct clause: as I will argue, the attitude holder of A (the speaker in (1)-(2)) can present B from the perspective of that event participant. For instance in (1), the logophoric pronoun *yè* is licensed in the causal clause because the speaker takes Kofi's perspective and presents the latter's internal reason for leaving (the fact that Ama saw him) as the cause of the event. Such cases thus arise when the event participant in A has mental properties that allow her to postulate a cause for her own action or for the event or state affecting her.

Anticipating the analysis of these various perspectival possibilities of adjunct clauses like causal clauses, I will first show (i) that the subordinator (e.g. *because*) is relativized to a judge j that is syntactically represented as a silent argument of that subordinator and (ii) that j must be bound by the closest attitude holder AH (the attitude holder of A). Second, I will conclude (i) that a logophoric operator OP is syntactically represented at the periphery of the subordinate clause (i.e. B) and (ii) that OP is (at least partially) bound by the causal judge j and licenses logophoric elements *log* in B, just like in attitude contexts. This will correctly predict the existence of the three cases represented in (3), where case #2 corresponds to the case described above and exemplified by (1)-(2): the causal clause licenses logophoric elements coreferent with the event participant P in A because the causal judge j includes P; as we will see, this requires j to be (partially) bound by the event participant P in A, thus further supporting the syntactic representation of j.

(3) Case #1: $AH\ [_A\ P\ \ldots\ ][\ j_{AH}\ \textit{because}\ [_B\ OP_{AH}\ \ldots\ \log_{AH}\ ]]$
Case #2: $AH\ [_A\ P\ \ldots\ ][\ j_{AH+P}\ \textit{because}\ [_B\ OP_{P}\ \ldots\ \log_{P}\ ]]$
Case #3: $AH\ [_A\ P\ \ldots\ ][\ j_{AH+P}\ \textit{because}\ [_B\ OP_{AH+P}\ \ldots\ \log_{AH+P}\ ]]$

This analysis will be motivated by a detailed study of English causal clauses introduced by *because* and *since* (*because*-clauses and *since*-clauses, henceforth). In Section 1, I will present various basic perspectival effects observed in *because*-clauses modifying matrix clauses, which will be analyzed in Section 2. In Section 3, I will generalize this account by examining the perspectival effects in *because*-clauses and *since*-clauses modifying clauses embedded in attitude contexts.

1. Perspectival effects in *because*-clauses modifying matrix clauses

The goal of this section is to describe the types of perspectival effects observed in *because*-clauses. They are summarized in (4).

(4) Perspectival possibilities in *because*-clauses modifying matrix clauses (*A because B*)

	Causal judge	**Attitude holder of B**
Case #1	speaker	speaker
Case #2	speaker + event participant in A	event participant in A
Case #3	speaker + event participant in A	speaker + event participant in A

1.1. The simple case: speaker as only causal judge (case #1)

However the notion of cause is defined,[2] a causal relation between A and B is a mental construct: it is necessarily claimed by a reasoning subject, the causal judge. In the simple case, the causal judge is the speaker, whether the events or states described only involve inanimates or also animates with mental properties as illustrated below. In (5), it is the speaker that establishes a causal link between the lightning strike and the tree fall. It is also the speaker that can attribute Liz's departure to her tiredness in (6) (whatever Liz

[2] The exact definition of cause will not be discussed in this article: it will be sufficient for my purposes to use the intuitive notion of cause or explanation. The definition of causation has been long debated among philosophers, at least since Hume or even Aristotle. The two main recent lines of analysis in philosophy of language - which both present problems (see Sæbø 1991 for a review) - are based on the idea of sufficient conditionship, but one assumes that causality involves a regularity connection and the other counterfactuality (see Lewis 1973, i.a.). This discussion can be ignored here as the relation expressed by *because* does not necessarily correspond to the philosophical notion of causation (see Dowty 1979, i.a.): descriptively, *because* can express a temporal relation between events, a simultaneous relation between states or a grounding relation, as illustrated in (i) adopted from Dowty (1979: 103, 110).

(i) a. John left because Mary arrived.
b. John prefers this neighborhood because Mary lives nearby.
c. A kangaroo is a marsupial because it has a pouch.

These distinctions will not matter for my purposes either: in all cases, the relation expressed by *because* is a mental construct claimed by a reasoning subject and the goal is to examine the linguistic effects of this.

herself thinks). The speaker's beliefs are highlighted by continuations in parentheses in (a), which feel like contradicting what precedes them.

(5) The tree fell because it was struck by lightning.
    a. #But in fact, it fell because of something else.
    b. #although there was no lightning.
(6) Liz left the party because she was tired.
    a. #But in fact, she left because she was insulted.
    b. #although I do not believe she was tired.

In addition, the speaker holds the attitude described by the subordinate clause B in such cases: in both examples, (s)he endorses not only the causal relation between A and B, but also the content of B. This is shown by the same contradictory feeling triggered by the continuations in (b).

This second conclusion is corroborated by the fact that perspectival elements in B can be speaker-oriented: for instance, B can contain epithets that are evaluated by the speaker as in (7) and epistemic modals anchored to the speaker as in (8).

(7) Liz_i left the party because [**the poor woman**]$_i$ was exhausted.

(8) Liz left because she **must** have been tired.

The presence of these speaker-oriented elements in B guarantees that B is presented from the speaker's perspective because they cannot occur in attitude contexts: in (9) below, the epithet coreferring with the attitude holder is unacceptable even if it is evaluated by the speaker (i.e. epithets are antilogophoric, cf. Ruwet 1990, Dubinsky & Hamilton 1998, Patel-Grosz 2012, i.a.[3]); in (10), the epistemic modal *must* has to be anchored to the attitude holder Liz, not to the speaker (see Hacquard 2006, 2010; Stephenson 2007, i.a.).

(9) *Liz_i thinks that [**the poor woman**]$_i$ was exhausted.

[3] An epithet is said to be antilogophoric because it cannot corefer with the attitude holder of its context. This is so even if it is intended to be evaluated by the speaker (*pace* Dubinsky & Hamilton 1998):
(ii) *Paul_i thinks that [the idiot]$_i$ is married to a genius. (only I think that Paul is an idiot, he does not)
Note that examples like (iii) and (iv) (Dubinsky & Hamilton 1998: 688) show that epithets are only subject to antilogophoricity, not to Condition C (but they may be subject to Condition B).
(iii) a. *According to John_i, [the idiot]$_i$ is married to a genius.
      b. Speaking of John_i, [the idiot]$_i$ is married to a genius.
(iv) a. *John_i told us of a man (who was) trying to give [the idiot]$_i$ directions.
     b. John_i ran over a man (who was) trying to give [the idiot]$_i$ directions.

(10) Liz thinks that she **must** have been tired.

The speaker can thus be both the causal judge and the attitude holder of B.

(11) Case #1

	Causal judge	**Attitude holder of B**
Case #1	speaker	speaker

The observations so far are unsurprising: in the absence of explicit attitude verbs in these simple contexts, all attitudes are expectedly attributed to the speaker.

1.2. The interesting case: event participant as partial causal judge (cases #2-3)

More surprisingly, perspectival elements in B can also be anchored to the event participant[4] in A, as already illustrated in (1)-(2) above and further detailed below.

1.2.1. The event participant in A as attitude holder of B

Three arguments show that the event participant in A can be the holder of the attitude B. These arguments are based on the behavior of expressions that must in general be relativized to an attitude holder.

First, *because*-clauses can contain anaphors exempt from Condition A and anteceded by the event participant in A:

(12) a. Liz$_i$ left the party because there was an embarrassing picture of **herself$_i$** going around.
b. Liz$_i$ hated the party because there was an embarrassing picture of **herself$_i$** going around.
c. Sally$_i$ wanted to win the science fair because it would show that girls like **herself$_i$** could be scientists.
d. [The senator]$_i$ decided to resign because an incriminating video of **himself$_i$** was leaked to the press.

In (12)a-d, the anaphor *himself/herself* is contained in the adjunct clause while its antecedent is in the matrix clause, thus violating the locality conditions imposed by

[4] I use the terminology *event participant* for simplicity, but note that it is more precisely an eventuality participant as A does not necessarily denote an event, but can also denote a state as shown in (12)b or (18)b for instance. It is also because of this latter type of examples (*Airplanes frighten John because they might crash*) that I do not use the syntactic notion of subject: the event participant relevant for the causal judge does not have to be the subject in A.

Condition A. It has been clearly established that such exempt anaphors are licensed when they appear in clauses representing the perspective of their antecedent[5] (cf. Clements 1975, Thráinsson 1976, Maling 1984, Sells 1987, Kuno 1987, Pollard & Sag 1992, Safir 1992, 2004, Reuland 2011, Sundaresan 2012, Charnavel & Zlogar 2016, Charnavel & Sportiche 2017, i.a.). The contrasts in (13)-(14) illustrate the point for English:

(13) a. According to John$_i$, the article was written by Ann and **himself$_i$**.
b. *Speaking of John$_i$, the article was written by Ann and **himself$_i$**. [Kuno 1987: 121]

(14) a. [The novelist]$_i$ hinted that her next book would be about authors like **herself$_i$**.
b. *[Pottery recovered from the sunken ship]$_i$ suggested that Mediterranean merchants were trading goods like **itself$_i$** much earlier than previously thought.

In (13)a, *himself* is licensed although it is unbound because the expression *according to* construes the antecedent *John* as a perspective center: the main clause expresses a belief of John's; in (13)b, *himself* is however degraded because the expression *speaking of* makes John a non-perspectival topic. The contrast in (14) is due to (in)animacy: while animate *herself* can refer to a long distance attitude holder in (14)a, inanimate *itself* is unacceptable in (14)b, because it cannot be anteceded by any perspective center, since inanimates lack a mental state (cf. Charnavel & Sportiche 2016).
We can thus conclude that in (12), the exempt anaphors are in a clause (the *because*-clause) expressing the perspective of their antecedents, here the event participants Liz, Sally and the senator, respectively.

Furthermore, such exempt anaphors must be read *de se* when they occur in *because*-clauses. This shows that their antecedents are attitude holders of B, since *de se* readings only arise in propositional attitude contexts. Consider (12)a again (repeated below), and suppose that it is uttered in a context where Liz does not recognize herself in the picture. For instance, the picture is a nude picture of Liz showing her back, so that she mistakes it for a picture of her friend, and Liz decides to leave the party because she thinks that the picture is embarrassing for her friend. In this scenario, the anaphor *herself* is degraded.

[5] Perspective is a necessary condition for licensing exempt anaphors, but it is not sufficient in English: English anaphors can only be exempt if they occur in prosodically strong positions: for instance, they cannot appear in the direct object position of verbs (cf. Pollard & Sag 1992, Charnavel & Zlogar 2016, i.a.). This will be controlled for in all examples of exempt anaphors in this paper.

(15) Liz$_i$ left the party because there was an embarrassing picture of **her$_i$(#self)** going around. [non *de se*]

This illustrates the fact that in sentences like (12)a where exempt *herself* is licensed, the antecedent Liz is the *de se* attitude holder of the causal clause.

Second, epistemic modals must quite generally be linked to the closest superordinate attitude holder (see Hacquard 2006, 2010; Stephenson 2007, i.a.). For instance, *might* must be anchored to the speaker in (16), but to Sam in (17).

(16) It **might** be raining (#but I think it is not raining).

(17) Sam thinks that it **might** be raining (but I do not).

Now, *because*-clauses can contain epistemic modals anchored to the event participant in A: in (18)a-b, *might* can be relativized to Liz's (the subject agent) and John's (the object experiencer) epistemic states, respectively.

(18) a. Liz left the party because things **might** have spiraled out of control.
b. Airplanes frighten John because they **might** crash. [Stephenson 2007: fn.17]

This shows that under this interpretation, Liz and John are construed as attitude holders of the causal clauses B. Note that this is not obligatory though: unlike *herself* in (12) that forces the event participant's perspective (vs. the speaker's) in its clause, *might* in (18) can also be relativized to the speaker's epistemic state. But the fact that epistemic modals can be anchored to the event participant is sufficient to show that the event participant can be the attitude holder of B.

Third, the occurrence in *because*-clauses of evaluative expressions that can be oriented towards the event participant in A further demonstrates that B can represent the event participant's attitude. For example, the adjectives *embarrassing* in (19) and *great* in (20) can be evaluated by Liz (just like *might*, they can also be evaluated by the speaker).

(19) Liz left the party because an **embarrassing** picture of her was circulating.

(20) Liz voted for Trump because he was going to be a **great** President.

This again shows that Liz can behave as an attitude holder in the *because*-clauses given that evaluative expressions can only be anchored to attitude holders (cf. Sæbø 2009, i.a.).

For instance, *embarrassing* can only be evaluated by the speaker in (21), and can either be evaluated by Paul (*de dicto* reading) or the speaker (*de re* reading) in (22).[6]

(21) An **embarrassing** picture of Liz was circulating.

(22) Paul thought that an **embarrassing** picture of Liz was circulating.

Thus, the availability of exempt anaphors in B anteceded by the event participant in A and the fact that they must be read *de se*, as well as the availability of epistemic modals and evaluative expressions anchored to the event participant in A, demonstrates that the event participant in A can be the attitude holder of B, since all these expressions must be relativized to attitude holders.[7]

For consistency, note that these expressions can co-occur in *because*-clauses, and in this case, they must be evaluated by the same attitude holder: in (23), the evaluative adjective *fragile* and the epistemic modal *might* must both be evaluated by John, or they must both be evaluated by the speaker; in (24)-(26), the evaluative adjective

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[6] The behavior of predicates of taste occurring in *because*-clauses corroborates this argument: they can be linked to the event participant in A as illustrated in (v).

(v) Liz left the party because the food was not tasty. (i.e. not tasty to Liz)

This supports the hypothesis that Liz can be the attitude holder of B, as predicates of taste can be linked to attitude holders (cf. Lasersohn 2005, Stephenson 2007, Pearson 2013, i.a.): the speaker in (vi)a and Liz in (vi)b for instance.

(vi) a. The food is tasty. (i.e. tasty to me)
b. Liz thinks that the food is not tasty. (i.e. not tasty to Liz)

But the argument based on predicates of taste is less demonstrative than that based on evaluatives, as the judge of predicates of taste (vs. evaluatives) need not be an attitude holder as exemplified in (vii).

(vii) The cat food might be tasty. (i.e. tasty to the cat) [Stephenson 2007:(37)]

[7] The behavior of expressions that can be relativized to an attitude holder supports this conclusion, but is less demonstrative. In English, this is for instance the case of predicates of taste (see fn. 6) or deictic motion verbs like *come*. *Come* usually requires the speaker (or addressee) to be located at (or associated with) the goal of the motion, but in attitude contexts, the deictic center for *come* can shift from a discourse participant to the attitude holder as illustrated in (vii) (see Oshima 2007, i.a.).

(viii) *Context: the speaker and the addressee are at the same place.* [Oshima 2007: (18)]
a. ?*I should **come** to give John a hand.
b. John$_i$ claims that I should **come** to give him$_i$ a hand.

Now, *because*-clauses license *come* even when the speaker (or addressee) is not at the goal of motion. For instance, (ix) is felicitous even if the speaker (or addressee) is/was not at the same location as Liz.

(ix) Liz$_i$ left because her enemy was about to **come** to her$_i$.

This supports the hypothesis that Liz can be the attitude holder of B. This cannot prove the point though, as this type of shift is not specific to attitude contexts: in some cases like (x), neither the speaker nor any attitude holder need be at the goal of motion (but only Paul).

(x) As Paul$_i$ was living alone, his$_i$ son **came** to visit him$_i$ every week.

Some Japanese facts support the same idea: implicatures triggered by *wa* (contrastive marking) can be relativized to attitude holders different than the speaker, and like evidentials, they can be embedded under *because* (see Hara 2008); moreover, *because*-clauses remove the first person constraint on subjects of predicates of direct experience such as *samui* 'be cold' or *sabishii* 'be lonely' (see Tenny 2006).

embarrassing and the epistemic modal *might* must be evaluated by the perspectival antecedent of the clausemate exempt anaphor *herself*, namely Liz.[8]

(23) Airplanes frighten John because the **fragile** machines **might** crash.

(24) Liz$_i$ left the party because an **embarrassing** picture of **herself$_i$** was circulating.

(25) Liz$_i$ left the party because people **might** have mocked the pictures of **herself$_i$** that were circulating.

(26) Liz$_i$ left the party because people **might** have mocked the **embarrassing** pictures of **herself$_i$** that were circulating.

1.2.2. The event participant in A as partial causal judge

The fact that the event participant in A can be the attitude holder of B raises two questions: (i) in that case, who is the causal judge? (ii) can the event participant be the sole attitude holder of B or must the speaker hold the same attitude as the event participant? We address the first question in this section, and the second one in the next section.

When the event participant in A behaves as an attitude holder of B, (s)he must also be the causal judge. That the event participant in A endorses both the content of B and the causal relation is shown by continuations like (27)a or b, which are contradictory.

(27) Liz$_i$ left the party because there was an **embarrassing** picture of **herself$_i$** going around.
   a. #But she thinks that she left because she was tired.
   b. #But Liz thought there was no picture of herself going around.

Note that the continuation test is easier to apply when *because*-clauses contain exempt anaphors (anteceded by the event participant), because as seen above, exempt anaphors force their antecedent's perspective. Evaluatives and epistemics are however compatible with either the speaker's or the event participant's perspective. The test can nevertheless be applied under the right pragmatic conditions as in (28).

[8] Conversely, *embarrassing* must be evaluated by the speaker when it co-occurs with a first-person exempt anaphor:
(xi) Liz left the party because an **embarrassing** picture of **myself** was circulating.
The same holds for any other evaluative or epistemic modal co-occurring with exempt *myself*.

(28) Airplanes frighten John because the **fragile** machines **might** crash.
[Intended: *fragile* and *might* are anchored to John]
a. #But he thinks that they frighten him because they make him sick.
b. #But John thinks that airplanes cannot crash.

Thus, the speaker cannot be the sole causal judge when the event participant is the attitude holder of B. Conversely, the event participant cannot be the only causal judge either in this case: the speaker must agree with her and also endorse the causal relation, as shown by the fact that the continuations in (29)a and (30)a are also contradictory. But the speaker need not endorse the content of B, as shown by the acceptability of the continuations in (29)b and (30)b.

(29) Liz_i left the party because there was an **embarrassing** picture of **herself$_i$** going around.
a. #But I think that she left because she was tired.
b. I did not think the picture was embarrassing/I could see the picture was in fact of Anna.

(30) Airplanes frighten John because the **fragile** machines **might** crash.
[Intended: *fragile* and *might* are anchored to John]
a. #But I think that they frighten him because they make him sick.
b. But I think that airplanes cannot crash.

In sum, the causal judge is plural when B represents the event participant's perspective: it must include both the event participant and the speaker.

(31) Case #2 vs. impossible cases

	Causal judge	**Attitude holder of B**
Case #2	speaker + event participant in A	event participant in A
*	speaker	event participant in A
*	event participant	event participant in A

We can construe this as the speaker adopting the event participant's perspective to present the cause: the speaker endorses the causal relation, but presents B as the event participant's attitude. This situation arises when the event participants have their own reason for the event (or state) and the speaker presents this reason as the cause of the event (or state) for the event participant even if the speaker thinks that B does not in fact hold (for ease of presentation, I use *reason* to refer to what is thought by the internal

event participant to cause the event or state and I use *cause* to refer to what is thought by an external observer like the speaker to cause the event or state).

For instance, given that the leaving event described in (32) is volitional, the agent Liz has a privileged access to the reason for this event, namely her mental attitude triggering her action.

(32) Liz$_i$ left because there was an embarrassing picture of **herself$_i$** going around.

By using the logophoric anaphor *herself* in (32), the speaker thus signals that (s)he takes Liz's reason for the event as its actual cause (even if the speaker disagrees that the content of this reason actually holds).

Similarly, the experiencer John in (33) is in a privileged position to determine the reason for his own mental experience. The speaker can thus choose to adopt his perspective to present the cause of this experience (in that case, *might* is interpreted as anchored to John only).

(33) Airplanes frighten John because they **might** crash. [Stephenson 2007: fn.17]

Case #2 thus requires the event participants in A to be able to determine their own reason for the event. Therefore, events that only involve inanimates as in (5) repeated below as (34) do not qualify: here, the only possible causal judge is the speaker.

(34) The tree fell because it was struck by lightning.

1.2.3. The event participant in A as only attitude holder of B? (case #2 vs. case #3)

We have just observed (in section 1.2.2) that when the event participant in A is the attitude holder of B, the causal judge must include both this event participant and the speaker. This raises the question whether the attitude holder of B can (or must) also be plural, just like the causal judge.

In the examples of section 1.2.1, we have distinguished between two types of perspectival elements that can be oriented towards the event participant in *because*-clauses: those like exempt anaphors, which, when anteceded by the event participant, force her perspective (vs. the speaker's), and those like epistemic modals and evaluative adjectives that can in principle be anchored either to the event participant or to the

speaker. Furthermore, we have seen that when several of these elements co-occur in the *because*-clause as in (25) repeated below as (35), they have to be anchored to the same individual (either John or the speaker).

(35) Airplanes frighten John because the **fragile** machines **might** crash.

One further distinction, which interacts with these two points, can be made among *because*-clauses expressing the perspective of the event participant: some of them only represent the event participant's perspective; others can also present the plural perspective of the event participant and the speaker.

The latter case arises with *because*-clauses oriented towards the event participant that contain an epistemic modal (like (18)b repeated below as (36)) or an evaluative adjective (like (20) repeated below as (37)).

(36) Airplanes frighten John because they **might** crash. [Stephenson 2007: fn.17]

(37) Liz voted for Trump because he was going to be a **great** President.

In (36), the epistemic modal *might* can either be anchored to John only (John thinks that airplanes might crash, but I – the speaker – need not believe it), as suggested by Stephenson,[9] or to both John and the speaker (both John and I think that airplanes might crash). Similarly in (37), the adjective *great* can express Liz's sole evaluation (Liz thought that Trump was going to be a great President, but I am/was not committed to this belief)[10] or Liz and the speaker's plural evaluation (both Liz and I believed that Trump was going to be a great President).

The former case – the event participant's sole perspective is forced – arises with exempt anaphors anteceded by the event participant. In (12)a (repeated below as (38)), *herself* has to be anteceded by Liz and *embarrassing* consequently expresses Liz's sole perspective (Liz thinks that the picture is embarrassing, but I need not believe so).

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[9] The same point is (indirectly) made in von Fintel & Gillies (2007: (16), fn 11) who mention the following example (xii)a involving an epistemic modal embedded in a *because*-clause and suggest that it could be paraphrased as in (xii)b (where she, but not necessarily I, believed that there might have been a mistake):
(xii) a. The editor reread the manuscript because there might have been a mistake.
b. The editor reread the manuscript because she believed there might have been a mistake.

[10] Some speakers find this interpretation difficult, but crucially, there is a clear contrast between this case and cases like (29)a-(30)a: for all speakers, it is easier to interpret B (Trump was going to be a great President) than the causal relation (this idea caused Liz to vote for him) as not believed by the speaker.

(38) Liz$_i$ left because there was an **embarrassing** picture of **herself$_i$** going around.

However, if *herself* is replaced with the plural anaphor *ourselves* referring to both Liz and the speaker, the *because*-clause represents the plural perspective of Liz and the speaker (both Liz and I think that the picture is embarrassing).

(39) Liz$_i$ left because there was an **embarrassing** picture of **ourselves$_{i+s}$** going around.

But just like the perspective of *fragile* and *might* in (35) must be harmonized, two disjoint exempt anaphors referring to the event participant and the speaker, respectively, cannot co-occur in the same *because*-clause:

(40) a. *Liz$_i$ left because there was an embarrassing picture of **herself$_i$** and **myself** going around.
b. *Liz$_i$ left because a picture of **myself** was being compared to a picture of **herself$_i$**.

Because-clauses thus license single or plural perspective, but not mixed (split) perspective. The case of the event participant as an attitude holder of B must therefore be divided into two subcases: case #2 and case #3.

(41) Case #2 and case #3 vs. impossible cases

	Causal judge	**Attitude holder of B**
Case #2	speaker + event participant in A	event participant in A
Case #3	speaker + event participant in A	speaker + event participant in A
*	speaker	event participant in A + speaker
*	event participant in A	event participant in A + speaker
*	speaker + event participant in A	speaker

For completeness, finally note, as indicated in the last three lines of the table above, that when the attitude holder of B is plural (including both the event participant and the speaker), the causal judge must also be plural: it cannot just be the speaker as shown by the contradictory continuation in (42)a, and it cannot just be the event participant either as shown in (42)b.

(42) Liz$_i$ left because there was an embarrassing picture of **ourselves$_{i+s}$** going around.
a. #But I think that she left because she was tired.
b. #But she thinks that she left because she was tired.

The reverse does not hold: we have seen that the event participant can be the only attitude holder of B when the causal judge is plural (case #2). However, intuitions about

interpretation suggest that the event participant must also be included in the attitude holder of B if it is included in the causal judge: the speaker cannot be the only attitude holder of B when the causal judge is plural. But note that it is hard to prove the point using the continuation test below: the acceptability of (b) could simply show that (43) is an instance of case #1 (the speaker is both the only causal judge and the only attitude holder of B); it cannot unambiguously show that the event participant cannot be committed to the causal relation when she does not hold the attitude in B.

(43) Liz left because there was an embarrassing picture of **myself** going around.
   a. #But I think that she left because she was tired.
   b. But she thinks that she left because she was tired.

2. Analysis

The goal of this section is to provide an account for the possible and impossible cases of perspectival effects in *because*-clause discussed in the previous section and summarized below.

(44) Perspectival possibilities in *because*-clauses modifying matrix clauses (*A because B*)

	Causal judge	**Attitude holder of B**
Case #1a	speaker	speaker
***Case #1b**	speaker	event participant in A (+ speaker)
***Case #1c**	event participant in A	event participant in A (+ speaker)/ speaker[11]
Case #2	speaker + event participant in A	event participant in A
Case #3a	speaker + event participant in A	speaker + event participant in A
***Case #3b**	speaker + event participant in A	speaker

2.1. Causal judge

To capture the observation that a causal relation is a mental construct, I hypothesize that the subordinator *because* is relativized to a judge j. Specifically, we can assume that

[11] This case (speaker only as attitude holder of B) has not been discussed explicitly, but of course, the causal judge cannot only include the event participant when the sole attitude holder of B is the speaker as shown in (xiii) (where the epithet forces the speaker's attitude in B); the event participant can never be the sole causal judge.
(xiii) #Liz$_i$ left because [the poor woman]$_i$ was exhausted. But I think that she left because she was bored.

because is similar to an attitude verb (cf. Stephenson 2007, von Fintel & Gillies 2007),[12] whose subject is the (silent) causal judge j.

(45) ⟦ *because* (j) ⟧^{w} = λB.λA. ∀w' compatible with j's mental state in w, B is the cause of A in w'[13]

Furthermore, I assume that j is syntactically represented as a silent variable that must be locally bound for two main reasons.

First, as we will see in section 2.3, cases #2-3 (where B is presented from the event participant's perspective) require specific syntactic conditions, namely that the causal clauses B be in the scope of the event participant. This strongly suggests that j must be bound by the event participant for these cases to arise.

Second, a comparison between *because*-clauses in matrix and embedded contexts reveals that j is subject to syntactic constraints of locality: j must include the closest attitude holder. In the previous section, we have indeed observed that j must include the speaker in matrix clauses: the event participant cannot be the sole causal judge. In section 3, we will further see that j must include the lowest attitude holder in embedded attitude contexts.

For that reason, we can assume that j is a silent logophoric anaphor, which must be bound by the local attitude holder. In case #1 (we will come back to cases #2-3 in section 2.3), j is thus bound by the speaker s represented in the left periphery of root clauses (see Speas & Tenny 2003, Haegeman & Hill 2013, i.a.), as represented below in (46).

(46) **s** [[$_{A}$ …] [**j$_{s}$** [because [$_{B}$ …]]]]

[12] Stephenson (2007: 506-507) suggests that *because* takes an individual argument and involves epistemic alternatives to explain the following fact: in some cases like (xiv) below, *might* can be linked to a non-speaker's epistemic state. At first glance, this goes against her generalization that the judge of *might* can only shift from the speaker to another individual in attitude contexts. To solve this issue, she proposes that sentences like (xiv) involve a hidden *because* and in *because*-clauses that express a person's conscious reasoning or rationale, the judge parameter is shifted to the person whose reasoning is involved.
(xiv) *[Context: Chris asks Bill why Ann is hiding in the bushes.]* Bill: I might be on that bus.
See fn 9 for a similar observation in von Fintel & Gillies (2007).

[13] Tense is here ignored for simplicity. In most cases, the speaker evaluates the causal relation at the time of utterance, and the event participant at the time of the event. But there may be discrepancies reminiscent of so-called double access readings. For instance, the cause of Mary's sickness expressed by the causal clause in (xv) can be established (by the speaker or Mary) at the time of the event as in (xv)a or (by the speaker) after the event as in (xv)b (as long as it still holds that Mary is pregnant at the time of the event just as in the case of double access readings).
(xv) a. Mary was sick because she was pregnant.
b. Mary was sick because she is pregnant.

The hypothesis that j must be bound (by the local attitude holder) is corroborated by the fact that *because*-clauses only trigger sloppy readings with respect to the judge in VP-ellipsis contexts: in (47), the elided causal clause can only be evaluated by John, not by Paul.[14]

(47) a. Paul: "The tree fell because it was struck by lightning." *(cause according to Paul)*
John: "The utility pole did too [*fall because it was struck by lightning*]."
*(cause according to John/*Paul)*
b. Paul said that the tree fell because it was struck by lightning. *(cause according to Paul)*
John said that the utility pole did too [*fall because it was struck by lightning*]."
*(cause according to John/*Paul)*

The locality of the binding will be further supported in section 3 by the behavior of *because*-clauses in embedded contexts.

2.2. Logophoric operator

The hypothesis of the presence of a causal judge j is necessary to explain why *because*-clauses can express the perspective of the speaker (S) or the event participant in A (call it P), but it is not sufficient to account for all perspectival effects observed in B. I will now justify the existence of a syntactically represented logophoric operator OP at the periphery of B that is (partially) bound by the judge j, in addition to j. In previous literature, logophoric operators are anteceded by perspective centers[15] and bind logophoric elements *log* in their clause (cf. Koopman & Sportiche 1989, Kratzer 2006, Anand 2006, i.a.).[16]

(48) Case #1: S $[_A$ P … $][$ j_S *because* $[_B$ OP_S … log_S $]]$
Case #2: S $[_A$ P … $][$ j_{S+P} *because* $[_B$ OP_P … log_P $]]$
Case #3: S $[_A$ P … $][$ j_{S+P} *because* $[_B$ OP_{S+P} … log_{S+P} $]]$

There are several motivations for distinguishing j from OP.

[14] This is distinct from the sloppy/strict reading possibilities of the pronoun *she* in the *because*-clause (see section 2.3).
[15] This formulation is a simplification for ease of presentation. More precisely, a logophoric operator is a head introducing a pronominal element, which by definition, is understood to be anteceded by the perspective center of the operator's clause (i.e. to be bound by j here); given the discussion about (15), it must more specifically be a *de se* center (cf. Anand 2006, i.a.).
[16] Sundaresan (2012) (cf. Jayaseelan 1998) similarly postulates the existence of a perspectival center syntactically represented in a functional projection (the Perspectival Phrase) in the left periphery of phrases containing the Tamil perspectival anaphor *taan*, including adjunct clauses, but without linking this to the fact that the relations expressed by (some) subordinators are mental and require a judge.

First, we must distinguish the attitude towards the causal relation from the attitude towards B, the cause, as they are not necessarily identical. Indeed, they only partially overlap in case #2: the speaker endorses the causal relation between A and B but need not believe B. But conceptually, it is necessary to believe B in order to believe that B causes A. What the speaker believes is therefore in fact that the event participant believes B, and that this is what caused A. The introduction of the event participant's belief in B is basically what the logophoric operator codes. Interestingly, this seems to be morphologically reflected in Ewe.[17] As illustrated in (1) repeated as (49)a, the causal clauses that can contain logophoric pronouns are not only introduced by a counterpart of *because* (*ela*), but also by the complementizer *be(na)*, which is both the complementizer used in clausal complements of attitude verbs (as shown in (49)c) and the verb 'say' (cf. Clements 1975, Culy 1994, Pearson 2015).

(49) a. Kofi$_i$ dzo ela be(na) Ama kpɔ yè$_i$.
Kofi left because COMP Ama saw LOG
'Kofi$_i$ left because Ama saw him$_i$.' [Culy 1994: 1072]

b. Kofi be yè-dzo.
Kofi said LOG-leave
'Kofi said that he left.' [Clements 1975: 142]

c. John boù be yè nyi honvi.
John think COMP LOG COP stupid
'John thinks that he is stupid.' [Pearson 2015: 94]

Second, we have seen that the perspective in *because*-clauses can be plural, but not mixed: for instance, the evaluation of *fragile* and *might* must be harmonized in (23) (repeated below as (50)); disjoint exempt anaphors are unacceptable, but plural ones are not, as shown by the contrast between (39) and (40) (repeated below as (51)a-b); similarly, an antilogophoric epithet (forcing the speaker's perspective) cannot co-occur with a co-referring exempt anaphor (forcing the antecedent's perspective), but only with a first-person exempt anaphor, as illustrated in (52)a-b. Note that this impossibility strongly recalls that found elsewhere, e.g. in Mandarin (cf. Huang & Liu 2001) where referentially distinct but clausemate logophors (*ziji*) are prohibited, but a plural logophor is not.

[17] It would also be interesting to find an overt counterpart of the causal judge in some languages. I have not encountered any so far, but note that the causal judge can be overtly realized in English as follows:
(xvi) The tree fell because, according to me, it was struck by lightning.

(50) Airplanes frighten John because the **fragile** machines **might** crash.

(51) a. *Liz$_i$ left because there was an embarrassing picture of **herself$_i$** and **myself** going around.
b. Liz$_i$ left because there was an embarrassing picture of **ourselves$_{i+s}$** going around.

(52) a. *Liz$_i$ left the party because **[the poor woman]$_i$**'s relatives were mocking a picture of **herself$_i$**.
b. Liz$_i$ left the party because **[the poor woman]$_i$**'s relatives were mocking a picture of **myself**.

This is left unaccounted for if we suppose the existence of j only: without OP, case #2 would imply that partial binding of a logophoric element by j is possible; but in that case, mixed (split) perspective should be licensed: for instance, both *herself* and *myself* could each be partially bound by j, which should make (51)a acceptable. Postulating the existence of a standard logophoric OP solves the problem as represented in (53): indeed, there is at most one logophoric operator (one perspective) per logophoric domain (here, the causal clause) and it exhaustively binds logophoric elements within its clause (cf. Koopman & Sportiche 1989, Anand 2006, i.a.). This excludes referentially distinct logophoric elements like *herself* and *myself* in the same (causal) clause, as well as any other type of perspective conflict.

(53) a. * S [$_A$ P …][j_{S+P} *because* [$_B$ OP_P … log_P … log_S …]]
b. * S [$_A$ P …][j_{S+P} *because* [$_B$ OP_S … log_P … log_S …]]
c. * S [$_A$ P …][j_{S+P} *because* [$_B$ OP_{S+P} … log_P … log_S …]]
d. S [$_A$ P …][j_{S+P} *because* [$_B$ OP_{S+P} … log_{S+P} …]]

Finally, this is consistent with, and further supports the conclusions of Charnavel (2014) regarding exempt anaphors specifically. According to Charnavel (2014), the presence of a logophoric operator as exhaustive binder explains why anaphors appear to be exempt from Condition A (even if they have the same form as plain anaphors) when they occur in clauses presented from the perspective of their antecedent: they are in fact not exempt, but they are locally and exhaustively bound by the logophoric operator, just as plain anaphors are locally and exhaustively bound by their overt antecedent. Similarly, apparently exempt anaphors occurring in causal clauses are in fact not exempt if we suppose the existence of OP in their clause, but exhaustively and locally bound by OP; the causal judge j, however, could neither be a local nor an exhaustive binder for these

anaphors. Furthermore, binding by the judge j could not explain why the causal clause must be presented from the first-personal perspective of the exempt anaphors; binding by the logophoric operator can however derive the *de se* reading of exempt anaphors (see Anand 2006, Charnavel 2014, i.a.; cf. fn. 15).

To sum up, perspectival elements in causal clauses are exhaustively and locally bound by OP, which is itself locally, but not necessarily exhaustively bound by j: the availability of case #2 shows that binding of OP by j does not have to be exhaustive; the impossibility of cases #1b-1c (any attitude holder of B must be included in the causal judge) shows that binding of OP by j has to be local.

2.3. Cases #2-3: obligatory binding by event participant

So far, we have concluded that logophoric elements can be licensed in *because*-clauses because they are bound by a left peripheral clausal logophoric operator (partially) bound by the causal judge, which is itself (partially) bound by the speaker. What remains to be motivated is that in cases #2-3, the causal judge j must also be bindable, and bound by the event participant P in A.

(54) Case #1: $S\ [_A\ P\ \ldots\ ][\ j_S\ \textit{because}\ [_B\ OP_S\ \ldots\ \log_S\ ]]$
Case #2: $S\ [_A\ P\ \ldots\ ][\ j_{S+P}\ \textit{because}\ [_B\ OP_P\ \ldots\ \log_P\ ]]$
Case #3: $S\ [_A\ P\ \ldots\ ][\ j_{S+P}\ \textit{because}\ [_B\ OP_{S+P}\ \ldots\ \log_{S+P}\ ]]$

First, binding of the judge j by the event participant P is possible in principle, as *because*-clauses can be low enough (as VP modifiers) to be in the c-command domain of P. And indeed, such binding does occur: (i) quantificational matrix subjects can bind pronouns in the *because*-clauses as in (55);[18] (ii) Condition C effects arise when a proper name in the *because*-clause corefer with a matrix pronoun as in (56); (iii) sloppy readings are available in the case of VP-ellipsis as in (57) (cf. Rutherford 1970).

(55) [**No girl**]$_i$ left because **she$_i$** was tired.

[18] Pronominal binding is however impossible when the *because*-clause is fronted (which will not be further discussed in this paper):
(xvii) *Because she$_i$ was tired, [no girl]$_i$ left.
This suggests that fronted *because*-clauses are interpreted in a higher position than the subject. The absence of condition C effects in (xviii) suggests that they can also originate high.
(xviii) Because Liz$_i$ was tired, she$_i$ left.

(56) ***She**$_i$ left because **Liz**$_i$ was tired.

(57) Liz$_i$ left because she$_i$ was tired, and **Lucy**$_k$ did too (leave because **she**$_k$ was tired).

This is corroborated by scopal facts: the interpretation in (58) and NPI licensing in (59) show that *because*-clauses can be in the scope of the matrix negation (cf. Lakoff 1965, Rutherford 1970, Iatridou 1991, Johnston 1994, i.a.); they can also be outscoped by matrix epistemic modals as in (60), or by adverbs, even relatively low ones like *often* as in (61).

(58) Liz did **not** leave because she was tired, but because she was bored.

(59) Liz did **not** leave because she had **anything** to do, but because she was bored.

(60) Liz **must** have left because she was tired (I don't think it was for another reason).

(61) Liz **often** leaves early because she is tired (but sometimes, it is because she has to meet someone else afterwards).

Thus, the possible low attachment of *because*-clauses makes it possible for the causal judge to be in a position where it can be bound by the event participant in A.

Furthermore, *because*-clauses cannot be presented from the perspective of the event participant in A when that event participant cannot bind the causal judge j. This can be shown using *psych*-verb constructions, where the relevant event participant, namely the experiencer, occurs lower than the subject, as in (62).

(62) a. *This documentary does **not** interest Trump$_i$, because it gives a **bad** image of **himself**$_i$.
b. This documentary does **not** interest Trump$_i$, because it gives a **bad** image of **him**$_i$.
c. This documentary does **not** interest Trump$_i$ because it gives a **good** image of **himself**$_i$, but because…

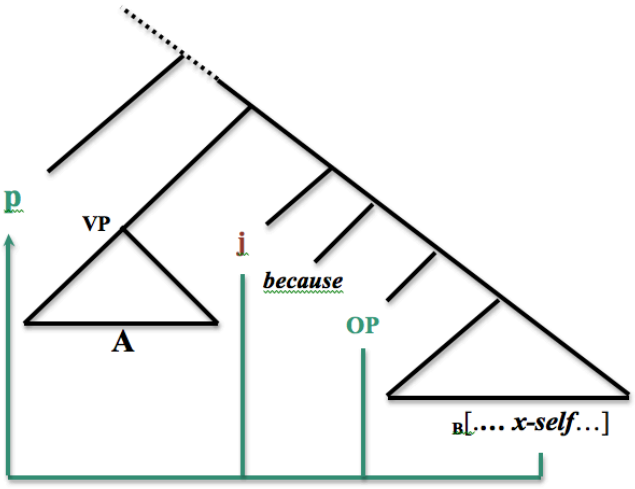
In (62)a-b, *because* scopes over the matrix negation, so that *Trump* is not in a position to bind the causal judge j. In that case, only the pronoun is available in the *because*-clause, the exempt anaphor *himself* is not; similarly, the evaluative adjective *bad* cannot be evaluated by Trump. In (62)c however, the matrix negation outscopes the *because*-clause, and in that case, *himself* is acceptable in the *because*-clause and *good* can be evaluated by Trump.

The same argument can be made in (63) where the *because*-clause modifies the matrix clause in (63)a-b, but the embedded clause in (63)c.

(63) a. *[Paul thinks that Liz$_i$ left] because the media made comments about **herself$_i$**.
b. [Paul thinks that Liz$_i$ left] because the media made comments about **her$_i$**.
c. Paul thinks that [Liz$_i$ left because the media made comments about **herself$_i$**].

All these facts demonstrate that bindability of j by P is necessary for B to be presented from P's perspective (as represented in Figure 1 below), a correlation that can be explained if j must be bound by P.

(64) *Figure 1:*
Binding of j by P is required for logophoric elements anteceded by P to appear in B



The reverse is false: *because*-clauses do not have to be presented from the perspective of the event participant P when P can bind j. For instance, the availability of pronominal binding in (65) shows that *no tree* can bind j; nevertheless, the causal judge has to be the speaker since a tree is inanimate. Similarly, *Liz* is in a position to bind j in (66) given that the matrix negation below it outscopes the *because*-clause and thus licenses the NPI *anything* in it; nevertheless, the presence of the antilogophoric epithet *the idiot* in the *because*-clause guarantees that B is presented from the speaker's perspective only.

(65) **[No tree]$_i$** fell because **it$_i$** was struck by lightning.

(66) Liz$_i$ did **not** leave because **[the idiot]$_i$** had **anything** to do, but because she was bored.

This means that j need not be bound by the closest binder: j can be bound by the speaker S across the event participant P.

In sum, j must be bound by the local attitude holder (i.e. by the speaker in matrix clauses) as discussed in section 2.1, and it can also (but need not) be bound by the (local) event participant P if P is high enough.

(67) Case #1: S [$_A$ P …][j_S *because* [$_B$ OP_S … log_S]]
*Case #1c: S [$_A$ P …][j_P *because* [$_B$ $OP_{P(+S)}$ … $log_{P(+S)}$]]
Cases #2-3: S [$_A$ P …][j_{S+P} *because* [$_B$ $OP_{P(+S)}$ … $log_{P(+S)}$]]

One way to further derive this double behavior is to reduce it to a single condition and to hypothesize that j is an anaphoric logophor, which must be locally and exhaustively[19] bound by a logophoric operator. This implies that matrix clauses, just like embedded clauses, can also contain a logophoric operator in their left periphery (cf. Heim 1991, Pearson 2013, i.a.). Just like the logophoric operator postulated in the *because*-clause, this matrix operator is locally, but not necessarily exhaustively bound: in cases #2-3, it has a split antecedent, since it is locally bound by both the event participant P and the speaker S. To comply with Condition C, this matrix operator must thus appear in a lower position than P, as represented in (68).

(68) cases #2-3: S [$_A$ P OP_{P+S} …][j_{P+S} *because* [$_B$ $OP_{P(+S)}$ … $log_{P(+S)}$]]

This explains why cases #2-3 require the event participant P to be in a position to bind j: j must be able to be bound by this operator, which lies below P.

This hypothesis makes an additional prediction: in cases #2-3, the matrix clause must express the plural perspective of the speaker and the event participant, and should therefore disallow elements that force the speaker's sole perspective. This appears to be borne out: (69) shows that when the *because*-clause expresses the event participant's perspective (as guaranteed by the presence of exempt *herself*), a first-person exempt

[19] Anaphoric binding must be exhaustive, as shown by Lebeaux (1984), among others. Under this hypothesis, j thus obeys the same conditions as an anaphor: j is not subject to split binding, only the logophoric operator is. Cf. Charnavel's 2014 proposal, which derives apparent split binding of exempt anaphors from their binding by a logophoric operator: exempt anaphors, just like plain anaphors, must be exhaustively bound, but the silent logophoric anaphor binding exempt anaphors can have a split antecedent.

anaphor in the matrix clause is degraded as compared to a plural one; similarly, (70) illustrates that an exempt anaphor anteceded by the event participant is degraded in the *because*-clause when the matrix clause contains a speaker-oriented epistemic modal.

(69) a. *Liz$_i$ was showing weird pictures of **myself** because there was an embarrassing picture of herself$_i$ going around.
b. Liz$_i$ was showing weird pictures of **ourselves$_{i+s}$** because there was an embarrassing picture of herself$_i$ going around.

(70) Liz$_i$ **must** have left because there was a picture of her$_i$(*self) going around.
[Intended: *must* outscopes *because* and *must* is anchored to the speaker]

To wrap up, we can assume that the matrix clause and the adjunct clause can each contain a logophoric operator; both operators are locally, but not necessarily exhaustively bound, but they locally and exhaustively bind the judge j and the logophoric elements in *because*-clauses, respectively. If cases #2-3 require j to be bindable by P, it is thus because for the *because*-clause to express P's perspective, j must include both S and P, which requires the matrix logophoric operator binding j to be both below P and above the *because*-clause.

(71) Case #1: S [$_A$ OP$_S$ …][j$_S$ *because* [$_B$ OP$_S$ … log$_S$]]
Case #2: S [$_A$ P OP$_{S+P}$ …][j$_{S+P}$ *because* [$_B$ OP$_P$ … log$_P$]]
Case #3: S [$_A$ P OP$_{S+P}$ …][j$_{S+P}$ *because* [$_B$ OP$_{S+P}$ … log$_{S+P}$]]

2.4. Corroborating evidence: *since*-clauses

Since is similar to *because* in involving a judge j, for the same conceptual and empirical reasons, and the behavior of *since*-clauses supports the hypothesis that binding of j by P is required if P is a (co-)judge of the causal relation: as we will now show, an event participant P in A is never in a position to bind the judge of *since*-clauses because they attach too high, and this syntax correlates with the fact that *since*-clauses can never be presented from P's perspective.[20]

[20] As suggested by an anonymous reviewer, a similar argument can be made on the basis of discourse coherence relations. Inspired by Hume, Hobbs (1990) and Kehler (2002), among others, observe that one of the types of relation connecting sentences in a coherent discourse is the cause-effect relation (result or explanation depending of the ordering of the clauses) as illustrated below.
(xix) a. The tree was struck by lightning. It fell. [result]
b. The tree fell. It was struck by lightning. [explanation]
Clearly, the event participant in the first sentence cannot bind into the second one in such cases, which predicts that the second sentence cannot be presented from the event participant's perspective, but the

Unlike *because*-clauses that can express the cause of the event or state described in the matrix clause as in (72)a-b and most examples of this paper, *since*-clauses provide evidence for (believing) the matrix proposition as in (73) or a reason for the matrix speech act as in (74) (cf. Rutherford 1970, Sæbø 1991, i.a.).[21]

(72) a. Liz left because she was tired.
b. Liz has a fever because she has malaria.

(73) a. Liz left, since her coat is not on the rack.
b. Liz must have malaria, since she has a fever.

(74) a. Did Liz leave, since you know everything?
b. Let's go for a drink, since you insist.

Given what they modify, we expect *since*-clauses to attach very high e.g. as modifiers of Evidential Phrases (EvidP) and Speech Act Phrases (SAP) at the left periphery of clauses (as argued in Cinque 1999, Speas & Tenny 2003, Speas 2004, Haegeman & Hill 2013, i.a.). This expectation is supported by the fact that opposite results obtain with respect to the various tests performed on *because*-clauses above: pronominal binding into *since*-clauses is not licensed (e.g. (75)), they do not exhibit Condition C effects (e.g. (76)), they cannot be retrieved in VP-ellipsis (e.g. (77)), they cannot be outscoped by the matrix negation (e.g. (78))[22] and therefore cannot contain

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causal judge is the speaker. This is exemplified in (xx), where the second sentence (connected to the first one by a relation of explanation) can contain a speaker-oriented epithet in (a), but not an exempt anaphor referring to the event participant in (b).

(xx) a. Liz$_i$ left the party yesterday. There was an embarrassing picture of [the poor woman]$_i$ going around.
b. Liz$_i$ left the party yesterday. There was an embarrassing picture of her$_i$(*self) going around.

There is however a complication due to the availability of Free Indirect Discourse (FID): perspectival elements oriented towards the event participant can occur in the second clause if it is construed as FID. This is illustrated in (xxi) where the indexical *today* can be shifted and refer to the day in which Liz (vs. the speaker) had her thought (see Banfield 1982, Schlenker 2004, i.a., for the claim that the shifting of time and location indexicals is a property of FID). In that case, the exempt anaphor is arguably bound by the FID operator that does the same kind of work as an attitude verb (see Sharvit 2008, i.a.).

(xxi) Liz$_i$ left the party. Today again, there was an embarrassing picture of herself$_i$ going around!

[21] At least for some speakers, *because* can also be used in cases like (73) and (74) with an appropriate prosody (in particular, the causal clause must be separated from the matrix clause by an intonational break in those cases, unlike in cases like (72)). See Rutherford 1970, Sæbø 1991, i.a.

[22] There is another reason why *since*-clauses cannot be outscoped by the negation: given that they are not at-issue, they cannot be focused. In fact, *since*-clauses, unlike *because*-clauses cannot be clefted:

(xxii) a. *It is since she has fever that Liz has malaria.
b. It is because she has malaria that Liz has a fever.

The non-at-issueness of *since*-clauses can be shown by various diagnostics (see Charnavel 2017; cf. Scheffler (2008) for German *denn* vs. *weil*): in particular, they cannot provide an answer to the Question Under Discussion and cannot be directly challenged.

NPIs licensed by the matrix negation (e.g. (79)) and they cannot be in the scope of epistemic modals (e.g. (80)) or adverbs (e.g. (81)) (cf. Groupe Lambda-1 1975, Iatridou 1991, i.a.).

(75) a. *[Every girl]$_i$ left, since her$_i$ coat is not on the rack.
b. *[Every girl]$_i$ left, since you must know everything about her$_i$.

(76) a. ?She$_i$ must have left, since we cannot see Liz$_i$'s coat on the rack.
b. She$_i$ left, since you must know everything about Liz$_i$.

(77) a. Liz left, since her coat is not on the rack, and Lucy did too (leave (*since her coat is not on the rack)).
b. Liz left, since you must know everything, and Lucy did too (leave (*since you must know everything)).

(78) a. #Liz did not leave since her coat is not on the rack (but since I cannot hear her any more).
b. #Liz did not leave since you must know everything (but since you asked me about this).

(79) a. *Liz did not leave since she brought anything with her (but since I cannot see her any more).
b. *Liz did not leave since you must know anything about her (but I just want to tell you this).

(80) a. #Liz must have left since her coat is not on the rack (I don't think I can be based on the fact that I cannot see her to say that).[23]
b. #Liz must have left since you must know everything (I don't think I would say that she left if you didn't want to know everything).

(81) a. #Liz often leaves since her coat is not on the rack (but sometimes, I know that she left because she tells me).
b. #Liz often leaves since you must know everything about her. (but sometimes, I tell you even if you do not care)

As predicted by our hypothesis that j must be bound by the event participant P if the causal relation is presented from P's perspective, the height of *since*-clauses makes it

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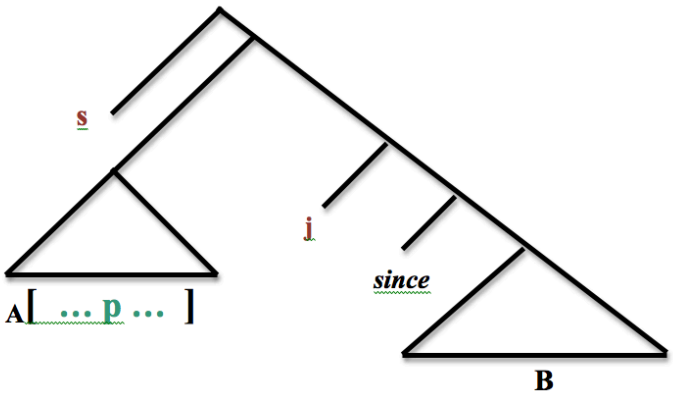
Nevertheless, it cannot be argued (as in Iatridou 1991) that *since*-clauses are in general opaque to syntactic operations (e.g. pronominal binding, NPI-licensing) because they are not at-issue ('presupposed' in Iatridou's terms). Indeed, pronominal binding into a *since*-clause is in fact possible when the binder is in a higher clause as shown in (xxiii) and we will see further examples of embedded *since*-clauses in section 3.
(xxiii) [No postman]$_i$ says that his$_i$ mail truck was towed since it's not in his$_i$ usual parking spot.

[23] It is not the *since*-clause that is in the scope of the epistemic modal *must* (as made explicit by the parenthesis), but conversely, the epistemic modal that is in the scope of the *since*-clause: *since*-clauses easily modify *must* by specifying the content of indirect evidence (cf. von Fintel & Gillies 2010 on the relation between epistemic modals and indirect evidentiality).

impossible for the *since*-clause to be presented from P's perspective: given that *since*-clauses modify high projections (A=EvidP or SAP), the judge j is not in the binding domain of P as shown in Figure 2. Therefore, logophoric elements coreferent with P cannot occur in *since*-clauses as represented in (83).

(82) *Figure 2:* binding of j by p is impossible in *since*-clause



(83) a. Case #1': S [$_A$ … [… P …] …][j_S *since* [$_B$ OP_S … log_S]]
b. *S [$_A$ … [… P …] …][j_{S+P} *since* [$_B$ OP_P … log_P]]

Thus, exempt anaphors referring to the event participant in A (vs. the speaker) are not licensed as shown in (84) (vs. (85)). Similarly, epistemic modals like *might* in (86) and evaluative adjective like *embarrassing* in (87) cannot be relativized to the matrix event participant's mental state, but only to the speaker's.[24]

(84) a. *Liz$_i$ must have left, since there is an embarrassing picture of **herself$_i$** going around.
b. *Did Liz$_i$ leave, since you know everything about **herself$_i$**?

(85) a. Liz must have left, since there is an embarrassing picture of **myself** going around.
b. Did I leave, since you know everything about **myself**?

(86) a. ?#Liz must have left the party, since things **might** have spiraled out of control.
b. ?#Did Liz leave the party, since things **might** have spiraled out of control?

[24] It seems that epistemic modals are generally degraded in *since*-clauses (as indicated by the question mark in (86)). This is expected if we assume that epistemic modals are similar to evidential markers of indirect evidence (see von Fintel & Gillies 2010): given that evidential causal clauses provide the content of indirect evidence (see fn. 23), they cannot themselves contain an epistemic modal.

(87) a. #Liz must have left, since an **embarrassing** picture of her husband was being mocked.
b. #Did Liz leave, since an **embarrassing** picture of her husband was being mocked?

All these elements should instead be speaker-oriented. Syntactically, this is due to the fact that, as can be seen in Figure 2, the causal judge j - or more specifically, given the hypothesis above, the matrix operator binding j - can only be bound by the speaker. This is also semantically expected given that only the speaker, not the event participant, can provide some evidence for the truth of the matrix proposition or some reason for the matrix speech act, as the author of the matrix clause is the speaker.

More precisely, only a discourse participant (not just the speaker) can endorse the relation expressed by *since*: in some cases, *since*-clauses can be presented from the addressee's perspective. This is the case in examples like (88) below involving irony (cf. Groupe λ-1 1975: 277):[25] here, the content of the *since*-clause (B=*you know everything*) is believed by the addressee, not by the speaker (the irony effect of the sentence reveals that the speaker distances herself from the addressee's point of view). The relation expressed by *since* is however endorsed by both the speaker S and the addressee A as shown by (89) and represented in (90). This allows the speaker to make an *argumentum ad absurdum* ((s)he demonstrates that the content of the causal clause is false by showing that an untenable result follows from its acceptance).

(88) Give me the winning numbers, since you know everything.

(89) a. #Give me the winning numbers, since you know everything. But I don't believe that knowing everything implies knowing what are the winning numbers.
b. #Give me the winning numbers, since you know everything. But you don't believe that knowing everything implies knowing what are the winning numbers.

(90) Case #4: S A $[_A \quad OP_{S+A} \ldots][\ j_{S+A} \quad since \ [_B \quad OP_A \quad \ldots \quad]]$

[25] The addressee may also be construed as the perspective center in *since*-clauses modifying questions, if we suppose that evidential shift occurs (cf. Murray 2010, i.a.), i.e. if we take the *since*-clause to provide evidence for the addressee's potential answer (under another interpretation, the *since*-clause provides a reason for the speech act, namely the question).
(xxiv) Did Liz leave, since Liz's coat is not on the rack?

This perspectival possibility derives from our hypothesis: the causal judge (or more precisely, the logophoric operator binding j) can be bound by the addressee, which, like the speaker, is represented in the left periphery of root clauses (see Speas & Tenny 2003, Haegeman & Hill 2013, i.a.). As represented in (91), this predicts that logophoric elements coreferent with the addressee can appear in causal clauses. Examples in (92)-(93) show that this is borne out.[26]

(91) a. Case #4: S A [$_A$ OP$_{S+A}$ …][j$_{S+A}$ *because/since* [$_B$ OP$_A$ … log$_A$]]
b. Case #5: S A [$_A$ OP$_{S+A}$ …][j$_{S+A}$ *because/since* [$_B$ OP$_{S+A}$ … log$_{S+A}$]]

(92) a. Liz must have left, since there is an embarrassing picture of **yourself** going around.
b. Liz left because there was an embarrassing picture of **yourself** going around.

(93) a. Liz must have left, since there is an embarrassing picture of **ourselves$_{s+a}$** going around.
b. Liz left because there was an embarrassing picture of **ourselves$_{s+a}$** going around.

To wrap up, the various perspectival possibilities of causal clauses (summarized in (94)) depend on their level of attachment: given that *since*-clauses attach very high (modifying EvidP or SAP), their causal judge (or more specifically, the operator binding it) can only be bound by discourse participants (speaker or addressee); but given that *because*-clauses can attach low (modifying VP), their causal judge (or the operator binding them) can also be bound by a matrix event participant. Since the logophoric operator licensing logophoric elements in causal clauses must be (at least partially) bound by the causal judge, logophoric elements in *since*-clauses can therefore only refer to discourse participants, but logophoric elements in *because*-clauses can also refer to event participants.

(94) Case #1: S [$_A$ OP$_S$ …][j$_S$ *because/since* [$_B$ OP$_S$ … log$_S$]]
Case #2: S [$_A$ P OP$_{S+P}$ …][j$_{S+P}$ *because* [$_B$ OP$_P$ … log$_P$]]
Case #3: S [$_A$ P OP$_{S+P}$ …][j$_{S+P}$ *because* [$_B$ OP$_{S+P}$ … log$_{S+P}$]]
Case #4: S A [$_A$ OP$_{S+A}$ …][j$_{S+A}$ *because/since* [$_B$ OP$_A$ … log$_A$]]
Case #5: S A [$_A$ OP$_{S+A}$ …][j$_{S+A}$ *because/since* [$_B$ OP$_{S+A}$ … log$_{S+A}$]]

[26] The following more complex cases are also correctly predicted by our hypothesis:
(xxv) S A [[$_A$ … P OP$_{S+A+P}$][j$_{S+A+P}$ *because* [$_B$ OP$_{A+P}$ … log$_{A+P}$]]]
S A [[$_A$ … P OP$_{S+A+P}$][j$_{S+A+P}$ *because* [$_B$ OP$_{S+A+P}$…log$_{S+A+P}$]]]
(xxvi) a. Liz$_i$ left because there was an embarrassing picture of **yourselves$_{i+a}$** going around.
b. Liz$_i$ left because there was an embarrassing picture of **ourselves$_{i+s+a}$** going around.

3. Generalizing the analysis: the case of embedded causal clauses

So far, our analysis accounts for the perspectival effects in causal clauses modifying matrix clauses, which are repeated in (95).

(95) Perspectival possibilities in causal clauses modifying matrix clauses (*A because/since B*)

	Causal judge	**Attitude holder of B**
Case #1	speaker	speaker
Case #2	speaker + event participant in A	event participant in A
Case #3	speaker + event participant in A	speaker + event participant in A
Case #4	speaker + addressee	addressee
Case #5	speaker + addressee	speaker + addressee

The aim of this last section is to show that the analysis can be generalized as in (96) to derive all cases of perspectival effects in causal clauses, including those of clauses embedded in attitude contexts. The obligatory inclusion of the speaker in the causal judge is specific to matrix clauses: more generally, the causal judge must include the attitude holder of A. As we will see, this supports the hypothesis that the causal judge j (or more specifically, the operator binding it) must be bound locally.

(96) Perspectival possibilities in causal clauses (… A *because/since* B)

	Causal judge	**Attitude holder of B**
Case #1	attitude holder of A	attitude holder of A
Case #2	attitude holder of A + event participant in A	event participant in A
Case #3	attitude holder of A + event participant in A	attitude holder of A + event participant in A
Case #4	attitude holder of A + addressee of A	addressee of A
Case #5	attitude holder of A + addressee of A	attitude holder of A + addressee of A

3.1. Perspectival effects in *because*-clauses embedded in attitude contexts

When *because*-clauses are embedded in attitude contexts, the causal judge must include the lowest attitude holder (AH) as schematized in (97).

(97) a. AH_1 [AH_2 *thinks* [$_A$ …][j_{AH2} *because* [$_B$ …]]]
b. *AH_1 [AH_2 *thinks* [$_A$ …][j_{AH1} *because* [$_B$ …]]]
c. *S [AH_2 *thinks* [$_A$ …][j_S *because* [$_B$ …]]]

For instance, the causal relation in (98) must be endorsed by Paul, not by the speaker: pronominal binding of the pronoun *it* in the *because*-clause by the quantifier *every plant* in the embedded clause guarantees that the *because*-clause modifies the embedded clause; in that case, the continuation in (99), which implies that the causal relation expressed by the *because*-clause is not endorsed by Paul, gives rise to a contradiction.

(98) Paul thinks that [every plant]$_i$ died because he forgot to water it$_i$.

(99) #Paul thinks that [every plant]$_i$ died because he forgot to water it$_i$. But he thinks that the only reason why they died is that they needed more light.

The same holds in the case of multiple embedding as in (100): the causal judge must be Paul, not Mary, as shown by the unacceptability of (101).

(100) Mary believes that Paul$_k$ thinks that [every plant]$_i$ died because he forgot to water it$_i$.

(101) #Mary believes that Paul$_k$ thinks that [every plant]$_i$ died because he forgot to water it$_i$. But according to her,[27] he thinks that the only reason why they died is that they needed more light.

As predicted by our hypothesis, the lowest attitude holder can therefore be the attitude holder of B: perspectival elements in embedded *because*-clauses can be anchored to the lowest attitude holder. For instance, Paul is the antecedent of the exempt anaphor *himself* contained in the *because*-clause in (102), which modifies the embedded clause since it is outscoped by the embedded negation; the adjective *embarrassing* is also evaluated by Paul.

(102) Paul$_i$ hopes that his book did not sell well because there was an **embarrassing** picture of **himself$_i$** going around, but because it was good.

However, higher attitude holders cannot be perspective centers of B. Thus, the presence of the antilogophoric epithet *the idiot*, which forces the speaker's perspective in the embedded *because*-clause, makes (103) ungrammatical, and the first-person exempt anaphor *myself* occurring in the embedded *because*-clause in (104) is degraded.

(103) *Paul$_k$ thinks that [every plant]$_i$ died because **[the idiot]$_k$** forgot to water it$_i$.

[27] *According to her* is added to the continuation to ensure that we do not contrast Mary's belief with the speaker's belief about Paul's beliefs, but test whether Paul must endorse the causal relation in Mary's belief worlds.

(104) *Paul hopes that his book did not sell well because there was an embarrassing picture of **myself** in it, but because it was good.

Similarly, the embedded *because*-clause in (105) cannot contain the exempt anaphor *herself* referring to the highest attitude holder Madonna.

(105) *Madonna$_i$ hopes that Paul thinks that his book did not sell well because there was an embarrassing picture of **herself$_i$** in it, but because it was good.

This shows that case #1 should be generalized as in (106) and analyzed as in (107): the causal judge must be the lowest attitude holder (AH), i.e. the individual whose attitude is presented in A, the clause modified by the *because*-clause.

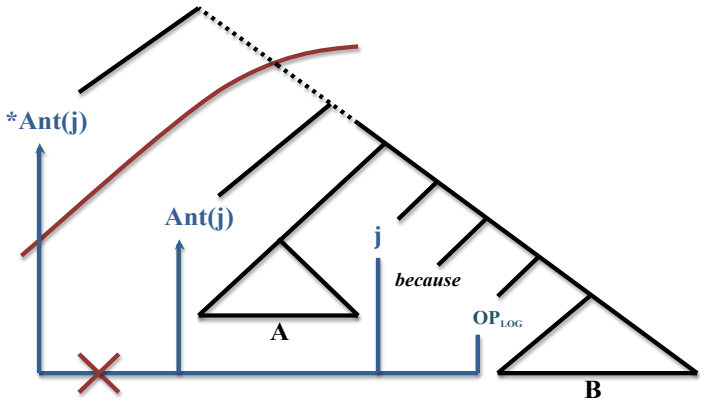
(106) Perspectival possibilities in *because*-clauses

	Causal judge	**Attitude holder of B**
Case #1	attitude holder of A	attitude holder of A

(107) AH_1 [AH_2 *thinks* [$_A$ …][j_{AH2} *because* [$_B$ OP_{AH2} … log_{AH2} …]]]

As mentioned in section 2.1, this follows from the fact that the causal judge must be bound by the local attitude holder, as represented in (108).

(108) *Figure 3:* local binding of j by its antecedent Ant(j)



As discussed in section 2.3, this derives from the hypothesis that j is an anaphoric logophor, which is locally bound by a logophoric operator that must itself be locally bound. In matrix clauses, the antecedent of j, which locally binds the operator binding j, is thus the speaker, which is represented in the left periphery of root clauses. In embedded clauses, the antecedent of j is the lowest attitude holder, which is represented

as a logophoric operator in the left periphery of the attitude clause (cf. Koopman & Sportiche 1989, Kratzer 2006, Anand 2006, i.a.).

(109) AH_1 [AH_2 *thinks* [$_A$ OP_{AH2}…][j_{AH2} *because* [$_B$ OP_{AH2} … log_{AH2} …]]]

This hypothesis is compatible with the fact that in all cases, the event participant in A can also be an attitude holder of B, as long as it is also included in j. In fact, the observations regarding the event participant's perspective in the case of matrix clauses extend to embedded clauses as specified in (110) and (111). The arguments made for the case of matrix clauses are replicated for the case of embedded clauses in (112) (cf. (38)-(40)) involving exempt anaphors (the same would hold with evaluatives and epistemic modals) and in (113) (cf. (27)a, (29)a) involving contradictory continuations.

(110) Perspectival possibilities in *because*-clauses

	Causal judge	**Attitude holder of B**
Case #2	attitude holder of A + event participant in A	event participant in A
Case #3	attitude holder of A + event participant in A	attitude holder of A + event participant in A

(111) Case #2: AH_1 [AH_2 *thinks* [$_A$ P OP_{AH2+P} …][j_{AH2+P} *because* [$_B$ OP_P … log_P]]]
Case #3: AH_1 [AH_2 *thinks* [$_A$ P OP_{AH2+P} …][j_{AH2+P} *because* [$_B$ OP_{AH2+P} …log_{AH2+P}]]]

(112) a. Paul thinks that Liz_i did not leave because there was an **embarrassing** picture of **herself$_i$** going around, but because she was tired.
b.*$Paul_k$ thinks that Liz_i did not leave because there was an **embarrassing** picture of **herself$_i$** and **himself$_k$** going around, but because she was tired.
c. $Paul_k$ thinks that Liz_i did not leave because there was an **embarrassing** picture of **themselves$_{i+k}$** going around, but because she was tired.

(113) a. #$Paul_k$ thinks that Liz_i left because there was an embarrassing picture of $herself_i$ going around, but he thinks that it was because she was tired.
b. #$Paul_k$ thinks that Liz_i left because there was an embarrassing picture of $herself_i$ going around, but she thinks it was because she was tired.

Finally, cases #4-5 can also be generalized as in (114)-(115): *because*-clauses can contain the perspective of the addressee of A, i.e. the external addressee in matrix clauses or the lowest reported addressee A_2 in embedded attitude clauses. The latter case is illustrated in (116) involving exempt anaphors (cf. (92)-(93)) and in (117) involving contradictory continuations (cf. (89)a-b).

(114) Perspectival possibilities in *because*-clauses

	Causal judge	**Attitude holder of B**
Case #4	attitude holder of A + addressee of A	addressee of A
Case #5	attitude holder of A + addressee of A	attitude holder of A + addressee of A

(115) Case #4: S_1 A_1 [AH_2 *told* A_2 [$_A$ OP_{AH2+A2}…][j_{AH2+A2} *because* [$_B$ OP_{A2} … log_{A2}]]]
Case #5: S_1 A_1 [AH_2 *told* A_2 [$_A$ OP_{AH2+A2}…][j_{AH2+A2} *because* [$_B$ OP_{AH2+A2}… log_{AH2+A2}]]]

(116) a. Paul convinced $Mary_k$ that their book sold well because there was an embarrassing picture of **herself$_k$** going around.
b. $Paul_i$ convinced $Mary_k$ that their book sold well because there was an embarrassing picture of **themselves$_{i+k}$** going around.

(117) a. #Paul convinced $Mary_k$ that their book sold well because there was an embarrassing picture of $herself_k$ going around, but he thought it was because it was cheap.
b. #$Paul_i$ convinced $Mary_k$ that their book sold well because there was an embarrassing picture of $herself_k$ going around, but she thought it was because it was cheap.

3.2. Perspectival effects in *since*-clauses embedded in attitude contexts

These generalizations are corroborated by the perspectival effects observed in *since*-clauses modifying embedded clauses, which, as we will see, can be generalized as in (118).

(118) Perspectival possibilities in *since*-clauses

	Causal judge	**Attitude holder of B**
Case #1	attitude holder of A	attitude holder of A
Case #4	attitude holder of A + addressee of A	addressee of A
Case #5	attitude holder of A + addressee of A	attitude holder of A + addressee of A

The argument can only be made using *since*-clauses that can in principle be embedded. This is the case of *since*-clauses modifying Evidential Phrases like (73)b (repeated as (119)), but not of *since*-clauses modifying Speech Act Phrases like (120).

(119) Liz must have malaria, since she has a fever.

(120) Liz left, since you must know everything.

Thus, (119) can be embedded in an attitude context as shown in (121), where embedding of the *since*-clause is guaranteed by various means: the *since*-clause is fronted within the

embedded clause, it modifies the embedded epistemic modal *must*, and the use of the matrix verb *refuse* pragmatically enforces the embedded construal.[28]

(121) Paul refuses to believe that since she has a fever, Liz must have malaria.

However, (120) cannot be transposed into an indirect discourse as shown in (122): embedding of the *since*-clause is ensured by its fronting within the embedded clause and can be further guaranteed by a *de dicto* non *de re* reading of *annoying* (Paul's interlocutor is annoying to him, but not to me); in that case, the *since*-clause cannot be interpreted as providing a reason for Paul's reported speech act.

(122) #Paul says that since his annoying interlocutor must know everything, Liz left.

This derives from the fact that Evidential Phrases can be embedded[29] (cf. Speas 2004, Zu 2015, i.a.), while speech acts are (usually) not embeddable (see discussion in Krifka 2014, i.a.).

When we thus guarantee that *since*-clauses are embedded, we observe that just like in the case of embedded *because*-clauses, the causal judge must be the lowest attitude holder. For instance, it is Paul who must endorse the evidential relation expressed by *since* in (123)a and (124)a (i.e. the radio indicates that the neighbors left): the

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[28] The *since*-clause cannot modify the infinitival clause headed by *believe* either: *since*-clauses can only modify tensed clauses. Thus, (xxvii)a is unacceptable under the *de dicto* non *de re* reading of *her coat*, which forces the *since*-clause to be embedded ((xxvii)b is however acceptable, and pronominal binding by the embedded quantifier guarantees embedding of the *because*-clause).

(xxvii) a. *Paul believes Liz to have left since [her coat]$_{de\ dicto}$ is not on the rack.
b. Paul believes [each woman]$_i$ to have left because she$_i$ was tired.

This suggests that non-finite clauses cannot include EvidP.

[29] More precisely, Evidential Phrases can only be embedded under representational attitudes quantifying over an information state: just like epistemic modals (see Anand & Hacquard 2013), evidential *since*-clauses can be embedded under predicates of acceptance like *believe* or *think*, but not under desideratives or directives, as shown by the contrast between (xxviii)a and (xxviii)b.

(xxviii) a. Paul thinks that since her coat is not on the rack, Liz has left.
b.*Paul {wants/demands} that since her coat is not on the rack, Liz leave.

Note that Anand & Hacquard (2013) explain this restriction for epistemic modals by hypothesizing that the quantificational domains of epistemics are determined by anaphoric reference to an embedding attitude, which implies that the attitude must have informational content. Extending this analysis to the case of *since*-clauses would amount to restricting the quantificational domain of *since* to doxastic alternatives. But given that *because*-clauses can embed under desideratives and directives when they do not modify EvidP (as illustrated in (xxix) below), I instead reduce this difference to a structural difference: *because*-clauses in (xxix) modify VPs, which can be embedded under any attitude verb, while *since*-clauses in (xxviii) modify EvidPs, which can only be embedded under predicates of acceptance.

(xxix) a. Paul wants that Liz come to the meeting because she wants to (not because she is forced to).
b. Paul demands that Liz apologize because she regrets her behavior (not to please him).

continuations in (b), which imply that only the speaker in (123)b and only Mary in (124)b endorse the evidential relation, give rise to a contradiction.[30]

(123) a. Paul believes that since their radio is on, his neighbors must have left.
b. #Paul believes that since their radio is on, his neighbors must have left. But he does not believe that his neighbors turn the radio on when they leave (to turn away potential thieves).

(124) a. Mary thinks that Paul believes that since their radio is on, his neighbors must have left.
b. #Mary thinks that Paul believes that since their radio is on, his neighbors must have left. But according to her, he does not believe that his neighbors turn the radio on when they leave (to turn away potential thieves).

As predicted by our hypothesis, the lowest attitude holder can therefore be the perspective center in B: the embedded *since*-clause in (125) can contain the exempt anaphor *himself* anteceded by Paul.

(125) Paul$_i$ thinks that since there is a picture of **himself$_i$** missing, Liz must have left with some of his belongings.

However, ungrammaticality ensues when the presence of an antilogophoric epithet like *the idiot* in (126) or a first-person exempt anaphor as in (127) forces the embedded *since*-clause to be from the speaker's sole perspective.

(126) *Paul$_i$ thinks that since there is a picture of **[the idiot]$_i$** missing, Liz must have left with some of his belongings.

(127) *Paul thinks that since there is a picture of **myself** missing, Liz must have left with some of his belongings.

Similarly, *since*-clauses do not license logophoric elements referring to any other higher attitude holder like Mary in (128).

(128) *Mary$_i$ is afraid that Paul thinks that since there is a picture of **herself$_i$** missing, Liz must have left with some of his belongings.

[30] Given that *since*-clauses are not-at-issue (see fn. 22) and thus have a projective behavior, this shows that they belong to the class of not-at-issue content subject to the Obligatory Local Effect, i.e. not-at-issue content whose implications must be attributed to the attitude holder (Tonhauser *et al.* 2013). This not only holds with respect to the evidential relation expressed by *since*, but also with respect to the content of the *since*-clause (e.g. B=*their radio is on* in (123)): it has to be compatible with the attitude holder's doxastic alternatives. Regarding B, the speaker must furthermore agree with the attitude holder (the sentence is infelicitous if the speaker does not believe that the radio is on): *since*-clauses behave like complements of factive verbs in this respect. This does not affect the argumentation here.

This shows that the perspectival effects of *since*-clauses can be analyzed just like those of *because*-clauses in case #1 as represented in (129): the causal judge (or more precisely, the operator binding it) must similarly be bound by the lowest attitude holder.

(129) AH_1 [AH_2 *thinks* [$_A$ OP_{AH2}…][j_{AH2} *since* [$_B$ OP_{AH2} … log_{AH2} …]]]

Finally, the same holds for cases #4-5: the causal judge of *since*-clauses can also be bound by the lowest addressee A as schematized in (130) and exemplified in (131)-(132).

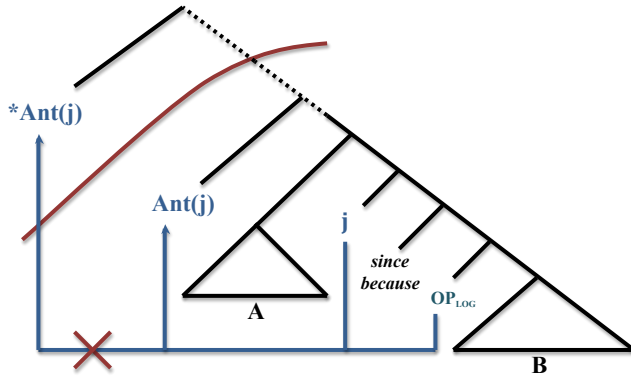
(130) Case #4: S A_1 [AH_2 *told* A_2 [$_A$ OP_{AH2+A2} …][j_{AH2+A2} *since* [$_B$ OP_{A2} … log_{A2}]]]
Case #5: S A_1 [AH_2 *told* A_2 [$_A$ OP_{AH2+A2} …][j_{AH2+A2} *since* [$_B$ OP_{AH2+A2} … log_{AH2+A2}]]]

(131) a. Paul convinced $Mary_k$ that since there is a picture of **herself$_k$** missing, Liz must have left with some of their belongings.
b. $Paul_i$ convinced $Mary_k$ that since there is a picture of **themselves$_{i+k}$** missing, Liz must have left with some of their belongings.

(132) a. #Paul convinced $Mary_k$ that since there is a picture of $herself_k$ missing, Liz must have left with some of their belongings. But he did not believe that the absence of the picture indicated that Liz left with some of their belongings.
b. #$Paul_i$ convinced $Mary_k$ that since there is a picture of $herself_k$ missing, Liz must have left with some of their belongings. But Mary did not believe that the absence of the picture indicated that Liz left with some of their belongings

Thus, the behavior of embedded *since*-clauses confirms the hypothesis made on the basis of *because*-clauses: the causal judge j (or more specifically, the logophoric operator binding it) must be bound by the local attitude holder, as represented in (133):

(133) *Figure 4*: local binding of j by its antecedent Ant(j)



Because j is an anaphoric logophor, there is thus a correlation between the height of causal clauses and the identity of the causal judge as summarized in (134).

(134) *Interaction between types of causal clauses and possible causal judges*

causal clause\causal judge	speaker (higher attitude holder)	(lowest) attitude holder	+ event participant
matrix *because*-clause	✓	n/a	✓
matrix *since*-clause	✓	n/a	×
embedded *because*-clause	×	✓	✓
embedded *since*-clause	×	✓	×

4. Conclusion

In sum, causal subordinators introduce an attitude context due to their meaning: the relation they express must be established by an attitude holder, the causal judge. Specifically, the causal relation must be evaluated by the author of the clause modified by the causal clause (i.e. the speaker in simple clauses and the lowest attitude holder in attitude contexts), as well as its addressee in some cases. In the case of volitional events or mental experiences, the causal judgment can also be attributed to their participant, who can claim their own reason for their action or feeling. This gives rise to a constrained range of perspectival possibilities in causal clauses summarized in (135).

(135) Perspectival possibilities in causal clauses (… A *because/since* B)

	Causal judge	**Attitude holder of B**
Case #1	attitude holder of A	attitude holder of A
Case #2	attitude holder of A + event participant in A	event participant in A
Case #3	attitude holder of A + event participant in A	attitude holder of A + event participant in A
Case #4	attitude holder of A + addressee of A	addressee of A
Case #5	attitude holder of A + addressee of A	attitude holder of A + addressee of A

Thus, causal clauses[31] can be added to the class of logophoric domains and it is not surprising that they can contain logophoric pronouns: just like subjects of attitude verbs, their causal judge (which is itself bound by a logophoric operator) (partially) binds a logophoric operator at the periphery of causal clauses that licenses logophoric elements in them as summarized in (136).

(136) Case #1: AH_1 [AH_2 [$_A$ OP_{AH2} …][j_{AH2} *because/since* [$_B$ OP_{AH2} … log_{AH2}]
Case #2: AH_1 [AH_2 [$_A$ P OP_{AH2+P} …][j_{AH2+P} *because* [$_B$ OP_P … log_P]
Case #3: AH_1 [AH_2 [$_A$ P OP_{AH2+P} …][j_{AH2+P} *because* [$_B$ OP_{AH2+P} … log_{AH2+P}]
Case #4: AH_1 A_1 [AH_2 A_2 [$_A$ OP_{AH2+A2} …][j_{AH2+A2} *because/since* [$_B$ OP_{A2} … log_{A2}]
Case #5: AH_1 A_1 [AH_2 A_2 [$_A$ OP_{AH2+A2}…][j_{AH2+A2} *because/since* [$_B$ OP_{AH2+A2}…log_{AH2+A2}]

More generally, adjunct clauses are worth further investigating with respect to their logophoric properties as their semantic contribution makes them likely to introduce perspective: the relation they express is subject to be relativized to a judge, which should depend both on the type of relation expressed and on the structural position of the clause. For instance, purpose clauses, which introduce the notion of intention, can easily introduce an event participant's perspective as in (137), while concessive clauses, which seem to express anticauses (König & Siemund 2000), tend to be speaker-oriented (e.g. (138)). Nevertheless, purpose clauses must be speaker-oriented when they are higher and modify speech acts as in (139).

(137) Luke$_i$ invited his friends so that they could see pictures of **himself$_i$**.

(138) ??Liz$_i$ didn't leave although an embarrassing photo of **herself$_i$** was going around.

(139) To be fair, Luke did well.

[31] As suggested by an anonymous reviewer, it would be worth examining if the observations and analysis can extend to other causal environments such as other causal clauses (e.g. *given that*, *as*), causal prepositional phrases (e.g. *because of*, *due to*) or constructions with causative verbs (e.g. *cause*, *make*). The latter case seems promising in this respect as we observe a correlation between the availability of exempt anaphors in the clausal subject and the availability of pronominal binding as shown in (xxx) and (xxxi). This suggests that causative verbs may also be relativized to a causal judge syntactically represented as a bound variable.

(xxx) a. The {idea/fact} that an embarrassing picture of herself$_i$ was circulating made Liz$_i$ leave the party earlier than planned.
b. The {idea/fact} that an embarrassing picture of her$_i$ was circulating made [each girl]$_i$ leave the party earlier than planned.

(xxxi) a. ? The {idea/fact} that an embarrassing picture of herself$_i$ was circulating caused Liz$_i$'s early departure from the party.
b. ? The {idea/fact} that an embarrassing picture of her$_i$ was circulating caused [each girl]$_i$'s early departure from the party.

Adjunct clauses thus constitute a rich empirical domain that promises to shed further light on the linguistic effects of perspective.

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