

## An emphatic abilitative modal. *Ser capaç vs. be able\**

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### 1 Introduction

The main goal of this work is to propose an analysis that accounts for the semantic differences between the Catalan modal construction *ser capaç* ‘be able/capable’ [henceforth SC] – and its Spanish counterpart *ser capaz* – and English *be able*. Building on previous work on the English modal construction *be able* (Thalberg 1972; Bhatt 1999; Pinon 2003; Mari & Martin 2007), we address three main puzzles, summarized in (i)-(iii):

- (i) Whereas *be able* triggers an ‘effort component’ (Bhatt 1999), SC forces a scalar inference similar to the one triggered by English *even*.
- (ii) Whereas the effort component of *be able* has been shown to be a presupposition (cf. e.g. Giannakidou & Staraki 2013), SC gives rise to ambiguity under negation: it yields a hard reading and an easy reading. Only the former, but not the latter can be accounted for by an analysis based on an effort component as presupposition.
- (iii) The presence of NPIs like Catalan *ni* ‘not even’ forces the marked easy reading instead of the default hard reading. However, in the absence of such NPIs, the presence of negation gives rise to ambiguity.

In this paper we argue that SC contains an abilitative modal and a covert EVEN. We derive the ambiguity by arguing that, besides EVEN, there is a covert NPI-EVEN that is licensed under negation and yields the easy reading.

### 2 The data: properties of SC

Before going into the description of the three aforementioned puzzles that are the main object of study of this paper, let us briefly review the three main properties of SC already identified in Castroviejo & Oltra-Massuet (2013). On the one hand, we observe that SC does not only mean *tenir la capacitat / tener la capacidad* ‘have the ability/capacity’. Thus, a sentence like (1a) can describe a situation in which Brown was able to perform the action of hitting in a unique chance event, i.e. accidentally, and he cannot repeat it. However, in order for (1b) to be truthfully uttered it is necessary that Brown has this special ability, so he must be able to

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repeat this action if he wants to. See e.g. Mari & Martin (2007) for a detailed description of this contrast.

- (1) *Ser capaç* (Cat.) / *ser capaz* (Sp.) ‘be capable’ ≠ ‘have the ability’
  - a. Brown was capable of hitting three bull’s eyes in a row.
  - b. Brown had the ability to hit three bull’s eyes in a row.(Thalberg 1972; Pinon 2003; Mari & Martin 2007)

On the other hand, as first observed for Spanish in Castroviejo & Oltra-Massuet (2013), SC is an abilitative modal construction that displays ambiguity in that it also shows epistemic uses. Observe that in a sentence like (2a), the modal SC has an abilitative interpretation. We refer to the capacity that Hobbes has to translate the complete works of Homer at the age of 86, which we consider a genuine achievement. On the other hand, in (2b) a mother surmises that her son may have solved the case, which she regards as something extraordinary. That corresponds to the epistemic reading. Note that the availability of an epistemic reading with SC further distinguishes this modal construction from ‘have the ability/capacity’ (cf. (1b)), which only conveys an abilitative interpretation.

- (2)
  - a. Hobbes fue capaz de traducir la obra completa de Homero a los 86 años. ‘Hobbes was capable of translating Homer’s collected works at age 86.’
  - b. Mi hijo es capaz de haber resuelto el caso sin acudir a la policía. ‘My son is capable of having solved the case without going to the police.’

Finally, note that the proposition in SC, both in the abilitative and in the epistemic, is interpreted as something unusual, daring, or extraordinary. So, the sentences in (3) are felicitous only if they are uttered in a context where to blow one’s nose or to fasten one’s shoelaces can be interpreted as a great achievement, for instance if John is a little child, or an adult that has suffered an accident that prevents him from doing actions that would be easy for an adult under normal conditions. In both cases, we would obtain an abilitative interpretation. Also the epistemic interpretation of SC requires a complement that refers to an unusual event, as depicted in (4).

- (3)
  - a. En Joan és capaç de mocar-se (tot sol/amb només tres anys). ‘John is capable of blowing his nose (by himself / as a 3-year old).’
  - b. En Joan és capaç de cordar-se les sabates (tot sol/ amb només tres anys). ‘John is capable of fastening his shoelaces (by himself / as a 3-year old).’
- (4) En Joan és capaç de mocar-se sorollosament enmig de la conferència. ‘John is capable of loudly blowing his nose in the middle of the talk.’

Castroviejo & Oltra-Massuet (2013) provide a number of additional contrasts as empirical evidence for the ambiguity of SC. There, following standard practice in semantics that treats modals as quantifiers over worlds that take a proposition as an argument and are relativized to a modal base and an ordering source, it is argued

that there are different positions for SC and that these positions are connected to the anchoring of the subject (speech vs. event) and a time (speech and event).

In this work we concentrate on the internal components of SC in an attempt to account for the ‘daring/extraordinary’ component that it adds to the structure, as well as the various ways in which such component interacts with negation and the presence of polarity items.

### 3 Three puzzles

#### 3.1 Puzzle 1: The ‘effort component’

Bhatt (1999) argues that *be able* triggers an ‘effort component’ on the part of the subject, which is “part of the conventional implicature of the ability modal.” So, the assertion in (5a) is infelicitous in the absence of a context like that in (5b) that clearly implies an effort of the subject of the ability attribution.

- (5) a. [out of the blue]  
#Mary is able to breathe.
- b. [Mary lies in bed in a hospital]  
Despite the accident, Mary is able to breathe.

In the case of SC, such effort component does not seem to be enough to explain its semantics. Given the same situation as in (5b) above, the Catalan SC counterpart is still deviant, i.e. it does not feel fully felicitous, even if only slightly.

- (6) [Mary lies in bed in a hospital]  
?A pesar de l’accident, la Maria és capaç de respirar.  
‘Despite the accident, Mary is capable of breathing.’

Rather, as already mentioned, one of the basic properties of SC is that the *p* complement of SC is viewed as something extraordinary, daring, or crazy, or something that can be considered quite an achievement (recall (2a)). That this is so is clearly illustrated in the examples (7)-(9).

- (7) En Martí és capaç de caminar 8 hores seguides.  
‘Martin is capable of walking 8 hours in a row.’
- (8) Veuràs el que ets capaç de fer.  
‘You’ll see what you’re capable of (doing).’
- (9) La gent és capaç de deixar l’alcohol o el sexe, però no el telèfon.  
‘People are capable of giving up alcohol or sex, but not their phone.’

In Castroviejo and Oltra-Massuet (2013) this is encoded as Kratzer’s (1981/1991) *slight possibility*, as described by Portner (2009) in (10).

- (10) A proposition *p* is a slight possibility in *w* with respect to a modal base *f* and an ordering source *g* iff:
  - a. *p* is compatible with *f*(*w*); and
  - b.  $\neg p$  is a necessity in *w* with respect to *f* and *g*.

The slight possibility force of (10) intends to convey that the proposition  $p$  is extraordinary, i.e. true in non-standard worlds, which should derive the intuition that it would be daring or quite an achievement that  $p$ . What is proposed in (11) is, thus, that SC is evaluated with respect to a world  $w$ , a modal base  $f$  and an ordering source  $g$ , it combines with a proposition  $p$  and it returns truth iff there is a world  $w'$  compatible with the intersection of  $f$  and  $g$  where  $p$  holds, and in all ordinary worlds  $w''$ ,  $p$  is not the case.

$$(11) \quad \llbracket \text{SC} \rrbracket^{w,f,g}(p) = 1 \text{ iff } \exists w' \in \bigcap f(w) : p(w') = 1 \text{ and } \forall w'' \in \text{BEST}_{g(w)}(\bigcap f(w)) : p(w'') = 0$$

As will be immediately shown in the next subsection, this proposal cannot explain the kind of scalar inferences that are derived when SC interacts with negation.

### 3.2 Puzzle 2: Ambiguity under negation

As with other implicative verbs (Karttunen 1971), *be able*'s effort component is not suspended under negation, because it is a presupposition (Giannakidou & Staraki 2013), as the examples in (12)-(13) show. In other words, both (12a) and its negative counterpart in (12b) involve exactly the same implication, the one stated in (12b)-(13b).

- (12) a. John was able to stand up.  
 b. It took some (considerable) effort to stand up.
- (13) a. John wasn't able to stand up.  
 b. It took some (considerable) effort to stand up.

In the case of SC, under negation we obtain two possible inferences. On the one hand, a sentence like (14) has an interpretation where we have the same achievement component we would find in its positive counterpart, what we call the *hard reading* in (14a). However, SC differs from *be able* in that negation can reverse the inference in the  $p$  complement, so that we obtain the so-called *easy reading* in (14b).

- (14) En Joan no és capaç de calcular l'interès compost.  
 'John isn't capable of calculating compound interest.'
- a. Hard reading: Calculating compound interest is quite an achievement.  
 b. Easy reading: Calculating compound interest is the least John should be able to do.

Thus, unlike the effort component of *be able*, which is analyzed as a presupposition and as such projects under negation, SC's daring component must be understood as a scalar presupposition that can either survive as such or be reversed under negation, giving rise to two an ambiguity. This is problematic, since whereas the hard reading is predicted if this meaning is a presupposition, there is nothing that can explain the easy reading. In particular, it would be difficult to explain how negation can target the presuppositional hard reading to reverse it.

### 3.3 Puzzle 3: SC under negation in the presence of NPI

Interestingly, even though SC under negation can be ambiguous between a hard and an easy reading of the *p* complement as in (14) above, the presence of an explicit NPI like *ni* or *ni tan sols* ‘not even’ forces the easy reading. Thus, since the complement of *p* in (15) can hardly be understood as an easy achievement, it obtains a hard reading under negation in (15a). The presence of an explicit NPI renders the sentence infelicitous, because it forces an easy interpretation that clashes with the necessarily difficulty implied in swimming across Lake Michigan.

- (15) a. En Pere no és capaç de creuar el Llac Michigan nedant.  
‘Peter is not capable of swimming across LM.’  
b. # En Pere **no** és capaç **ni** de creuar el Llac Michigan nedant.  
‘Peter isn’t even capable of swimming across LM.’

Sentence (16) illustrates exactly the opposite behavior. In this case, the *p* complement of SC is a certainly uncomplicated thing to do. The positive statement in (16a) can only be interpreted as implying some extraordinary effort, say being attributed to either a little child or some handicapped adult. However, (16b) necessarily implies that washing one’s face is an easy task, which it certainly is, and so the sentence becomes felicitous under negation.

- (16) a. # En Pere és capaç de rentar-se la cara.  
‘Peter is capable of washing his face.’  
b. En Pere **no** és capaç **ni** de rentar-se la cara.  
‘Peter isn’t even capable of washing his face.’

The question that must be addressed is how it is possible that we obtain the marked easy reading under negation when NPI ‘not even’ is not made explicit, instead of the default hard interpretation. Recall (14), repeated below for convenience.

- (17) En Joan no és capaç de calcular l’interès compost.  
‘John isn’t capable of calculating compound interest.’  
a. Hard reading: Calculating compound interest is quite an achievement.  
b. Easy reading: Calculating compound interest is the least John should be able to do.

While, as shown in (16b), the NPI *ni* forces the easy reading under negation, (17) reveals that this easy reading can also arise without the explicit presence of a particle that has the properties of *even*.

## 4 Proposal

In this section we elaborate on a proposal that can provide a satisfying analysis to the previous questions. In a nutshell, we argue that SC can be decomposed into an abilitative modal and a covert *even*, which we call *EVEN* in capital letters. We do not delve into the semantics of the modal (we address the interested reader to works

like Mari & Martin (2007) and Giannakidou & Staraki (2013) for this matter), but we concentrate on the effect of EVEN. We show that it forces a scalar inference like the one English *even* yields. The ambiguity observed under negation will be explained by assuming the existence of an NPI-EVEN, along with EVEN. While the former needs to be licensed under negation and yields the easy reading, EVEN is not a polarity item and can occur in both positive and negative environments triggering the hard reading.

#### 4.1 On *even*

The extensive literature on *even* (Karttunen & Peters 1979; Bennet 1982; Rooth 1985; Kay 1990; Wilkinson 1996; Lahiri 1998; Herburger 2003; Giannakidou 2007; Crnić 2011) has focused on several aspects of its semantic and pragmatic contributions. For instance, on the divide between asserted and inferred (presupposed or implicated) content, or on the discussion about whether there is an additive inference besides its scalar presupposition. In this paper, we will only be interested in the scalar presupposition yielded by *even*.

*Even* was analyzed in Karttunen & Peters (1979) as triggering a “conventional implicature” (nowadays treated as a presupposition) that ranks the pronounced sentences as the least likely of a set. Later on, *even* was identified as an item that is sensitive to focus, and Rooth (1985) pointed out that the alternatives that focus generates can be identified as the members of the set *even* quantifies over. Consider the example in (18).

(18) The dean invited even [Bill]<sub>F</sub>.

The focus-sensitive item *even* is associated with *Bill*, so the alternatives we will take into account are those (relevant) individuals  $x$  that the dean could have invited, and they will be ordered according to their likelihood. Bill turns out to be the less likely individual for the dean to invite. This is expressed as in (19).

(19)  $\forall x[x \neq \text{Bill} \rightarrow \mathbf{likelihood}(\text{dean inviting } x) > \mathbf{likelihood}(\text{dean inviting Bill})]$

Most of the literature accepts an analysis along the lines of (19). But two different approaches have been proposed to account for *even* under negation, (20). In this scenario, Bill is the least likely individual for the Dean to invite.

(20) The dean didn't invite even Bill.

The polarity account (Rooth 1985; Herburger 2003; Giannakidou 2007) claims that there are two distinct lexical items for *even*. One *even* is a positive polarity item (PPI) and the other is a negative polarity item (NPI). While the former cannot occur under the scope of negation, the latter has a different semantics than the PPI *even*. In particular, it reverses the likelihood relation between the pronounced sentence and the alternatives, as shown in (21).

(21)  $\forall x[x \neq \text{Bill} \rightarrow \mathbf{likelihood}(\text{dean inviting Bill}) > \mathbf{likelihood}(\text{dean inviting } x)]$

While in (19) the likelihood of inviting Bill is at the bottom of the scale (so a *bottom of the scale* presupposition is triggered), the likelihood of inviting Bill in (21) is at the top of the scale (and hence, a *top of the scale* presupposition obtains).

By contrast, the movement account (Karttunen & Peters 1979; Wilkinson 1996; Lahiri 1998; Crnič 2011) postulates a single *even*, one that can move out of the scope of negation. Thus, the denotation of *even* remains the same in positive and negative contexts. In the latter, though, negation is part of the embedded proposition and of the alternatives, in the following way:

$$(22) \quad \forall x[x \neq \text{Bill} \rightarrow \mathbf{likelihood}(\text{dean not inviting } x) > \mathbf{likelihood}(\text{dean not inviting Bill})]$$

(22) says that for any relevant individual  $x$ , not inviting  $x$  is more likely than not inviting Bill. Since the least likely individual not to have invited is Bill, this amounts to declaring that Bill is the most likely individual for the dean to have invited.

The greatest advantage of the polarity approach is that it can account for a rich inventory of *evens* cross-linguistically. As pointed out by Giannakidou (2007), Greek has different lexical items for *even* in positive and in negative contexts, so suggesting the existence of more than one *even* in English is not so uneconomical for the theory. Moreover, in the movement account, *even* escapes from the scope of negation, so it is still treating *even* as a polarity item. We believe that this approach best captures the behavior of Catalan PPI and NPI *evens*, that is, *fins i tot* and *ni*, respectively.

On the other hand, the movement account provides an elegant analysis for *even*, because there is no redundancy in the lexicon and the analysis makes use of an operation that is widely accepted in linguistic theory, namely movement. The interaction between operators at LF is attested beyond *even* and negation, so this explanation does not make any strong theoretical stipulations.

Although this is not crucial in this paper, in order to choose an approach over the other, we will provide some evidence against the idea that EVEN moves. However, we will also show that EVEN is not a polarity item.

## 4.2 ABLE + EVEN

Our proposal is that SC can be decomposed into an ability modal – which we call ABLE – and EVEN. Following Bennet (1982); Kay (1990) and Crnič (2011), we assume that the force of EVEN is existential rather than universal, as shown in the definition condition in (23).

$$(23) \quad \llbracket \text{EVEN} \rrbracket^{g,c}(C, p, w) \text{ is defined only if} \\ \exists q \in C[\mathbf{likelihood}(q) > \mathbf{likelihood}(p)]$$

By doing this, we aim to express that EVEN is slightly weaker than the PPI counterpart *fins i tot*. The idea behind this is that in (23), we consider that there is at least one relevant proposition in the context that is more likely (or expected or noteworthy) than the pronounced proposition.

Consider the example in (24), where the whole embedded proposition to SC is in focus.

- (24) En Pere és capaç de [creuar el Llac Michigan nedant]<sub>F</sub>.  
 ‘Peter is capable of swimming across Lake Michigan.’

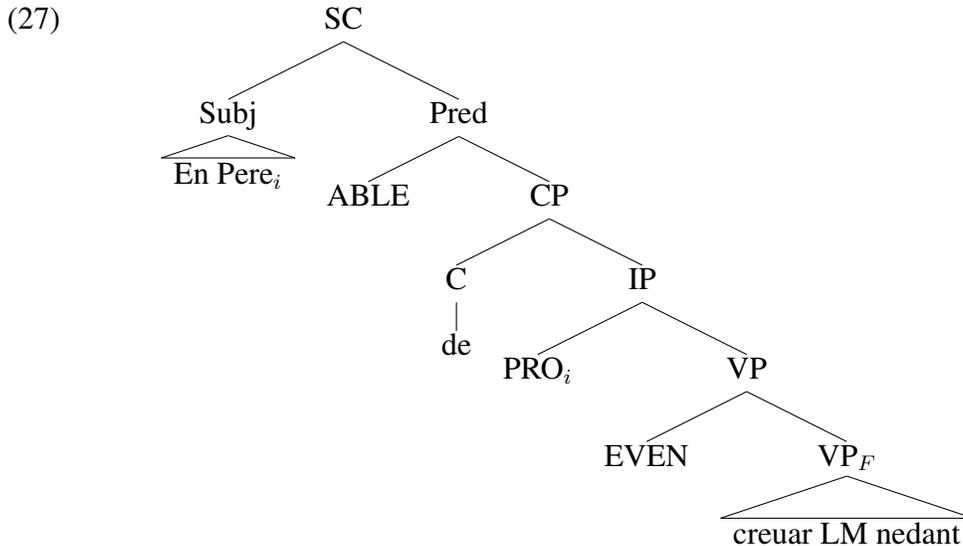
EVEN is sensitive to the context of utterance (not all the possible alternatives to the pronounced proposition are computed) and to the pronounced proposition, which contains ABLE and a focused constituent. This is shown in (25).

- (25) a. [EVEN C<sub>I</sub>] [Peter is ABLE to [swim across LM]<sub>F</sub>]  
 b. C<sub>I</sub> ⊆ {Peter is ABLE to Q | Q a VP denotation}

EVEN quantifies over the subset of possible alternatives of the form *Peter is able to P* that are picked out by the contextual variable C<sub>I</sub>. The scalar presupposition tells us that there is at least one alternative in this set that is more likely than Peter being able to cross Lake Michigan, (26).

- (26) ∃p ∈ {Peter is ABLE to Q | Q a VP denotation}: **likelihood**(p) > **likelihood**(that Peter is ABLE to cross LM)

Plainly put, crossing Lake Michigan is taken to be quite an achievement. The assumed syntactic representation is in (27).



Now that we have introduced the basics of our analysis, we can go back to the puzzles and reason why introducing a covert EVEN is a sensible proposal.

### 4.3 Back to the three puzzles

First, recall from Puzzle 1 that SC involves an inference that is somehow stronger than the effort component that has been associated with English *be able*. We repeat (6) below for convenience.

- (28) [Mary lies in bed in a hospital]  
 ?A pesar de l'accident, la Maria és capaç de respirar.  
 ‘Despite the accident, Mary is capable of breathing.’

Here, it is not merely that Mary makes an effort to breathe. To make sense out of (28), we need to interpret that there is a set of actions that Mary is able to do, and that the one we are asserting she is able to carry out is the least likely. In this situation, though, it would be awkward to think that breathing is the least likely action she can perform. World knowledge tells us that breathing is the most basic ability we have as humans, so any other ability entails breathing. This fact is at odds with considering breathing as the least likely ability one can have. Crnić (2011) couches this property as in (29).

(29) *Scalarity and Entailment* (From Crnić (2011:15))

If a proposition  $p$  entails a proposition  $q$ ,  $q$  cannot be less likely than  $p$

So, if being able to talk, or think or dance entails being able to breathe, being able to breathe cannot be less likely than being able to talk or think or dance. Unless we assume a very specific context where the previous entailment does not hold, to say (28) will be ill-formed.

Moving on to Puzzle 2, we saw that SC under negation can yield either a hard or an easy reading. Compare (30) with (31), which is used in the literature on *even* to argue that two possible interpretations are available when a negative predicate such as *doubt* and *even* interact.

(30) En Joan no és capaç de calcular l'interès compost.

'John isn't capable of calculating compound interest.'

- a. Hard reading: Calculating compound interest is quite an achievement.
- b. Easy reading: Calculating compound interest is the least John should be able to do.

(31) Mary doubts that John can even calculate compound interest.

Depending on the approach we take, the polarity approach or the movement approach, we have different ways of accounting for (31), as shown in subsection 4.1 above. In subsection 4.4 we will focus on the analysis of SC under negation. What matters for now is that there is a parallelism between the two readings in SC and the two readings that have been raised in the literature on *even*.

Finally, Puzzle 3 revolves around the interaction between SC and the Catalan NPI *ni* 'not even'. If we assume that *ni* spells out its silent counterpart, then the obligatory easy reading in (32) is straightforward.

(32) En Pere **no** és capaç **ni** de rentar-se la cara.

'Peter isn't even capable of washing his face.'

*Ni* is an NPI and so it must be licensed by negation. For *ni* we adopt the polarity account (cf. (21)), and the underlying structure in (32) would be [Neg ABLE NPI-EVEN]. Therefore, for any relevant thing that we can evoke Peter is able to do, cleaning his face is at the top of the likelihood scale, (33).

(33)  $\forall Q [Q \neq \text{wash one's face} \rightarrow \text{likelihood}(\text{Peter is able to wash his face}) > \text{likelihood}(\text{Peter is able to } Q)]$

Recall that in the polarity account, the likelihood relation between the pronounced proposition and the set of relevant alternatives is reversed. Hence, (32) asserts that Peter is not capable of washing his face, and it presupposes that the likelihood of Peter being able to wash his face is greater than the likelihood that he is able to do any of the relevant alternative actions.

#### 4.4 Two readings

Taking up on Puzzle 2, in this subsection we spell out the derivation of the two readings, easy and hard, that may emerge when SC occurs in a negated sentence. Consider again sentence (17), repeated in (34) for convenience.

- (34) En Joan **no** és capaç de [calcular l'interès compost]<sub>F</sub>.  
 'John isn't capable of calculating compound interest.'

Recall that we have to face two different ways to derive the easy and hard readings. Adopting the movement approach would involve having a single EVEN that moves covertly when the easy reading obtains. Something along the lines of (35).

- (35) a. [EVEN C<sub>1</sub>] [John is not ABLE to [calculate compound interest]<sub>F</sub>]  
 b.  $\exists p \in \{\text{John is not ABLE to } Q \mid Q \text{ a VP denotation}\}$ : **likelihood**(*p*) > **likelihood**(that John is not ABLE to calculate compound interest)

Here, to derive that calculating compound interest is the easiest (the most likely or less noteworthy) activity John is able to engage in, we would argue that EVEN is a silent scalar item that moves out of the scope of negation. The underlying structure is in (35a), and the scalar inference is in (35b). Note that negation is part of the set of propositions EVEN quantifies over.

The main problem we see with this account is that we are predicting that the EVEN that is in SC will interact with any other operator besides negation, a prediction that is not borne out. Consider a test taken from Guerzoni (2003:221)<sup>1</sup>, where embedding *even* in the protasis of a conditional yields different interpretations depending on the approach we are assuming. Specifically, if *even* scopes out of other operators, it is predicted that unlikelihood holds not only about the proposition where *even* is pronounced, but rather about the causal relation between protasis and apodasis. To illustrate it with an example, take (36). The movement account predicts the interpretation in (36a), while an account that does not resort to movement predicts (36b).

- (36) Si en Ramon és capaç de calcular l'interès compost, trobarà feina.  
 'If Ramon is capable of calculating compound interest, he will find a job.'  
 a. There is at least one alternative *Q* to being able to calculate compound interest such that being able to calculate compound interest and finding a job is less expected than being able to *Q* and finding a job.  
 b. There is at least one alternative *Q* to being able to calculate compound interest such that being able to calculate compound interest is less expected than being able to *Q*.

<sup>1</sup>We are grateful to Elena Guerzoni for pointing out this test to us.

In the case of SC, the correct prediction is the one in (36b), so at least we have one argument to prefer an account where EVEN stays *in situ*. Therefore, we have to accept that the easy reading is triggered by another EVEN, namely an NPI-EVEN, which is only licensed in the scope of certain (non-veridical) operators (Giannakidou 2001 and subsequent work). As pointed out by Jason Merchant (p.c.), the fact that two different interpretations are triggered is a strong enough motivation for postulating two different silent items. Moreover, this also strengthens the parallelism between the language’s polarity items and SC.

We, hence, propose an NPI-EVEN whose definiteness condition is established below; there is at least one relevant alternative proposition  $q$  that is less likely (or noteworthy or expected) than the pronounced proposition.

$$(37) \quad \llbracket \text{NPI-EVEN} \rrbracket^{g,c}(C, p, w) \text{ is defined only if} \\ \exists q \in C[\text{likelihood}(p) > \text{likelihood}(q)]$$

In (38) we state the scalar presupposition that arises from sentence (34). While it asserts that John was not able to calculate compound interest, it presupposes that being able to calculate compound interest is not a noteworthy ability (since it is considered a rather easy task).

$$(38) \quad \exists p \in \{\text{John is ABLE to } Q \mid Q \text{ a VP denotation}\}: \text{likelihood}(\text{that John is ABLE to calculate compound interest}) > \text{likelihood}(p)$$

Now, to derive the hard reading, we just need to assume the same EVEN that we have in positive environments, so something along the lines of (39).

$$(39) \quad \text{a. } [\text{EVEN } C_1] [\text{John is ABLE to } [\text{calculate compound interest}]_F] \\ \text{b. } \exists p \in \{\text{John is ABLE to } Q \mid Q \text{ a VP denotation}\}: \text{likelihood}(p) > \\ \text{likelihood}(\text{that John is ABLE to calculate compound interest})$$

Here, calculating compound interest is an unlikely or noteworthy ability for John to have. The entire sentence is negated, but this scalar presupposition projects. Note that this EVEN, unlike English *even* or Catalan *fins i tot* ‘even’, is not a PPI, because it is felicitous in the scope of negation.

#### 4.5 Motivations for an alternative analysis?

In this paper we have pursued a syntactic approach to derive the emphatic reading of SC, i.e. one that assumes two null items, namely EVEN and NPI-EVEN, in the derivation. This idea is based on the assumption that EVEN and NPI-EVEN can be spelled out as the language’s polarity *evens*. In this subsection we want to discuss some of the drawbacks of this syntactic analysis and entertain the essentials of a pragmatic account.

In the present analysis, we need to assume that *fins i tot* ‘even’ and *ni* ‘not even’ spell out EVEN and NPI-EVEN respectively. Otherwise, we would not be able to explain why or how the emphatic meaning is not reduplicated with the occurrence of the language’s polarity *evens*. But this spell-out assumption is not deprived of flaws, either. Most notably, certain differences between the two sets of items remain unexplained.

To begin with, we have been taking for granted that EVEN and NPI-EVEN are overtly realized as a PPI or an NPI *even*. However, we have assumed that the null set of *evens* are weaker (they involve an existential quantifier instead of a universal one). Furthermore, the silent versions do not have the additive component that the overt set of *evens* have. Maybe the quantificational force and the presence of the additive presupposition are somehow related. In any case, if one is the spell-out of the other, we may want to support the idea that they have the same semantics.

Second, the silent *evens* are compatible with expressions that overt *evens* do not license. For instance, free choice items or universal quantifiers, (40).

- (40) a. En Miquel és (# **fins i tot**) capaç de fer **qualsevol cosa** per aconseguir la feina.  
 ‘Michael is (even) capable of doing anything to get the job.’  
 b. En Miquel és (# **fins i tot**) capaç de fer-ho **tot** per aconseguir la feina.  
 ‘Michael is (even) capable of doing everything to get the job.’

Third, unlike overt *evens*, EVEN can remain under the scope of negation, (41). While the bottom of scale inference is preserved despite negation in (41a), *fins i tot* being a PPI, (41b) is marginal. Finally, (41c) only yields the easy reading, because *ni* is an NPI.

- (41) a. En Pere **no** és capaç de creuar el LM nedant.  
 ‘Peter isn’t capable of swimming across LM.’  
 b. \*En Pere **fins i tot no** és capaç de creuar el LM nedant.  
 c. En Pere **no** és capaç **ni** de creuar el LM nedant. [Only easy reading]  
 ‘Peter isn’t even capable of swimming across LM.’

Pending further research about the differences and similarities between EVEN and the language’s polarity items, we have to make the assumption that null items may have different properties from their overt counterparts, which would not be such a strange assumption. However, we can present additional arguments that suggest that a pragmatic approach that appeals to Krifka’s (1995) **Emph.Assert** operator, and which does not require an exact match between *even* and the proposed scalar presupposition is the right direction to follow.

A first piece of evidence comes from considering other (neighboring) languages such as Portuguese<sup>2</sup>, where SC does not have the depicted emphatic component. In fact, this property is absent from the well-known inventory of modal verbs, and yet, emphasis understood as a comparison in terms of informational strength is not a rare component in historical processes of meaning change such as minimizers becoming NPIs (Eckardt 2006). Although this would require a full-fledged study, these data suggest that emphasis may be a conventionalization of an inference that was present in most contexts of utterance of SC in previous stages of the language. A second piece of evidence that the emphasis associated with SC should have a pragmatic rather than a syntactic source comes from the fact that the two readings under negation arise in different contexts. More specifically, they are answers to two different Questions under Discussion (QUD, Roberts 1996). (42) shows that

<sup>2</sup>We thank Patrícia Amaral for pointing this out to us.

the hard reading derives from including the negation in the QUD, while (43) shows that a positive QUD yields the easy reading.

- (42) a. A: De què no és capaç en Pere?  
 ‘What is Peter not capable of?’  
 b. B: En Pere no és capaç de creuar el LM nedant.  
 ‘Peter is not capable of swimming across LM.’
- (43) a. A: De què és capaç en Pere?  
 ‘What is Peter capable of?’  
 b. B: En Pere no és capaç de rentar-se la cara.  
 ‘Peter is not capable of washing his face.’

Following Roberts’ (1996) mapping between focus and the QUD as depicted in Kadmon (2001), (44), we can conclude that the focal part of (42) and (43) are different, and this might explain the differences in the readings.

- (44) An utterance B whose logical translation is of the form  $\beta$  or  $?\beta$ , where  $\beta$  is a formula, is felicitous only if  $\llbracket \beta \rrbracket^f = \text{last}(\text{QUD}[\llbracket B \rrbracket^o])$ .

In particular, in (42), the focal part would be the same as the one in a positive sentence whose QUD is also positive, as in (45), that is SC’s propositional complement, without negation. Thus, the alternatives generated are of the form ‘Peter is able to  $p$ .’

- (45) a. A: De què és capaç en Pere?  
 ‘What is Peter capable of?’  
 b. B: En Pere és capaç de creuar el LM nedant.  
 ‘Peter is not capable of swimming across LM.’

In contrast, in (43), negation is in focus, since it is part of the reply to the QUD. The alternatives generated are of the form ‘Peter is not able to  $p$ ’.

We may relate this phenomenon to the following examples Krifka (1995) brings out:

- (46) From Krifka (1995:227)  
 a. Mary knows every place on earth. She has (even) been to BORneo!  
 b. John would distrust Albert SCHWEITzer!

Such cases are illustrations of focal prosody used to bring *emphasis* to the sentence. In Krifka’s account, emphatic prosody is represented by the **Emph.Assert** operator, which much like *even*, indicates that the sentence containing the focalized element is more unlikely than any of the relevant alternatives. However, contrary to postulating a null element in the syntax, which involves obeying locality conditions and interacting with other operators, **Emph.Assert** is not bound to syntactic restrictions because it is a force operator that translates emphatic prosody (although this leaves open issues such as embeddability conditions, etc.). In particular, Krifka adopts the structured meanings framework (Jacobs 1991; von Stechow 1990) to represent in the denotation of each sentence what is the background (B), the foreground (F) and the alternatives (A) separately. Consider (47).

- (47) **Emph.Assert**( $\langle B, F, A \rangle$ )( $c$ ) =  $c \cap B(F)$ , iff
- a. For all  $F' \in A$ :  $c \cap B(F) \prec_c c \cap B(F')$
  - b.  $c \cap B(F) \prec_c \bigcap \{c \cap B(F') \mid F' \in A\}$

The first condition tells us that the assertion is less likely in the current common ground than any alternative assertion, and the second one states that the assertion made is less likely than the conjunction of all the relevant alternative assertions. In other words, distrusting Albert Schweitzer is more noteworthy than distrusting any other relevant alternative people, and it is also more noteworthy than distrusting all of the relevant alternative people.

Going back to SC, we can say that whenever negation is part of the focus, the alternatives also contain negation and, even though the likelihood relation is preserved, a top of the scale presupposition (easy reading) obtains. By contrast, when negation is not in focus, then the same bottom of the scale presupposition (hard reading) as with positive sentences obtains. Not having EVEN in the syntax prevents us from deriving undesired scope interactions. However, we need to claim that SC has conventionalized the need to be pronounced using **Emph.Assert** rather than just a regular **Assert** force operator. Further research needs to determine whether a syntactic or a pragmatic account can best explain the phenomenon we have begun to explore.

## 5 Conclusions

To conclude, we have addressed three puzzles concerning the semantics of Catalan *ser capaç* (and Spanish *ser capaz*, for this matter). First, it has been argued that rather than an effort component, as is the case of *be able*, SC yields a scalar inference that is comparable to the one triggered by English *even* or Catalan  *fins i tot*. Second, the ambiguity that we have observed under negation between a bottom of the scale and a top of the scale inference ('hard' and 'easy' readings respectively) can be explained if we assume that there is both a covert EVEN and a covert NPI-EVEN that is licensed under negation. Third, EVEN and NPI-EVEN are spelled out as the language's *evens*, although they do not match exactly in their semantic properties.

We have contributed new empirical data to the longstanding debate on the nature of a covert *even*. However, more research needs to be done. Among remaining and new unsettled issues, we should point out that more research should be devoted to highlight the differences between covert and overt *evens*. Additional remaining issues relate to the differences between *be able* and *be capable* in English, a topic in its own right, which, to the best of our knowledge, has not been undertaken yet. Also the similarities and differences between Catalan and Spanish SC and English *be capable* deserve a deeper study.

## References

- Bennet, J. 1982. Even if. *Linguistics & Philosophy* 5.403–418.
- Bhatt, R. 1999. Ability modals and their actuality entailments. In *WCCFL 17 Proceedings*, ed. by K. Shahin, S. Blake, & E.-S. Kim, volume 17, 74–87.
- Castroviejo, E., & I. Oltra-Massuet, 2013. On capacities and their epistemic extensions. Talk at LSRL43 (April 17, CUNY).
- Crnič, L. *Getting 'even'*. MIT dissertation.
- Eckardt, R. 2006. *Meaning change in grammaticalization: An enquiry into semantic reanalysis*. Oxford University Press.
- Giannakidou, A. 2001. The meaning of free choice. *Linguistics & Philosophy* 24.659–735.
- 2007. The landscape of EVEN. *Natural Language & Linguistic Theory* 25.39–81.
- , & E. Staraki. 2013. Ability, action, and causation: From pure ability to force. In *Genericity*, ed. by Alda Mari, Claire Beyssade, & Fabio Del Prete. Oxford University Press.
- Guerzoni, E. *Why Even Ask? On the Pragmatics of Questions and the Semantics of Answers*. MIT dissertation.
- Herburger, E. 2003. A note on Spanish *ni siquiera, even*, and the analysis of NPIs. *Probus* 15.237–256.
- Jacobs, J. 1991. Focus ambiguities. *Journal of Semantics* 8.1–36.
- Kadmon, N. 2001. *Formal pragmatics*. Blackwell London.
- Karttunen, L. 1971. Implicative verbs. *Language* 47.pp. 340–358.
- , & S. Peters. 1979. Conventional implicature. In *Syntax and semantics 11: Presuppositions*, 1–56. New York: Academic Press.
- Kay, P. 1990. Even. *Linguistics & Philosophy* 13.59–111.
- Krifka, M. 1995. The semantics and pragmatics of polarity items. *Linguistic Analysis* 25.1–49.
- Lahiri, U. 1998. Focus and negative polarity in Hindi. *Natural Language Semantics* 6.57–123.
- Mari, A., & F. Martin. 2007. Tense, abilities and actuality entailment. In *Proceedings of the Sixteenth Amsterdam Colloquium*, 151–156.
- Pinon, C. 2003. Being able to. In *WCCFL 22 Proceedings*, ed. by G. Garding & M. Tsujimura, 384–397.
- Portner, P. 2009. *Modality*. Oxford and New York: Oxford University Press.
- Roberts, C. 1996. Information structure in discourse: Towards an integrated formal theory of pragmatics. *Working Papers in Linguistics - Ohio State University* 91–136.
- Rooth, M. *Association with focus*. University of Massachusetts, Amherst dissertation.
- Thalberg, I. 1972. *Enigmas of agency: Studies in the philosophy of human action*. London: Allen and Unwin.
- von Stechow, A. 1990. Focusing and backgrounding operators. In *Discourse particles*, ed. by W. Abraha, 37–84. Amsterdam: John Benjamins.
- Wilkinson, K. 1996. The scope of *even*. *Natural language semantics* 4.193–215.