

## Information Structure and (in)definiteness

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### 1. Introduction

In this paper, I discuss the two most prominent examples of the interaction between definiteness and Information Structure (IS): Topicalization has been associated with definiteness (specificity) and existentials with indefiniteness (the “definiteness effect”). Both these phenomena exhibit seemingly idiosyncratic exceptions to this association. This paper demonstrates that these exceptions are resolved by a careful analysis in terms of IS. Section 2 defines the primitives of IS, topic and focus, in terms of their effect on a file system representing the discourse manipulation of referents in the common ground. It is shown how subordinate ISs afford an explanation of the fact that specific indefinites can provide topics.

It is well known that IS has an impact on word order. I have argued elsewhere (e.g. (Erteschik-Shir 2007, 2005b)) for an account of this interaction in terms of PF linearization constrained by the canonical IS of a language.<sup>1</sup> This is the topic of section 3 where I demonstrate how topicalization is constrained differently in Danish, Norwegian, Hebrew, Catalan and Russian in view of their different canonical ISs as well as other language particular properties. I also show that although the first position in Germanic languages is generally dedicated to topics, non-topics in this position also impact IS by formingthetic sentences. Section 4 offers an analysis of the definiteness effect in existentials. It also gives some evidence (citing Romance data from (Leonetti 2008)) that here again there are differences in canonical IS as well as morphological differences between the languages.

### 2. What is a topic?

Topics are what the sentence is ‘about’ and the truth value of a sentence is determined with respect to them ((Reinhart 1981, Strawson 1964)). Since sentences may have more than one topic, the “main” topic (often the syntactically highest one, i.e., a subject or one that is topicalized) is the pivot for truth value assessment. Depending on context, however, any one of the topics in a sentence can play this role. Only referential expressions serve as topics. Topics are prototypically referential DPs with a discursal antecedent. Weak (unstressed) pronouns are therefore by definition topics and can be used to tell which constituent types may function as such. Personal pronouns, temporal and locative pronouns (*then, there*) show that DPs and spatio-temporal expressions may function as topics. Although topics are necessarily given or presupposed, not all presupposed elements are topics.

Languages mark topics in a variety of different ways. Topics can be marked by topicalization, by a (clitic) pronoun, morphologically, by topic drop or by intonation (including destressing). Most languages use several of these options. In Danish, for example, topicalization is prevalent, but

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<sup>1</sup> For arguments against the idea that IS functional features trigger movement (e.g. (Rizzi 1997)) see (Erteschik-Shir 2007), 86-101.

topics can optionally remain in situ ((Erteschik-Shir 2007)). Different types of topics may therefore have different properties cross-linguistically. The following two kinds of topics are commonly distinguished: continued topics, which refer back to an already mentioned referent, and shifted topics, which are derived from a restrictive (d-linked) or contrastive set.<sup>2</sup> In Catalan, this distinction applies as follows: topicalization is reserved for shifted topics but continued topics are postposed rather than dropped ((Barker 2007)).<sup>3</sup> It has been claimed that dropped topics are *continued* topics ((Schulz 2003)). In the case of languages that employ several ways of marking topics, for example both topicalization and topic drop, there may be a division of labour such that the former applies to shifted topics, whereas the latter applies to continued topics. In some languages, however, topics selected from restrictive or contrastive sets are distinguished from continued topics. (Erteschik-Shir, Ibnbari, and Taube 2012) argue that Topicalization applies to the former and Topic drop to the latter in both Russian and Hebrew. (1)-(3) ((60)-(63) in Erteschik-Shir et al. op cit) illustrates this for Hebrew.

- (1) *Dani hevi xalav me-ha-super ve-sam Ø ba-mekarer*  
 Dani brought milk from-the-supermarket and-put in-the-fridge  
 ‘Dani brought milk from the supermarket and put it in the fridge.’
- (2) Dani hevi xalav ve-tapuxim me-ha-super.  
 Dani brought milk and-apples from-the-supermarket  
 ‘Dani brought milk and apples from the supermarket.’
- (3) *et ha-xalav hu sam ba-mekarer*  
 ACC the-milk he put in-the-fridge  
 ‘He put the milk in the fridge.’

In (1) topic drop applies to the continued topic in the second conjunct which refers back to the object of the first conjunct. The topicalized example in (3) is licensed in a context such as (2) which introduces the set {milk,apples}, but cannot occur in the context of the first (italicized) sentence in (1). Topic drop is also blocked in a context such as (2).

Since the topic is the pivot for truth value assessment, every sentence must contain at least one topic. This must also be the case for all focus sentences. Following (Gundel 1974) and Erteschik-Shir 1997, such sentences are analysed as having an implicit or overt “stage” topic indicating the spatio-temporal parameters of the sentence (the here-and-now of the discourse).

<sup>2</sup> (Frascarelli and Hinterhölzl 2007) distinguish Familiar Topics, Aboutness-shift Topics and Contrastive Topics. These are parallel to continued, shifted and contrastive topics respectively.

<sup>3</sup> Catalan is discussed in section 3.3 below.

## 2.1 Indefinite Topics

Following (1995, 1989), stage level predicates may, but need not have a spatio-temporal argument shown in (Erteschik-Shir 1997) to be a stage topic:

(4) Firefighters are (always) available.

(4) can be asserted out-of-the-blue indicating that it is predicated of an implicit stage topic. It can also be interpreted with the subject as a topic in which case the predicate is interpreted as a property of the subject. This is not the case for Individual-level predicates which cannot be interpreted as predicated of a stage topic:

(5) Dogs are intelligent.

Since no stage topic is available here, the only candidate for topichood in intransitive individual-level predicates such as (5) is the subject. Intransitive individual-level predicates therefore provide an excellent test for topichood. Any element that can function as a subject in such sentences must qualify as a topic.

As expected, definites are possible topics.<sup>4</sup>

- (6) a The little boy is intelligent.
- b He is intelligent.
- c John is intelligent.

As shown in (7), indefinites are also possible topics. Only singular indefinites are excluded:

- (7) a #A little boy is intelligent.
- b Dogs/a dog are intelligent. (only generic)
- c A student I know is intelligent. (specific)
- d A DOG is intelligent, a CAT is not. (contrastive)
- e TWO/SOME (of the) students are intelligent. (partitive)

These facts can be accounted for within a theory of information structure (IS) which is sensitive to definiteness, keeps track of those discourse referents that are “given” and can be topics, and also allows for the introduction of new potential topics.

Following Reinhart 1981, the common ground is represented by a set of file cards. Each file card represents a discourse referent. These cards are organized so that the most recently activated cards are to be found *on top of the stack of cards*. These are the discourse referents which

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<sup>4</sup> Definiteness is viewed here as a semantic property involving familiarity (see below).

provide potential *topics* in the discourse. In order to get to the top of the stack, the card (the referent it represents) is focused. This follows implicitly from the definition of focus:

- (8) The Focus of a sentence *S* = the (intension of a ) constituent *c* of *S* which the speaker intends to direct the attention of his/her hearer(s) to, by uttering *S*. ((Erteschik-Shir 1973, Erteschik-Shir and Lappin 1979))

If the attention of the hearer is drawn to (the referent of) *X*, then the hearer (metaphorically) selects the card for *X* and puts it in a place of prominence, namely on top of his stack of file cards. The Heimian ((Heim 1982)) distinction between definites as old and indefinites as new is incorporated into the filing system as follows:

- (9) a        The card is selected from among the already existing file cards if it is definite and therefore represents an existing referent.  
b        The hearer is required to make out a new card for an indefinite.

The file system thus involves locating cards on top of a stack (topics) or positioning them there (foci). Additionally, each card is updated with the information predicated of it in the sentence. Certain cards are permanently available on top of the file. These include the card for the speaker and the card for the hearer and the current stage (the spatio-temporal parameters of the discourse situation) since these referents are available in any discourse situation. Let me illustrate with the sequence of sentences in (10):

- (10) a        I<sub>top</sub> [know a student]<sub>foc</sub>  
b        She<sub>top</sub> [is intelligent]<sub>foc</sub>

The first person topic of (10)a is located on top of the file and is therefore licensed as a topic. The focus rule applies to 'a student', a referential element within the focus domain. Since this is an indefinite, a new card is made out for this referent and is then positioned on top of the file. This card therefore licenses the topichood of the coreferential subject of (10)b.

In this system the notions topic and focus are defined discursively. Participants in a discourse update their common ground according to the rules of IS outlined here. Topics and focus in this framework do not project syntactic structure à la (Rizzi 1997), but are rather integrated at the PF interface. For discussion of various aspects of this issue see (Erteschik-Shir 2006b, a, Erteschik-Shir and Lappin 1987, Erteschik-Shir 2005b).

Topics, as defined above, are the pivot for truth value assessment. It follows that topics necessarily take wide scope. The scopal consequences of this view are discussed in (Erteschik-Shir 1997, 1999). (Endriss 2009), a recent proponent of this view, offers a comprehensive account of the quantificational properties of topics tying together their semantic, structural, and prosodic properties.

The interpretation of Foci differs from that of Rooth ((Rooth 1985, 1992)) for whom a focus (informally) involves selection from a set of alternatives. In (Erteschik-Shir 1997), I argue that

only restrictive foci (see below) range over a discourse defined set of alternatives, but that such foci must be distinguished from nonrestrictive foci which have different distributional properties.

The main difference between the approach advocated here and syntactic and semantic approaches to IS proposed elsewhere, is the requirement I impose that all IS properties (syntactic, semantic and prosodic) be derivable from the two IS primitives, topic and focus as defined here. (These are the only IS primitives required. Elements which are unmarked for topic or focus, do not have any status with respect to IS. This is the case for *eat* in “I<sub>top</sub> ate an apple<sub>foc</sub>” in the context of “What did you eat?”) As shown in the next section, this necessitates subordinate information structures.

## 2.2 Subordinate information structure

We are now ready to examine the distribution of actual topics in (6) and (7). The definite referents are acceptable in the examples in (6) if they have been introduced as foci in the discourse previous to the utterance of the sentences and following (9)a, have been selected from the existing file cards and positioned on top of the stack. Similarly, (7)b is acceptable with the generic reading, since generics, like names, are definite. Since no card is available for the singular indefinite **in(7)a**, however, it cannot provide a topic for the sentence.

The distinction between singular indefinites which do not provide valid topics and the specific, contrastive and partitive indefinites in (7)c, d, and e, follows naturally from the rules assuming that more than one topic and focus can be assigned within a sentence. The next section is devoted to this topic.

Whereas indefinites generally are new to both speaker and hearer and therefore do not qualify as topics, one type of specific indefinite is known to the speaker alone. These specific indefinites contain a modifier which minimally indicates that the speaker has a particular referent in mind.<sup>5</sup> This modifier is what allows this type of specific indefinite to be a topic as well as a focus.

With this in mind let us examine the information structural properties of the specific indefinite subject of (7)c, repeated here:

(11) *A student I know* is intelligent.

Since this is an individual-level predicate, the subject is the only possible topic rendering the IS in (12).

(12) [A student I know]<sub>top</sub> [is intelligent]<sub>foc</sub>

The question arises as to how a card for such an indefinite subject can be placed on top of the

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<sup>5</sup> For more examples of this type see (Erteschik-Shir 1997),41-42. Cases of unmodified specific indefinites occur as well. In such cases the discursial connection is accommodated. A detailed discussion of such examples in terms of IS is offered in Erteschik-Shir op. cit., 61-67.

file, a requirement for topichood. Once a subordinate IS is assigned to this constituent an explanation is readily found:

(13)  $I_{top}$  [know a student] $_{foc}$

As demonstrated in (10)a, the first person subject qualifies as a topic and a new card is made out for the indefinite 'a student' contained in the focus. This card is updated with the information provided by the relative clause and positioned on top of the file. This new card is now available as the topic of the sentence as a whole. The way (12) is derived is by processing it as two separate sentences, the first derived from the subordinate IS of the subject, the second equivalent to (12) as shown in (14).

(14)  $I_{top}$  [know a student] $_{foc}$      $She_{top}$  [is intelligent] $_{foc}$

The same IS is assigned as a subordinate IS to the subject of (12).

(15) [[A student] $_{foc}$   $I_{top}$  know] $_{top}$  [is intelligent] $_{foc}$

Note that the focushood of 'a student' is evidenced by the fact that it is stressed. Specificity is therefore accounted for by the information structure assigned to the modifier. The IS of this clause requires the introduction of a new card for 'a student' and its placement on top of the file and it also specifies some information that the speaker has about the student, distinguishing the specific indefinite from the nonspecific one. Once the subordinate f-structure is processed, the new card for the indefinite is to be found on top of the file and therefore qualifies as the topic of the sentence as a whole.<sup>6</sup>

Partitives (e.g., (7)e) are another type of specific indefinites and are derived in a similar fashion:

(16) TWO of the students are intelligent.

The utterance of a partitive requires that a set of students is contextually given. It follows that the set of students provides a topic and that a card for this set must be available on top of the file. Another property of indefinite partitives is that the quantifier must be stressed.

The selection of two students from this set is performed by focusing on the two members of the given set, creating a new card defining two members of the given set. The following IS results:<sup>7</sup>

(17) [[[TWO] $_{foc}$  of [the students] $_{top}$ ]] $_{top}$  [are intelligent] $_{foc}$

All types of specific indefinites are derived by subordinate IS and the resulting manipulation of the file system. The specific interpretation, the potential for both topichood and focusability, the contextual requirements as well as the stress patterns are all derived as a single package.<sup>8</sup>

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<sup>6</sup> Note that a similar set of operations would derive the topic *the student I know*, the difference being that the definite requires an existing card for the student in the available stack of cards.

<sup>7</sup> The idea that topics may contain foci is introduced already in (von Stechow 1994), 58 and (Krifka 1994, Krifka 1998), 94,99.

The connection between topicality and specificity has a fairly long history fraught with different views of what a topic is on the one hand and what specificity is on the other. Important contributions include (Gundel 1988), (Ward and Prince 1991), and more formal approaches such as, (Cresti 1995), (Portner and Yabushita 2001, von Heusinger 2002) and (Endriss 2009). It is not possible in a short paper to review these contributions although several of them are compatible with the analysis I propose. My intention here is merely to demonstrate that in principle the properties associated with specificity can be derived from IS as viewed here.

### 3. Topicalization

It is well known that in the unmarked case, topics (old/given elements) precede foci (new elements). However, there is little agreement as to what exactly the relevant information-structural elements are. Often this ordering of elements is considered to be determined by the relative status of the constituents.<sup>9</sup> Under the view presented here, the various types of topic and focus (contrastive, restrictive, etc.) are derived from subordinate ISs employing solely the basic notions of topic and focus employed above. In this way the manipulation of the file-system is accurately defined and the potential contexts of sentences with particular ISs is derived.

#### 3.1 Danish<sup>10</sup>

The same constituent types which can be topics in English (6)-(7) can be topicalized in Danish, including pronouns, definites, generics, contrastive elements, specific indefinites but *not* non-specific indefinites:

- (18) a      Hende mødte jeg i går.  
                  her    met    I yesterday  
                  'I met her yesterday.'
- b      Pigen mødte jeg i går.  
                  girl-the met    I yesterday  
                  'I met the girl yesterday.'

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<sup>8</sup> A detailed discussion of other types of specifics and their analysis in terms of IS is offered in (Erteschik-Shir 1997), 61-67. As pointed out by an anonymous reviewer it is not obvious that the subject of (i) should be analysed as a topic.

(i)            Less than 10 people on this planet are intelligent.

Here again a subordinate IS is imposed on the subject so that the quantifier *less than 10* operates on the given set of *people on this planet*. See also (Erteschik-Shir 1997), 182-3 for an analysis of German data from (Krifka 1994) including the scopal properties of similar topics.

<sup>9</sup> E.g., (Birner and Ward 2009), 1172

<sup>10</sup> The material in this section is to a large extent drawn from (Erteschik-Shir 2006a)

- c Blomster ser man om foråret.  
flowers sees one in spring-the  
'Flowers, one sees in the spring.'
- d Pigen mødte jeg i går, drengen mødte jeg først i dag.  
girl-the met I yesterday, boy-the met I first today  
'The girl I met yesterday, the boy I only met today.'
- e En pige som jeg mødte i går gav jeg en god bog til.  
A girl that I met yesterday gave I a good book to  
'A girl I met yesterday I gave a good book to.'
- f \*En pige mødte jeg i går  
a girl met I yesterday  
'I met a girl yesterday.'
- g \*Hospitalet tog Peter på  
hospital-the went Peter on  
'Peter went to the hospital.'

Pronouns are by definition topics, hence they can be topicalized as in (18)a. Definites can (but need not be) topics and can therefore also be topicalized, cf. (18)b. Bare plurals can be topicalized under their generic interpretation since, according to (Cohen and Erteschik-Shir 2002), bare plural topics (18c) are interpreted generically and bare plural foci are interpreted existentially.<sup>11</sup> (18)d illustrates topicalized contrast. (18)e shows that specific DPs can be topicalized whereas nonspecific, singular indefinites (18f) cannot. (18)g finally demonstrates that weak definites do not topicalize.<sup>12</sup>

A surprising constraint on Danish topicalization is that Danish does not tolerate ambiguity. V-second and topicalization result in a potentially ambiguous string:  $DP_1 V DP_2$ , where  $DP_1$  could in principle be either the subject or the object. In fact, in cases of potential ambiguity, Danish

<sup>11</sup> Singular indefinites can also be employed generically as topics. The different cross-linguistic expressions of genericity will not be dealt with here. Still it is predicted that generics can function as topics cross-linguistically.

<sup>12</sup> According to (Carlson et al. 2006), "weak" definites are not in fact semantically definite but are rather akin to bare count singulars.



allows only one interpretation, the one in which DP<sub>1</sub> is the subject and DP<sub>2</sub> is the object. (19), therefore cannot be an instance of topicalization of the object.<sup>13</sup>

(19) \*Peter mødte Sara

Peter met Sara

'Sara met Peter.'

Even in a context which enhances the object reading of the initial DP, (19), under this reading, is not licensed:

(20) Hvem var det Sara mødte, Peter eller Thomas?

Who was it Sara met, Peter or Thomas?

The context forces a contrastive reading of the topicalized object and still allows for a topic reading of the subject, yet Danish informants reject the sentence and necessarily interpret *Peter* as the subject.

Danish pronouns are case-marked as they are in English. Pronouns therefore *identify* subjects and objects and if either the subject or the object or both are pronouns, topicalization is licensed:

(21) a Ham mødte Sara igår.

him met Sara yesterday

'Sara met him yesterday.'

b ?Peter mødte jeg igår.

Peter met I yesterday

'I met Peter yesterday.'

c Ham mødte hun igår.

Him met she yesterday

'She met him yesterday.'

These data show that topicalization in Danish is not only restricted to constituents that qualify as topics, the result must also lead to an unambiguous parse. This constraint cannot be defined in terms of features of the fronted element in view of the fact that it is not necessarily the fronted element itself that bears case-marking: The case-marked subject pronoun (21b) licenses

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<sup>13</sup> Note that the presence of auxiliaries and negation disambiguates the DP V DP string. See (Raviv 2005) and the references cited therein for details.

topicalization even though the fronted element itself is not case-marked. Note that the slight degradation of this sentence is likely to be due to the fact that the disambiguating DP comes later in the sentence in this case, so the correct parse is signaled late in the sentence, resulting in a garden path effect with the fronted element parsed as the subject.

Topicalization also does not render ambiguity when one of the arguments is inanimate:

- (22) a      Den skuffe    malede drengen igår.  
                  That drawer painted boy-the yesterday
- b      ?Peter forskrækkede lynet      meget.  
                  Peter frightened      lightning-the a lot.

Here again, when the disambiguating inanimate is the subject as in (22)b, the sentence is somewhat degraded since the same garden path effect is triggered as in (21)b.

The requirement of an unambiguous parse cannot be accounted for by syntax and is most naturally construed as a parsing constraint on the identification of arguments at the interface with the articulatory-perceptual system, PF. I propose the following constraint for Danish:

- (23) In a string, X...Y, where X and Y are arguments, ID X as subject and Y as object if neither is marked otherwise.

Parsing would be facilitated even further if no dislocation were to take place. Dislocation must therefore also serve some function. In Danish, topicalization serves to identify the topic. (Focus is marked intonationally as in English). It is the need to identify both syntactic roles (subject, object) and information-structural roles (topic, focus) which lays a heavy burden on the parser in a language such as Danish which lacks both agreement and case-marking morphology.

A comparison with parallel data in Norwegian renders a surprising result. As demonstrated by (Raviv 2005), ambiguous topicalized sentences in Norwegian are licensed and contextually resolved. This difference between the syntactically similar Norwegian and Danish, according to Raviv, is due to the morphological differences between the pronoun systems of Norwegian and Danish. Whereas the Danish pronoun system distinguishes nominative and accusative pronouns morphologically, this is not the case in Norwegian (from Raviv op.cit. 57):

- (24) Han/hun/dere så Jonas.  
          Him/her, you.pl saw Jonas  
          'Jonas saw him/her/you.pl'  
          'He/she/you saw Jonas'

The morphological ambiguity of the Norwegian pronouns allows both readings. It follows that the two languages are distinct with respect to their tolerance for ambiguity. Raviv argues that the Norwegian tolerance for ambiguity both with respect to pronouns and with respect to

proper names and DPs, all unmarked for case, follows from the ambiguity in the pronoun system in Norwegian. Pronoun topicalization is very common in both languages and results in an unambiguous parse in Danish, but not in Norwegian. If Norwegian were subject to the parsing constraint in (23), topicalization would be very restricted – an unhappy result if topicalization plays a critical role in marking IS in the language. Still, even in Norwegian, the unmarked word order is SVO and this reading will be assigned (as it is in Danish) in ambiguous strings which are not contextually disambiguated. Contextual disambiguation is, however, licensed in Norwegian in contrast to what we saw in Danish.

Although only Danish adheres to (23), the preverbal argument is the unmarked topic in both languages. Subjects in the preverbal position also provide topics, all else being equal. Since topics are defined as what the sentence is about, a response to ‘tell me about X’ will necessarily have X as its topic. The following interchange shows that subjects are indeed unmarked topics in Danish:

- (25) A: Fortæl mig om Peter/Hvad med Peter?  
Tell me about Peter/How about Peter?  
B: Han er forelsket i Marie.  
He is in love with Marie.  
B’: ??Marie er forelsket i ham.  
Marie is in love with him  
B’’: I ham er Marie forelsket.  
With him is Marie in love

What is wrong with B’ is that the topic ‘him’ is not preverbal.

I use the term “canonical information structure” to identify the unmarked alignment of syntactic structure and IS in a particular language. The canonical IS for Danish (as well as Norwegian) is:

- (26) Canonical IS (*Danish*):  
 $X_{top} V [... Y ...]_{foc}$

The preverbal element (be it a subject, or a topicalized element) is the topic and the focus is postverbal.<sup>14</sup>

As pointed out by an anonymous reviewer, the response B’ in (25) accords with the canonical IS of Danish, since the topic is included in the topicalized PP “I ham”.

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<sup>14</sup> Note that the topic can also be a spatio-temporal phrase:

- (i) I morgen kommer Peter.  
Tomorrow comes Peter  
‘Peter is coming tomorrow.’

Canonical IS thus constrains word order and so avoids an ambiguous parse of the linear string. Canonical word order can be violated on condition that the sentence is disambiguated by morphology (Danish) or by context (Norwegian).

### 3.2 Topicalization in Hebrew

Hebrew topicalization is possible in two different word orders, OSV (27a) and OVS (27b).

- (27) a      et hasefer    moshe kana. ('et' marks definite objects)  
                  the-book    Moshe bought
- b      et hasefer kana moshe.

The examples in (28a) and (28b) show that indefinite (nonspecific, noncontrastive) DP subjects which, as shown above, cannot provide topics, must be postverbal:

- (28) a      \*et hasefer yeled exad kana  
                  the-book boy one bought  
                  'Some boy bought the book.'
- b      et hasefer kana yeled exad.

(29a) and (29b) show that a (non-deictic)subject-pronoun cannot occur postverbally.

- (29) a      et hasefer hu kana.  
                  the-book he bought
- b      \*et hasefer kana hu

These data reveal that the alignment between syntactic and IS structure is such that the topic must be preverbal and the focus postverbal as shown in (30).

(30) Canonical IS (*Hebrew*)

$$X_{\text{top}} \text{ V } [\dots Y \dots]_{\text{foc}}$$

The canonical IS of Hebrew is therefore parallel to the one argued for in Danish (26). There is an important difference between the two languages, however: Danish requires V-2, whereas Hebrew allows OSV as well.<sup>15</sup>

### 3.3 Topicalization in Catalan

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<sup>15</sup> In both languages topicalization is optional. Hebrew topicalization is in most cases contrastive. The two word orders ((27a) and (27b)) differ in that the subject is in focus in (27b), but not in (27a).

Catalan topicalization has in common with Danish topicalization that topicalized elements must be given, yet only “new” topics can be fronted. (Vallduví 1992) refers to these as ‘Links’. Old topics are detached to the right (Vallduví’s ‘Tails’). The following examples are from (Vallduví 1992):

- (31) a [written on an aerogram; first line on the extra space overleaf]  
 Amb-aquest-tros-de-paperet<sub>1</sub> ja no hi<sub>1</sub> COMPTAVA t<sub>1</sub>.  
with-this-little-piece-of-paper anymore no *obl* 1s-impf-count-on  
 'This-little piece-of-paper I wasn't COUNTING on anymore.'
- b Quant al Joan i la Isidora no t'ho sé dir,  
 as-for the J. and the I. no *iobj.obj* 1s-know to-say  
 doncs el Joan<sub>1</sub> el<sub>1</sub> veiem t<sub>1</sub> ben poc.  
 since the J. *obj* 1p-see quite little  
 'As for Joan and Isidora I can't say, since Joan we see very little of.'

Catalan topicalization has in common with Danish topicalization that the topicalized element must be old, yet, according to Vallduví, there is a difference. In Catalan only elements that are not topics in the previous sentence are topicalized. Such “new” topics are called shifted topics. Vallduví calls these fronted elements “Links” and views them as “address pointers” in a file system in which new information is listed under the address specified by the Link. Since a Link is a command to “go to” an existing “address”, Links only appear when there is a change of address. In the examples in (31), the fronted (underlined) elements are all new topics in this sense. The Link in (31a) is made deictically available, the one in (31b) is restrictively selected from the set {Joan, Isidora}. Prime cases of Links are contrastive or members of restrictive sets.

A strategy parallel to the left dislocation of Links is employed in sentences introduced by “as for X” in English and similar constructions in other languages.

- (32) As for X, X is nice.  
 ↑  
 LINK

“As for X” can only be used in a context in which X is a member of a contextually available set. The initial phrase selects X from this set and focuses it, thus making it a (pronominal) topic of the following sentence.

(Brunetti 2009) makes the same point concerning Italian and argues that If it turned out that “preverbal subjects that function as links are left dislocated, then Italian would display a perfect matching between the IS construction and the syntactic construction.” (759) In other words, the canonical IS for Italian (and Catalan) is one in which shifted topics are left dislocated, and topics

which have an antecedent in the discourse are detached to the right. In the theory of IS promoted here, shifted topics have a subordinate IS and are easily distinguishable from old topics which do not, and for which cards must be available on top of the file.

### 3.4 Topicalization in Russian

Languages like Russian which don't mark definiteness morphologically employ word order for this purpose. Topicalization marks definiteness and focusing marks indefiniteness.<sup>16</sup> The examples in (33)-(35) illustrate topicalized DPs not marked for definiteness.

- (33) Devušku Petja vstretil včera.  
girl.acc Peter met yesterday  
'Peter met the girl yesterday.' (not: 'Peter met a girl yesterday')
- (34) Čvety my vidim tol'ko vesnoj.  
Flowers we see only in-the-spring  
'We see flowers only in the spring.'
- (35) Devočke kotoruju ja vstretil včera ja dala xorošuju knigu  
girl.dat who.acc I met yesterday I gave good book  
'The girl who I met yesterday I gave a good book to?'

(33) receives only a definite reading, even in a contrastive context. In (34), *flowers* must be interpreted generically and in (35), even though the fronted DP is modified, it must be interpreted definitely and does not receive the reading of a specific indefinite. In Russian IS (via word order) therefore plays a critical role in determining definiteness.

According to (King 1995):2 the various surface orders found in Russian are predictable from discourse factors although word order alone is not responsible for encoding grammatical functions. King employs the following well-known example from (Jakobson 1971) to illustrate the fact that context may overrule word order in determining grammatical functions:

- (36) Mat'-Nom/Acc ljubit doč' -Nom/Acc.  
Mother loves daughter  
'Mother loves (her) daughter.'

Generally, in Russian, case marking disambiguates the grammatical functions of the arguments. This sentence, however, is potentially ambiguous since the cases of both the preverbal subject and the postverbal object NPs are ambiguous between nominative and accusative. In principle, the sentence should therefore be interpretable with either argument as subject or object. In fact, the unmarked interpretation follows the unmarked SVO word order with 'mother' as the subject. According to King, however, in an appropriate context, the sentence can also be understood with 'daughter' as the subject. Russian thus employs the same strategy as

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<sup>16</sup> See (Erteschik-Shir and Strahov 2004).

Norwegian, in which the unmarked reading takes the initial DP as the subject and only context can license the interpretation in which the initial DP is interpreted as a topicalized object.

### 3.5 Parameters

Topicalization in Russian plays a more critical role than in the other languages mentioned here, in that it facilitates the interpretation of NPs in terms of definiteness.<sup>17</sup> This is probably why a specific reading of the topicalized element in (35) is excluded. Here the connection between the lack of definiteness morphology and the role of topicalization is transparent. In languages such as Danish, the role of topicalization is limited to marking IS. Indefinites can therefore topicalize as long as they are specific or contrastive. The properties of topicalization cross-linguistically are therefore not easy to parameterize. Not only do morphological properties of the language play a role (definiteness marking, case marking, pronoun paradigms, etc.), so does V-second syntax and prosody as argued by (Speyer 2005).

According to (Speyer), the verb-second constraint was lost in English in the course of the Middle English Period. During the same time frame, the rate at which direct object noun phrases topicalize also declines. Speyer poses the question as to why the rate of topicalization should decline parallel to the loss of V2. Speyer notes that topicalization is motivated by pragmatic reasons and that it is unlikely that the conditions of language usage change over time. The decline in topicalization is therefore surprising. Speyer found that the decline of topicalization with full DP subjects is continual but the decline of topicalization with pronoun subjects is less pronounced and stops with the transition from Old English to Middle English Grammar. Since the decline affects pronoun subjects and full noun-phrase subjects differently, Speyer figures that prosody must be a factor. He makes the following comparison between topicalization in German and English:

- (37) a        Hans hasst Bohnen. Erbsen hasst Maria.  
          b        John hates beans. Peas, Mary hates.

Topicalized elements are generally selected from a contextually evoked set and are therefore accented. This is the case in both languages. The German sentence (37)a is unobtrusive. The English sentence (37)b is awkward. It requires a little break between the two accents. This looks as if—at least in English—a weak element between two accents is compulsory. Speyer calls this requirement the “Trochaic Requirement”. He views inversion in German as a handy way to avoid violation of the Trochaic Requirement. Modern English, since it has lost V-second, no longer has this option. The loss of topicalization, according to Speyer, therefore follows naturally from the loss of V-second since topicalization without V-second violates the Trochaic Requirement. Modern English therefore uses topicalization sparingly compared to the other languages reviewed here. Instead, a strict alignment between syntactic structure and IS is required

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<sup>17</sup> Whether or not Russian has DPs is debatable (e.g., Bošković and Gajewski 2011, Pereltsvaig 2007), therefore, for convenience, I use NP for Russian.

resulting in the canonical IS for English shown in (38) (where 's' and 't' stand for the spatial and temporal parameters, respectively in sTOP<sub>t</sub> in (38)b).

(38) Canonical IS (*English*)

- a        SUBJECT<sub>top</sub> [...]<sub>foc</sub>  
 b        sTOP<sub>t</sub>        [...]<sub>foc</sub>

In the canonical structure in (38)a, the subject aligns with the topic and the predicate with the focus. (38)b is an all-focus sentence with an implicit or overt stage topic. Syntactic constituent structure is again aligned with IS. The only marked case is one in which the object is the topic. Evidence for this being the case is given in the dialogue in (39), parallel to the Danish in (25).

- (39) A:    Tell me about John:  
           B:    He is in love with Mary.  
           B':    ??Mary is in love with him.

Similarly, a response to 'What happened?' triggers the out-of-the-blue, all-focus reading in (40)

- (40) John is in love with Mary.

### 3.6 Fronting non-topics

According to (Frey 2006), not all initial elements are topics. Such cases are illustrated in (41). Here, according to Frey, the fronted elements are not referential and require contextualization:

- (41) a        Fast jeden Kollegen        findet der berühmte Linguist sympathisch  
               nearly every<sup>ACC</sup> colleague thinks the famous    linguist (is) nice  
               'The famous linguist thinks nearly every colleague is nice.'  
           b        In einem Garten hat Maria den Hund gefüttert  
               in a garden        has Mary the<sup>ACC</sup> dog fed  
               'Mary fed the dog in a garden.'

According to Frey, (41a) in the context (42) is perfect:

- (42) Hans fühlt sich wohl an seinem neuen Arbeitsplatz.  
           Hans feels REFL fine at his        new working place

Note that the preceding sentence introduces the 'place of work' into the context, allowing it, and any of its natural parts to be the topic of the following sentence. 'Colleagues' are clearly a natural part of a place of work and therefore qualifies as the topic of (41a). This follows if elements which are "subsets" of previously mentioned constituents are defined as topics, a definition not adopted by Frey. Frey does not supply a context for (41)b but assumes that the



preposed locational PP cannot be a topic. Yet in a framework which allows stage topics, a PP may in fact play the role of a topic. (41)b cannot answer the question: Where did Maria feed the dog? It follows that the PP does not play the role of focus. Moreover, the fact that (43) is well-formed indicates that the PP in fact must be the topic, since the other sentence constituents are indefinite and therefore do not qualify as potential topics, and a sentence must have at least one topic to be interpreted.

(43) In einem Garten hat ein Mädchen einen Hund gefüttert.  
 in a garden has a girl a dog fed

It follows that (41)b and (43) are predicated of a stage topic in which 'a garden' restricts the location defined by the discursively-available current stage.

Yet, arguments for topichood do not extend to (44) and similar examples in which the fronted elements are argued by Frey to have no information-structural impact.

(44) Leider hat keiner dem alten Mann geholfen.  
 unfortunately has nobody the<sup>DAT</sup> old man helped  
 'Unfortunately, nobody has helped the old man.'

(44) exemplifies a sentence adverbial which cannot be topical. That adverbs such as *leider* are not likely topics is uncontroversial, yet it is not obvious that sentences in which such an adverb is fronted and sentences in which it is not are equivalent from an information structural perspective. A straightforward conclusion is that fronting an element which does not function as a topic indicates that none of the other elements in the sentence is to be interpreted as a topic. This would leave the sentence topicless, not an option in a framework in which every sentence must have a topic for truth-value assignment to take place. The only other option is that sentences such as these must be predicated of a stage topic. The sentences in (45) show that an initial adverb is possible in sentences in which all the arguments are indefinite and therefore cannot be interpreted as topics. This proves that these sentences are indeed to be interpreted as having a stage topic.

(45) a Glücklicherweise hat ein Mädchen eine Leiter mitgebracht.  
 Fortunately has a girl a ladder brought  
 'Fortunately a girl brought a ladder.'

b Leider hat ein Hund einen alten Mann gebissen.  
 Unfortunately has a dog an old man bitten  
 'Unfortunately, a dog bit an old man.'

I conclude that fronting a non-topic marks the sentence as having a stage topic in German. It follows that, counter Frey, fronting adverbs to the left periphery does have information-structural impact. This impact however is not associated with the fronted element itself. Note that interpreting a sentence with a stage topic does not exclude additional topics in the

sentence. (44), for example, could be uttered in a context in which *dem alten Mann* is also a topic.

The following Danish data gives the same results:

- (46) a      Desværre      kom Hans/han ikke til selskabet.  
                  unfortunately came Hans/he not to the party  
                  'Unfortunately Hans/he didn't come to the party.'
- b      Hans/han kom desværre      ikke til selskabet.  
                  Hans/he came unfortunately not to the party  
                  'Hans/he unfortunately didn't come to the party.'

Here again, only (46)a can be employed out of context. (46)b, however, requires that the subject is interpreted as a topic, and is therefore a good response to 'Tell me about Hans.' (46)a is not a possible continuation in this context. We can therefore conclude that in these Germanic languages, when the initial element does not qualify as a topic, the sentence is interpreted with an implicit stage topic. Fronting a non-topic signals a particular IS, namely one in which none of the overt elements is a topic.

(Svenonius 2004) claims that the initial position is not a simple topic position as argued above, he claims it is a "switch topic". He includes in this category contrastive foci, speaker-oriented adverbials, discourse connectives, scene-setting adverbials and actual switch topics. If no switch topic is available, a continued topic, often the subject, is placed in initial position, and if neither a shift topic nor a continued topic is available, an expletive may appear. Svenonius's description of the elements in initial position can be captured by the following generalization: The initial element in Germanic is either a topic or else the sentence is interpreted as having a stage topic. Since the class of topics includes continued topics, switch topics, contrast, and overt stage topics, Topicalization in Germanic in these cases can be seen as motivated by the movement of a topic. It is only when the fronted element is itself not a topic that such motivation fails.

(É. Kiss 2004) demonstrates that the placement of speaker oriented sentential adverbials in English also determines IS (her (32):117):

- (47)      a      \*<sub>[TP A]</sub> baby boy luckily was born]
- b      Luckily <sub>[TP a]</sub> baby boy was born]
- c      John luckily <sub>[TP]</sub> was born on time]

(47)a shows that a non-specific subject cannot be followed by a sentence adverbial and (47)b shows that the adverb must precede such a subject. (47)c shows that a specific subject may precede the adverb. According to É. Kiss, the preverbal subject in this example is a topic. (47)b,

however, is predicated of an implicit stage topic. This data is similar to the German data in (45). There too an initial sentence adverb indicates a stage topic. The position of the adverb therefore identifies the IS of sentences in English as well with ramifications for the definiteness of the subject. A preadverbial subject must qualify as a topic and be definite (or at least specific), but a postadverbial subject need not be.

All the cases listed in this section are illustrations of a left-peripheral element which does not itself have information-structural properties, yet signals a particular information structure, namely one with a stage topic. These structures also have another property which may explain their information-structural status: Due to the fact that the left-peripheral element is not an argument, the subject is necessarily postverbal, a position in which it cannot be interpreted as a topic. The motivation for these constructions may therefore be to oust the subject from initial position in order to enable its interpretation as a non-topic, triggering, in this case, an out-of-the-blue interpretation.

One of the issues that all authors who discuss left-peripheral elements such as these, is how to motivate their movement, in view of the fact that the element that moves cannot itself be identified with particular IS properties. A different view on this problem, which raises different theoretical issues, is to take seriously the particular alignment properties of the languages in question and to examine whether the resulting alignments are in fact canonical. If so, the motivation for a particular word order would be to promote a canonical alignment. Clearly, such motivation is non-syntactic, forcing IS-motivated word order to occur at PF where both IS properties and linear order are visible. This view has the advantage of simplifying syntax and allowing linear reordering at PF.

#### 4. Focusing the subject: Existentials

One way of “marking” a sentence as being all-focus and having a stage topic is therefore for a non-topic to occupy the left peripheral position. According to (É. Kiss 2004) and (Holmberg 2000), existentials employ exactly this strategy. As argued in (Erteschik-Shir 2007), the outcome is an all-focus sentence predicated of a stage topic. (A parenthesized spatial or temporal index is one which is missing contextually):

- (48) a        (s)Top<sub>t</sub>[There is a/\*the dog in my garden]<sub>foc</sub>  
           b        sTop<sub>(t)</sub>[There is a/\*the meeting at two o'clock]<sub>foc</sub>  
           c        (s)Top<sub>t</sub>[There are many/\*all people who like icecream]<sub>foc</sub>

In such an IS, the full sentence is entered on the card for the current here-and-now which provides the stage topic and an all-focus sentence is derived. What is special about the stage topic in existentials is that it is lacking in contextual definition: either the place or the time are not contextually available and a “new” stage is defined by adding these parameters to the stage.

This can be seen in (48). In (48)a, the location is not given contextually and in (48)b, the time is missing in the context. In (48)c, no locative parameter is contextually available, yet this parameter is not provided in the sentence either, the new stage is accommodated to mean the whole world. The definition of a new stage requires new inventory. Definites presuppose a referent associated with a location. Located referents are therefore incompatible with the interpretation of a new stage. This is the explanation for the definiteness effect in existentials.<sup>18</sup>

The definition of a *new* stage in this way also provides an explanation for *when* the definiteness effect applies. (49) illustrates examples in which it does not hold:<sup>19</sup>

- (49) a      There's city hall, the museum, and the park.  
           b      There's the meeting at 2 o'clock and the office event at 4.

Such existentials generally provide a list of elements contained in a certain place, or time: (49)a could be a description of the sights in a given town. (49)b could be a response to a request for the day's schedule at the office. In both cases, the context must include reference to the stage in question, namely the town, and the office events, respectively, but what's special about these stages is that they are unpopulated. The inventory which is listed in the existential may be given, yet it is new to the stage in question. An obvious difference between the sentences in (48) and (49) is that the former lack at least one of the parameters of the stage, the latter require full contextual specification of the stage (e.g., for (49)a, a particular city, and for (49)b, a particular day at work). Since the stage is not new, the inventory on it needs not be new either. The definiteness effect is therefore predicted to hold only of **new** stages.

The contextual difference between existentials of the first type in which the DE holds and those of the second type in which it doesn't, also plays a role in the IS of the sentence as a whole. Whereas the first type is predicated of an (at least partially) unindexed stage, one for which the spatio-temporal parameters are not contextually specified, the stage topic of the second type is fully specified contextually. It follows that as part of the focus in the first kind, the missing

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<sup>18</sup> The same definiteness effect is also found in locatives such as (i) and (ii) but not in possessives such as (iii):

- (i)      My soup<sub>top</sub> [has a/\*the fly in it]<sub>loc</sub>  
 (ii)     John<sub>top</sub> [has a/\*the hat on]<sub>loc</sub>  
 (iii)    John<sub>top</sub> [has a/the hat (in his hand)]<sub>loc</sub>

In (i) and (ii) the subjects are interpreted as locations and therefore function as stage topics. Their IS is therefore parallel to that of the sentences in (48) in that these stage topics also require the filling in of the location by a prepositional phrase. (iii) differs in that the subject is interpreted as a possessor and not as a location. The definiteness effect does not apply and the addition of a locational prepositional phrase is optional.

<sup>19</sup> The literature on the definiteness effect originating with (Milsark 1974) is vast and will not be reviewed here. Leonetti 2008 offers an excellent review of literature on the definiteness effect as well as work that characterizes definites in existentials.

spatio-temporal parameter(s) must be specified, which is why such sentences are incomplete without their “coda”. This is illustrated in (50) for the examples in (48).

- (50) a      \*(s)Top<sub>i</sub>[There is a dog]<sub>foc</sub>  
b      \*sTop<sub>(t)</sub>[There is a meeting]<sub>foc</sub>  
c      \*(s)Top<sub>i</sub>[There are many people]<sub>foc</sub>

(50c) is somewhat different from the other two. It can easily be completed by a locative, but the coda, in (48)c, is a relative clause. What is wrong with (50)c is therefore not that a missing locative must be filled in, but that without some added information the sentence is incomplete, it is missing a contentful focus. One way to remedy this is to add a location, another is to add a relative clause, and a third is to supply a contrastive context in which *many people* is contrasted with *few people*, in which case *many* will be stressed. Existential sentences which are subject to the DE therefore generally include a coda as part of the focus.

As shown in (49)a, this is not a requirement for existentials of the second kind. Here the location is part and parcel of the stage, and the focus introduces the inventory on this unpopulated but given stage. No coda is therefore required. In (49)b, a coda is (optionally) present. This coda is however packaged differently with respect to IS. Compare (51) and (52):

- (51) sTop<sub>i</sub> [There's [*the meeting at 2 o'clock*]]<sub>foc</sub>  
(52) sTop<sub>(t)</sub> [There is a meeting *at 2 o'clock*]<sub>foc</sub>

(Leonetti 2008) cites (Rando and Napoli 1978) as distinguishing the codas in the two cases. With the definite in (51) the (optional) postnominal constituent is parsed as a nominal modifier and is not a real coda. What this means in the current framework is that ‘the meeting at 2 o'clock’ is the element introduced on stage. In the existential in (52), however, what is introduced on the new stage is ‘a meeting’, the coda ‘at 2 o'clock’ functions to specify the missing temporal parameter of the stage.

The more fine-tuned view of the properties of stage topics developed here provides a way of distinguishing the different types of existentials and their properties. This is missing in Leonetti 2008’s inspiring paper. Leonetti demonstrates that not all properties of existentials can be derived from the IS of the construction. Other cross-linguistic factors play a crucial role as well, in particular the language particular encoding of information structure: “Taking into account the principles of information structure in each language is essential for our understanding of the link between syntactic positions and definiteness.” (p. 139) This is very much in line with the view taken above with respect to topicalization.

Leonetti addresses the seeming non-adherence of Italian and Catalan to the definiteness effect illustrated in (53) and (54) respectively (p. 134).

- (53) C'è un cane. / C'è il cane. / C'è Gianni.  
 Cl-is a dog. / Cl-is the dog / Cl-is John
- (54) Hi ha un gos. / Hi ha el gos. / Hi ha en Joan.  
 Cl has a dog / Cl has the dog / Cl has the John

The first point Leonetti makes and argues for is that the Definiteness Effect is in fact operative in Italian and that constructions with *esserci* such as *C'è Gianni* conflate two different constructions: the existential construction and a locative construction. The Definiteness Effect shows up only in the former.

The second and more significant point he makes is the observation that “the presence of the locative coda inside the VP blocks the insertion of definite DPs: these are excluded unless the locative coda is itself (right/left-) dislocated (or removed).” (Coda Constraint, p. 142).<sup>20</sup> It follows that the Definiteness Effect shows up in these languages as long as the Coda is information-structurally integrated with the DP.

Languages, according to Leonetti, differ with respect to their “coda effects”: Italian, Catalan and French, disallow the insertion of definites in existentials (they adhere to the Coda Constraint), whereas Spanish and possibly Romanian allow it. According to Leonetti, this is becausethetic (all-focus) sentences resist subordinate ISs within them. Languages which nevertheless allow internal topic-focus partitions within such a focus, do so, because they do not have such marginalizing devices.

Leonetti’s account of the different cross-linguistic expressions of the DE in Romance languages is therefore very much along the lines of discussion of cross-linguistic differences in topicalization discussed here. In both cases the differences boil down to differences in canonical IS as well as other idiosyncratic differences between the languages.

## 5. Architecture

Cross-linguistic variations in Topicalization constraints and the Definiteness effect in existentials are viewed here as being due to differences in the mapping of Information Structure to Syntactic Structure in the languages examined. This analysis requires a view of Topic and Focus assignment as part and parcel of the externalization system, and argues against syntactic approaches such as the cartographic approach which allows for syntactic projections of topic and focus features. It therefore provides support for the view expressed in (Berwick and Chomsky 2011) (among others) that the externalization system (PF) is responsible for at least microvariation. It also follows that displacement is constrained by the externalization system and not by the computational system as generally thought. This approach is particularly appropriate since by tying the effects to information structure, it allows for the great variety in empirical findings both within and across languages.

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<sup>20</sup> As shown in section 3.3, Catalan marginalizes topics by left-dislocating shifted topics and right-dislocating continued topics.

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