Epistemic indefinites under epistemic modals in Czech

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1   Introduction

Phenomenon Epistemic indefinites are indefinites that express (i) existential quantification/discourse referent introduction and (ii) ignorance on the part of the speaker or agent with respect to the identity of the introduced referent.

(1)   *Czech*
Volal **jakýsi** student.
called some.SI student
'Some student called, I don't know who it was.'

(2)   *Slovak* (Richtarčíková 2013)
Dnas sa tu obšmietal **akýsi** muž, vravel, že by sa chcel učiť lietať.
today refl here sneak some.SI man said that subj refl want learn fly
'Today some man was sneaking around, he said that he would like to learn to fly.'

(3)   *Russian* (Geist 2008)
Kakojto student spisyval na ekzamene. Ja pytajus' vyjasnit', kto eto byl.
some.TO student cheated on exam I try find.out who it was
'A student (not known to the speaker) cheated on the exam. I am trying to figure out who.'

(4)   *German* (Kratzer and Shimoyama 2002; Aloni and Port 2011, to appear)
Irgendein Student hat angerufen.
IRGEND.a student has called
'Some student called, I don't know who it was.'

(5)   *French* (Jayez and Tovena 2008)
Hier, Yolande a dû rencontrer **quelque** amie.
yesterday Yolande has must meet some friend
'Yesterday, Yolanda must have met some friend or other.'

(6)   *Romanian* (Fălăuş 2011)
E posibil ca Maria să se fi întâlnit cu **vreun** prieten şi să fi rămas cu el
is possible that Maria subj refl be met with VRE.a friend and subj be remained with him
în oraş.
in town
'It is possible that Maria met some friend, the speaker doesn't know which friend, and stayed with him in town.'

Problem The Czech epistemic indefinite (-SI) is not licensed under epistemic modals, irrespective of whether these are expressed by verbs (*musí, může*) or adverbs (*určitě, možná*) and irrespective of whether they express necessity (*musí, určitě*) or possibility (*může, možná*).

(7)   *We're coming back from a party and expect to find Tom sleeping in his bed. Yet, the bed is empty and snoring sounds are coming from elsewhere in the house.*

    a. *{ **Musí / může**} spát   na **jakémsi** gauči.
          must   can   sleep.inf on some.SI   couch
          Intended: 'He must/may be sleeping on some couch (but I don't know which).'

    b. *{ **Určitě / možná**} spí   na **jakémsi** gauči.
          surely   maybe   sleeps on some.SI   couch
          Intended: 'Surely/Maybe he's sleeping on some couch (but I don't know which).'

In such a case, the default indefinite (NĚ-) must be used.

(8)   *The same context as above.*

    a. { **Musí / může**} spát   na **nějakém** gauči.
          must   can   sleep.inf on some.SI   couch
          'He must/may be sleeping on some couch (implicated: I don't know/care which).'

    b. { **Určitě / možná**} spí   na **nějakém** gauči.
          surely   maybe   sleeps on some.SI   couch
          'Surely/Maybe he's sleeping on some couch (implicated: I don't know/care which).'

Note also that specific indefinites (the determiner *jeden* 'one'), expressing speaker's capability to identify the referent, are fine, too:

(9)   *The same context as above.*

    a. { **Musí / může**} spát   na **jednom** gauči.
          must   can   sleep.inf on one   couch
          'He must/may be sleeping on a couch (entailed: I know which).'

    b. { **Určitě / možná**} spí   na **jednom** gauči.
          surely   maybe   sleeps on one   couch
          'Surely/Maybe he's sleeping on a couch (entailed: I know which).'

The constraint on Czech epistemic indefinites observed in (7) is surprising because in other languages epistemic indefinites not only are compatible with epistemic indefinites (German IRGEND-), sometimes epistemic indefinites can even license them (Romanian VRE-).

(10)   *German* (Aloni and Port 2011)
    Hans **muss** in **irgendeinem** Zimmer im Haus sein.
    Hans must in IRGEND.a   room   in house be
    'Hans must be in some room of the house (I don't know which one).'

(11)   *Romanian* (Fălăuş 2011)

    a. *Ana a   văzut **vreun** prieten.
         Ana has seen VRE.a friend
         Intended: 'Ana saw some friend.'

    b. E posibil ca   Maria să   se fi întâlnit cu **vreun** prieten. . .
         is possible that Maria subj refl be met   with VRE.a friend
         'It is possible that Maria met some friend. . .'   (repeated from (6))

Sketch of the solution The contribution of epistemic indefinites in Czech is systematically trivial under epistemic modals. More particularly, the ignorance that stems from the evidential component of epistemic modals (von Fintel and Gillies 2010) entails the ignorance expressed by the epistemic indefinite. Since epistemic indefinites must be licensed by expressing ignorance non-trivially (Aloni and Port 2011), they are ruled out under epistemic modals.

2 A pilot corpus study

2.1 Search

- **Expression** I searched the adjectival indefinite determiner *jakýsi*.

  (12)   jak -ý   -si
          how -adjectival inflection -SI (epistemic postfix)
          'some (speaker doesn't know which)'

- **Corpus** Český národní korpus ČNK (Czech national corpus); URL `http://korpus.cz/corpora/`

- **Subcorpus** SYN (corpus of synchronic texts; 1300 million words/tokens)

- **Search engine** URL `https://korpus.cz/corpora/run.cgi/first_form` (password protected)

- **Query** word, "jakýsi | jakéhosi | jakémusi | jakémsi | jakýmsi | Jakýsi | Jakéhosi | Jakémusi | Jakémsi | Jakýmsi | jakási | jakési | jakousi | Jakási | Jakési | Jakousi | jacísi | jakýchsi | jakýmisi | Jacísi | Jakýchsi | Jakýmisi", where | means OR. This corresponds to a search for *jakýsi* in all its possible forms: 6 grammatical cases (nom, acc, gen, dat, loc, instr) + 6 paradigms (sg.masc.anim, sg.masc.inanim, sg.fem, sg.neut, pl.masc.anim, pl.rest); all in all 11 forms (due to syncretisms) times 2 (initial letter small/capital).

- **Hits** 131373

- **Analysis** 300 random occurrences were chosen and 100 of them (every third one) annotated and analyzed. (The other 200 can be used later if needed.)

2.2 Annotation categories

The basic annotation categories come from Haspelmath (1997); Figure 1 shows the extended version of Haspelmath's categories, where added categories are in boldface. Table 1 provides full labels and examples of the categories.

Figure 1: An extended version of Haspelmath's 1997 map (Aguilar-Guevara et al. 2011)

Note: In order for an indefinite to qualify for one of these functions, it must (i) be grammatical in the specified context and (ii) have the specified semantics.

ABBR	LABEL	EXAMPLE
SK	specific known	*Somebody* called. Guess who?
SU	specific unknown	I heard *something*, but I couldn't tell what it was.
IR	irrealis	You must try *somewhere* else.
Q	question	Did *anybody* tell you anything about it?
CA	conditional antecedent	If you see *anybody*, tell me immediately.
CO	comparative	John is taller than *anybody*.
DN	direct negation	John didn't see *anybody*.
AM	anti-morphic	I don't think that *anybody* knows the answer.
AA	anti-additive	The bank avoided taking *any* decision.
FC	free choice	You may kiss *anybody*.
UFC	universal free choice	John kissed *any* woman with red hair.
GEN	generic	*Any* dog has four legs.

Table 1: The extended set of functions (Aguilar-Guevara et al. 2011)

2.3 Annotation method

The annotation proceeds by using the decision tree in Figure 2. For each item, a set of tests is applied in order to arrive at one or more functions.
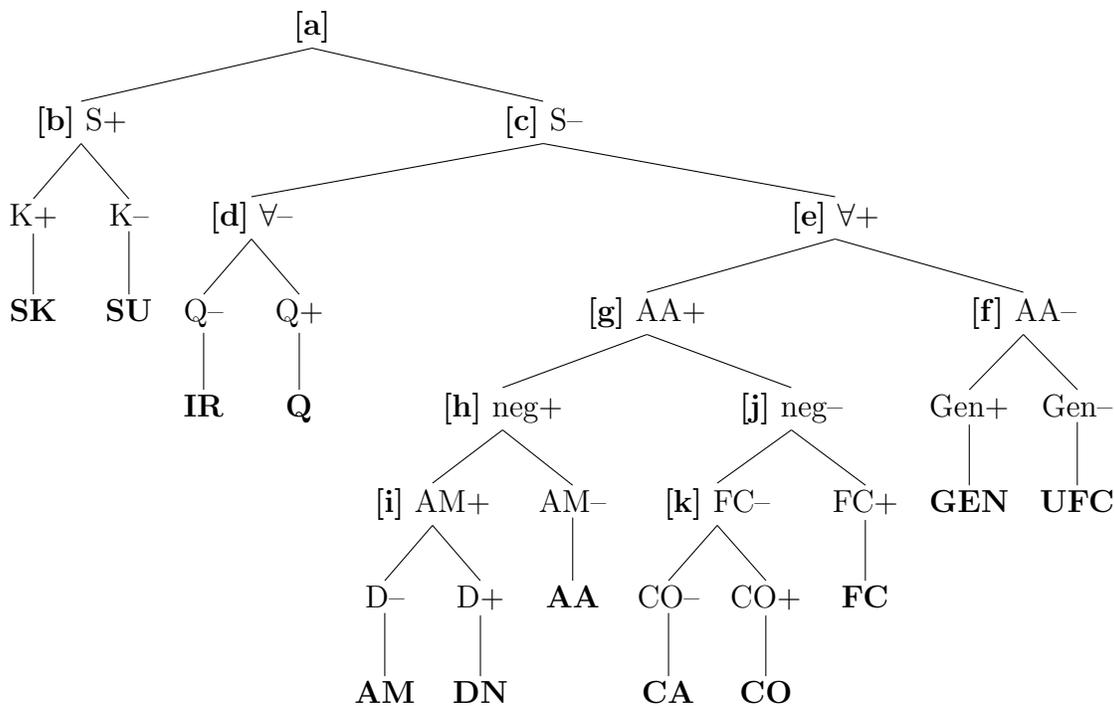
Figure 2: Decision tree (Aguilar-Guevara et al. 2011)

The tests needed for the annotation of *jakýsi* were the following:

(13)   a.   **Test for specificity**
        (i)   Does the indefinite introduce an (actual) referent? (Yes → S+)
        (ii)   Can the referent be picked up by a personal pronoun in the following discourse? (Yes → S+)
      b.   **Test for speaker's capability to identify the referent**

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      (i)   Can the sentence be followed by something like 'I don't know who/what/what kind of ... he/it was'? (Yes → SU)

      (ii)   Can the sentence be followed by 'Guess who/what.' (No → SU)

c. **Test for universal meaning**

      (i)   Can the sentence be paraphrased with a wide scope universal replacing the indefinite? (No → ∀−)

d. **Polar question or not**

      (i)   Does the indefinite occur in a polar question? (No → IR)

      (ii)   If yes, does the indefinite take narrow scope with respect to the polar question operator? (Yes → Q)

2.4   Results

About a quarter of the occurrences of NPs with *jakýsi* qualified as specific unknown indefinites. The majority qualified for the non-specific irrealis function.

Function	#
Total	100
IR	71
SU	**23**
SU/IR	3
?	3

Table 2: Results of annotation of 100 random occurrences of *jakýsi*
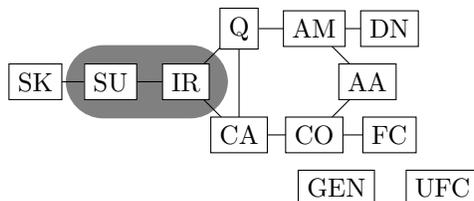
Figure 3: Haspelmath map for *jakýsi*

IR occurrences

In IR occurrences, *jakýsi* means 'something like' or 'some sort of'. It appears to modify the NP without attributing any referential properties to it. As a result, *jakýsi* in this function typically appears in (i) predicative positions, (ii) complements of creation verbs, (iii) (implicitly) intensional contexts.

35 out of the 71 IR occurrences are in predicative positions or are parts of verbo-nominal predicates. Predicates containing *jakýsi* are then always genuine predicates in the sense that they are not referential.

(14)   [...] [spätzle jsou] **jakési** halušky.
           spätzle are   some.si halušky/Slovakian gnocchi
     'Spätzle are something like halušky/Slovakian gnocchi.'

(15)   Její dům   byl **jakýmsi** středem Procházkovy rodiny.
     her house was some.si   center   Procházka's family
     'Her house was something like a center of Procházka family.'

(16) Udělá **jakési** spiklenecké gesto, [...]
      does some.SI conspirator gesture
      'He makes some sort of a conspirator gesture.'

16 internal arguments, 7 subjects, rest verbal or nominal modifiers. All the arguments are non-specific NPs, which apparently take narrow scope with respect to intensional operators, if these are present.

(17) se [...] podařilo vytvořit **jakési** perpetuum mobile.
      refl   managed create   some.SI perpetuum mobile
      'One managed to create some sort of perpetuum mobile.'   *create > perpetuum mobile*

(18) Z   mých řádek poslední doby je   cítit   **jakousi** vyrovnanost.
      from lines last   time   is   feel.inf some.SI balance
      'One can feel some sort of balance from the lines I wrote recently.'   *can > balance*

(19) Chybí jim **jakýsi** manuál s   radami, jak v konkrétní situaci   reagovat, [...]
      miss them some.SI manual with advice how in particular situations react.inf
      'They're missing some sort of manual with advice on how to react in particular situations.'
                                                                        miss > manual

(20) V nich jen při velkém úsilí zahlédneme zprávu o   nejisté   a   nejasné existenci
      in them only with big   effort see   message about uncertain and unclear existence
      jakéhosi autorova skoro-dvojníka, [...]
      some.SI   author's almost-twin
      'Only with great effort can we see a message about an uncertain and unclear existence of some
      sort of author's almost-twin.'   *can [if effort is made] > almost-twin*

SU occurrences

All SU occurrences were in episodic (non-modal) contexts.

(21) [...] tu   jsem   v dáli   spatřil [...] **jakousi** štíhlou věž.
           suddenly aux.past.1sg in distance glimpsed some.SI narrow   tower
      'Suddenly I glimpsed some narrow tower far away, I don't know what tower it was.'

(22) Přesto   místo   ní nejprve omylem   zatkli   **jakousi** Švédku.
      despite.that instead.of her first mistakenly arrested some.SI Swedish.woman
      'Despite that they first mistakenly arrested some Swedish woman, I don't know who she is/what
      her name is.'

(23) A   najednou koukám, **jakýsi** mládenec utíká [...] za   kostel [...]
      and suddenly look.1sg some.SI youngster runs   behind church
      'And suddenly I see how some youngster, I don't know who it is, is running behind the church.'

(24) Ptali se tam po   zatčení **jakéhosi** šéfa mafie v USA, jak vlastně ta mafie pracuje,
      asked refl there after arresting some.SI boss mafia in USA how actually the mafia works
      'They were asking some mafia boss in the USA, I don't know which, after arresting him, how
      the mafia actually works...'

(25) Založil jej na začátku sedmdesátých let   **jakýsi** A. J. Webermann, [...]
      founded it at beginning seventies   years some.SI A. J. Webermann'
      'At the beginning of the seventies, some (person called) A. J. Webermann founded it, I don't
      know who he is/was.'

Ambiguous occurrences

Some ambiguous examples illustrate that there is a genuine difference between SU and IR.

(26) Někteří   o   něm dokonce hovoří jako o   **jakémsi** stínovém vládci   země.
       some(.people) about him even   speak as   about some.SI shadow   governor country
   a. SU: 'There's a shadow governor of the country, I don't know which one, and some people
       even speak about him (somebody else) as about that shadow governor.'
   b. IR: 'Some even speak about him as though he were some sort of shadow governor of the
       country.'

(27) Prostitutky se   svolením   místních úřadů   poskytovaly své   služby v **jakémsi**
       prostitutes with permission local   administration offered   their services in some.SI
       zahradním altánku [...]
       garden   house
   a. SU: There's a garden house, I don't know which/what kind of, where prostitutes offered
       their services...'
   b. IR: Prostitutes offered their services in some sort of a garden house.'

Available and unavailable methods of identification

Aloni and Port (2011, to appear) argue that ignorance-expressing epistemic indefinites only express
partial ignorance. That is, there is always a way in which the speaker *can* identify the referent (otherwise
s/he couldn't felicitously express the belief that the referent exists). However, this way is not the way
that is required to convey knowledge of the referent in the context. It is in this sense that the speaker
conveys not to know/to be able to identify the referent.

(28) Speaker can identify the referent by name, but not by some contextually relevant description.
       Založil jej na začátku   sedmdesátých let   jakýsi A. J. Webermann, [...]
       founded it at beginning seventies   years some.SI A. J. Webermann
       'At the beginning of the seventies, some (person called) A. J. Webermann founded it, **I don't
       know who he is/was**.'

(29) Speaker can identify the referent by direct evidence, but not by any closer description.
       [...] tu   jsem   v dáli   spatřil   [...] **jakousi** štíhlou věž.
           suddenly aux.past.1sg in distance glimpsed some.SI narrow   tower
       'Suddenly I glimpsed some narrow tower far away, **I don't know what tower it was**.'

The following table specifies for all the SU occurrences the methods of referent identification that appear
(un)available to the speaker.

AVAILABLE	UNAVAILABLE	#	EXAMPLE
direct evidence	description (+naming)	11	(29)
reported evidence	description (+naming (+direct evidence))	8	
inference	description (+naming)	2	
naming	description (+direct evidence)	2	(28)

Table 3: (Un)available methods of identification in the 23 SU occurrences

3 More on SU indefinites (what corpus didn't tell us)

Below I look at the properties of SU indefinites that are left underspecified by the corpus study.

3.1 Scope

Extensional operators

As expected, SU indefinites take wide scope with respect extensional operators. In order to see the non-triviality of these facts, I report on the behavior of the default NĚ-indefinite.

(30) Karel nám **ne**řekl, že kontaktoval **kohosi** z Prahy.
       neg.told us that contacted somebody.-SI from Prague

    a. 'There is somebody from Prague (I don't know who) such that Karel didn't tell us that he contacted that person.'

    b. *'Karel didn't tell us that he contacted somebody from Prague.' (possibly he didn't contact anyone)

    → *Both readings available with **někoho**.*

(31) **Každý** měl za úkol kontaktovat **kohosi** z Prahy.
       everybody had for task contact somebody.SI from Prague

    a. 'There is somebody from Prague (I don't know who) such that everybody had the task to contact that person.'

    b. *'Everybody had the task to contact somebody (possibly somebody else than others) from Prague.'

    → *Both readings available with **někoho**.*

Intensional verbs, root modals, deontic modals

SU indefinites take wide scope with respect to intensional verbs, root modals, as well as deontic modals.[1]

(32) **Hledá jakousi** sekretářku.
       looks.for some.SI secretary

    a. 'There's some secretary (I don't know who) and he's looking for her.'

    b. *'He's looking for a (new) secretary.'

    → *Both readings available with **nějakou**.*

(33) **Chce** se vdát za **jakéhosi** Nora.
       wants refl marry for some.SI Norwegian.

    a. 'There's some Norwegian guy (I don't know who) and she wants to marry him.'

    b. *'She wants to marry some Norwegian (no matter who).'

    → *Both readings available with **nějakého**.*

(34) **Musí** se vdát za **jakéhosi** Nora.
       wants refl marry for some.SI Norwegian.

    a. 'There's some Norwegian guy (I don't know who) and she has to marry him.'

    b. *'She has to marry some Norwegian (no matter who).'

    → *Both readings available with **nějakého**.*

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[1]This is relevant for comparison with the German IRGEND, which takes narrow scope with respect to deontic possibility modals, where it exhibits a free choice effect, as well as with respect to bouletic modals, where it exhibits indifference effects; see Kratzer and Shimoyama (2002); Aloni and Port (2011).

Attitude predicates

SU indefinites may take narrow scope with respect to attitude predicates. Even in such cases, however, the indefinite expresses speaker (rather than attitude-holder) ignorance.

(35) Karel **si myslí**, že   každou středu   jezdí na **jakémsi** jednorožci.
      Karel refl thinks that every   Wednesday rides on some.si   unicorn

   a. 'Karel thinks that there is a unicorn (I don't know anything about it) and that he rides it every Wednesday.'

   b. #'There's a unicorn (I don't know anything about it) and Karel thinks that he rides it every Wednesday.'

3.2   Always speaker, never agent ignorance

As already suggested above, the ignorance is always interpreted relative to the speaker, (probably) never relative to another salient agent.

(36) Petra říkala, že   na katedře lingvistiky potkala jakéhosi Gisberta Fanselowa.
      Petra said   that on institute linguistics met   some.si Gisbert Fanselow

   a. *'Petra said that she met some (person called) Gisbert Fanselow, she didn't know who he was.'

   b. 'Petra said that she met some (person called) Gisbert Fanselow, I don't know who it was (whether it was really Gisbert or just somebody of that name).'

3.3   Methods of identification (un)available to the speaker

Aloni (2001); Aloni and Port (2011) distinguish between three types of identification methods: by direct evidence (ostension/being able to point at the referent when it/he/she is directly witnessed), by naming, and by description. Despite the clear tendency found in the corpus study (available: direct/reported evidence; unavailable: description), all possible combinations of the (un)availability of these methods are allowed in Czech.[2]

(37) Available: **description**, Unavailable: **naming**
      Mám   se setkat s   jakýmsi profesorem. Je to vedoucí katedry, ale nevím,   jak
      have.1sg refl meet with some.si professor   is it leader institute but neg.know.1sg how
      se jmenuje.
      refl names
      'I'm supposed to meet some professor. I know it's the leader of the institute but I don't know what his name is.'

(38) Available: **description**, Unavailable: **direct evidence**
      Mám   se setkat s   jakýmsi profesorem. Je to vedoucí katedry, ale nevím,   jak
      have.1sg refl meet with some.si professor   is it leader institute but neg.know.1sg how
      vypadá.
      looks
      'I'm supposed to meet some professor. I know it's the leader of the institute but I don't know what he looks like.'

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[2]In this respect, Czech -si behaves more like the German IRGEND- than the Italian UN QUALCHE or the Spanish ALGÚN (see Alonso-Ovalle and Menéndez-Benito 2003; Aloni and Port 2011 for discussion).

(39)   Available: **direct evidence**, Unavailable: **naming**
       Podívej, tam se zranil jakýsi trojskokan. Nevíš, jak   se   jmenuje?
       look   there refl injured some.si triple   jumper neg.know.2sg how refl   names
       'Look, some triple jumper got injured there. Do you know what his name is?'

(40)   Available: **direct evidence**, Unavailable: **description**
       Podívej, tam spadl jakýsi běžec. Nevíš,   na kterém byl místě?
       look   there fell   some.si runner neg.know.2sg on which   was position
       'Look, some runner fell down over there. Do you know what his position was?'

(41)   Available: **naming**, Unavailable: **description**
       Mám se setkat s   jakýmsi Karlem Malým. Bohužel   o   něm ale nic
       have refl meet with some.si Karel Malý   unfortunately about him but nothing.nci
       nevím.
       neg.know.1sg
       'I'm supposed to meet some.si (person called) Karel Malý. Unfortunately, I don't know anything
       more about him.'

(42)   Available: **naming**, Unavailable: **direct evidence**
       Mám se setkat s   jakýmsi Ondřejem Bláhou, ale nevím,   jak vypadá.
       have refl meet with some.si Ondřej   Bláha   but neg.know.1sg how looks
       'I'm supposed to meet some (person called) Ondřej Bláha, but I don't know what he looks like.'

(43)   Available: **direct evidence & naming**, Unavailable: **description**
       Podívej, tam právě představují jakéhosi Jardu Nováka. Nevíš,   kdo to je?
       look   there just introduce.3pl some.si Jarda Novák neg.know.2sg who it is
       'Look, they're just introducing some (person called) Jarda Novák. Do you know who it is?'

4   Analysis

Recall the problem (repeated from (7)):

(44)   *We're coming back from a party and expect to find Tom sleeping in his bed. Yet, the bed is empty
       and snoring sounds are coming from elsewhere in the house.*
       a. *{ **Musí** / **může**} spát   na **jakémsi** gauči.
           must   can   sleep.inf on some.si couch
           Intended: 'He must/may be sleeping on some couch (but I don't know which).'
       b. *{ **Určitě** / **možná**} spí   na **jakémsi** gauči.
           surely   maybe   sleeps on some.si couch
           Intended: 'Surely/Maybe he's sleeping on some couch (but I don't know which).'

We need: 1. Analysis of epistemic indefinites and the ignorance effect. 2. Analysis of epistemic modals.

4.1   Aloni & Port: Epistemic indefinites as identification method-shifters

Aloni's (2001) conceptual covers

The example below is true, false, or trivially true, depending on which identification method one chooses.[3]

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[3]The presentation of Aloni's theory is highly simplified. Its formal correctness is not guaranteed, please consult the original work. All mistakes are mine.

(45)   *Two cards are face down in front of me. I know that the winning card is Ace of Spades. However,*
        I don't know if it is the left one or the right one.
        I know which card is the winning card.

Idea: A method of identification corresponds to a conceptual cover—a set of individual concepts that exhaustively covers the relevant domain of individuals. Technically, the cover is modeled as an index (m, n, o) that gets interpreted by a conceptual perspective $\wp$—a function akin to an assignment—which maps cover indices to conceptual covers.

(46)   a. $[\![\text{which}_m \text{ card}]\!]^\wp = \wp(m)(\text{card}') = \{\text{Ace of Spades, Ace of Hearts}\}$
        b. $[\![\text{which}_n \text{ card}]\!]^\wp = \wp(n)(\text{card}') = \{\text{the card on the left, the card on the right}\}$
        c. $[\![\text{which}_o \text{ card}]\!]^\wp = \wp(o)(\text{card}') = \{\text{the winning card, the losing card}\}$

(47)   *In the above context*
        a. $[\![\text{I know which}_m \text{ card is the winning card}]\!]^\wp = \text{TRUE}$
                                            (I know that the winning card is Ace of Spades)
        b. $[\![\text{I know which}_n \text{ card is the winning card}]\!]^\wp = \text{FALSE}$
                                            (I don't know whether it's on the left or on the right)
        c. $[\![\text{I know which}_o \text{ card is the winning card}]\!]^\wp = \text{TRUE (trivially)}$
                                            (I know the winning card is the winning card)

Aloni and Port's (2011; to appear) application to epistemic indefinites

Idea: Referents of epistemic indefinites are identified via a method different from the one contextually required for knowledge.

Indefinites induce an obligatory (quantification) **domain shift**; two examples:

- Domain widening (see Kadmon and Landman 1993 for *any*): $[\![\text{a card}]\!] \subseteq [\![\text{any card}]\!]$

- Conceptual cover (CC-)shift: $[\![\text{some.SI}_n \text{ card}]\!]^\wp$, where n is shifted from m (different from n); while using m would have led to speaker's capability to identify/know the referent, it is n that is contextually required to identify/know the referent.

They express a **felicity condition:** the shift is only justified if it is for a reason:

- Domain widening must lead to strengthening (*John does *(not) have any book.*)

- CC-shift leads to necessary weakening (ignorance effect).

Example (repeated from (23)); imagine it is uttered in a context of testifying at the court.

(48)   A   najednou koukám, **jakýsi** mládenec utíká [...] za   kostel [...]
        and suddenly look.1sg some.SI youngster runs   behind church
        'And suddenly I see how some youngster, I don't know who it is, is running behind the church.'

(49)   a.   *Required for knowledge in this context: naming*
             $[\![\text{some.SI}_m \text{ youngster}]\!]^\wp = \{\text{John, Paul, Dave, ...}\}$
        b.   *Speaker identifies the referent in a different (shifted) way: direct evidence*
             $[\![\text{some.SI}_n \text{ youngster}]\!]^\wp = \{\text{the youngster over there, this youngster over here, that (pointing)}$
             youngster with black hair, $...\}$
        c.   *Resulting meaning:*
             $[\![\text{some.SI}_n \text{ youngster runs}]\!]^\wp = $ the youngster over there runs or the youngster over here runs
             or that youngster with black hair runs or $... = \exists x.x \in \{\text{the youngster over there, this}$
             youngster over here, that (pointing) youngster with black hair, $...\} \wedge x$ runs

If the shift from m to n is non-vacuous (i.e., the speaker indeed can't identify the referent by name), then the ignorance effect follows:

(50) $\neg\exists x.x \in \{\text{John, Paul, Dave, \dots}\} \wedge$ the speaker knows that x runs

4.2   von Fintel & Gillies: Epistemic modals and their evidential component

von Fintel and Gillies (2010) discuss what they call *Karttunen's problem* (see Karttunen 1972): According to modal logic, (51a) entails (51b), but that conflicts with our intuition, which says that (51b) is stronger than (51a).

(51)   Where are the keys?
    a.   They must be in the kitchen drawer.
    b.   They are in the kitchen drawer.

von Fintel and Gillies argue that (51a) feels weaker because it involves an evidential component which roughly says (52a). This triggers the implication in (52b).

(52)   a.   Whether or not the keys are in the kitchen drawer is not settled by speaker's direct evidence.
    b.   The claim that the keys are in the kitchen drawer relies on speaker's indirect (inferential) evidence.

Support: (53b) does not satisfy the presupposition that whether it is raining is not settled by my direct evidence.

(53)   I'm looking out of the window and see that it's raining.
    a.   It's raining.
    b. #It must be raining.

What happens if epistemic modals are used with an existential in them?

(54)   Somebody must be at the front door.
    a.   Whether or not somebody is at the front door is not settled by speaker's direct evidence.
    b.   **The speaker has no direct evidence that somebody is at the front door.**
    c.   The speaker has no direct evidence that nobody is at the front door.

4.3   Putting the two together

Consider first our example with the default NĚ-indefinite.

(55)   *We're coming back from a party and expect to find Tom sleeping in his bed. Yet, the bed is empty and snoring sounds are coming from elsewhere in the house.*
    Určitě spí   na **nějakém** gauči.
    surely   sleeps on NĚ.some   couch
    'Surely he's sleeping on some couch.'

(56)   a.   *Core meaning*
        $\forall w \in B_{\text{speaker}}(w_0) \rightarrow \exists x.x$ is a couch & Tom is sleeping on x in w
    b.   *Evidential implication*
        The speaker has no direct evidence that $\exists x.x$ is a couch & Tom is sleeping on x

Now the same example with the epistemic -SI indefinite.

(57)   *We're coming back from a party and expect to find Tom sleeping in his bed. Yet, the bed is empty
         and snoring sounds are coming from elsewhere in the house.*
         *Určitě spí   na **jakémsi** gauči.
         surely   sleeps on some.SI   couch
         Intended: 'Surely he's sleeping on some couch, I don't know which one.'

Note: The epistemic modal dictates that what is required for knowing that Tom is sleeping on some
couch is direct evidence (without it, one can only infer that Tom is sleeping on some couch). This carries
over to the CC-shift induced by the epistemic indefinite: the ignorance is stated with respect to direct
evidence.

(58)   a.   *Core meaning*
              $\forall w \in B_{\text{speaker}}(w_0) \to \exists x.x$ is a couch (identified by other than direct evidence) & Tom is
              sleeping on x in w
        b.   *Evidential implication*
              The speaker has no direct evidence that $\exists x.x$ is a couch (identified by other than direct
              evidence) & Tom is sleeping on x
        c.   *Ignorance effect*
              It's not the case that $\exists x.x$ is a couch directly identifiable by the speaker & $\forall w \in B_{\text{speaker}}(w_0) \to$
              Tom is sleeping on x in w[4]

Deriving the infelicity

(59)   a.   Intuitively, (58b) entails (58c).[5]
        b.   The ignorance effect is expressed even without the use of the epistemic indefinite (cf. (56b)).
        c.   The use of the epistemic indefinite is only licensed if it induces weakening (Aloni and Port
              2011).
        d.   In this case, the meaning is weakened independently, due to the epistemic modal. Hence,
              the use of the epistemic indefinite is not licensed and leads to infelicity.

4.4   Predictions

Possibility modals

The infelicity is expected to arise independently of the quantificational force of the epistemic modal.

(60)   *Context as above.*
         *Možná spí   na **jakémsi** gauči.
         surely   sleeps on some.SI   couch
         Intended: 'Maybe he's sleeping on some couch, I don't know which one.'

(61)   a.   *Core meaning*
              $\exists w \in B_{\text{speaker}}(w_0)$ & $\exists x.x$ is a couch (identified by other than direct evidence) & Tom is
              sleeping on x in w
        b.   *Evidential implication*
              The speaker has no direct evidence that $\exists x.x$ is a couch (identified by other than direct
              evidence) & Tom is sleeping on x

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[4]More precisely, the ignorance should be stated on top of the whole epistemic statement: 'There's no couch directly
identifiable by the speaker such that the speaker knows that Tom must be sleeping on that couch.' I think that the simpler
formulation above doesn't change anything about the truth conditions.

[5]More generally, it seems that having no direct evidence about the existence of some P entails the non-existence of any
P identified by direct evidence.

c.   *Ignorance effect*
It's not the case that $\exists x.x$ is a couch directly identifiable by the speaker & $\forall w \in B_{\text{speaker}}(w_0) \rightarrow$ Tom is sleeping on x in w[6]

Quantifiers over non-speaker states

The infelicity is expected to be lifted if the modal quantifies over a belief state of somebody else than the speaker. This is because the ignorance is always speaker's.

(62)   **Podle**   **Marie** Tom **možná** spí   na **jakémsi** gauči.
according.to Marie   Tom maybe sleeps on some.SI   couch
'According to Mary, Tom might be sleeping on some couch (I don't know which).'

In this case, (63b) does not entail (63c).

(63)   a.   *Core meaning*
$\exists w \in B_{\text{mary}}(w_0)$ & $\exists x.x$ is a couch (identified by other than speaker's direct evidence) & Tom is sleeping on x in w
b.   *Evidential implication*
Mary has no direct evidence that $\exists x.x$ is a couch (identified by other than speaker's direct evidence) & Tom is sleeping on x
c.   *Ignorance effect*
It's not the case that $\exists x.x$ is a couch directly identifiable by the speaker & $\forall w \in B_{\text{speaker}}(w_0) \rightarrow$ Tom is sleeping on x in w

Operators with no evidential component

The infelicity is expected not to arise with epistemic operators that do not involve any evidential component.

(64)   **Věřím**,   že   Tom spí   na **jakémsi** gauči.
believe.1sg that Tom sleeps on some.SI   couch
'I believe that Tom is sleeping on some couch (I don't know which).'

Here the ignorance effect is not entailed by anything and hence is justified.

(65)   a.   *Core meaning*
$\forall w \in B_{\text{speaker}}(w_0) \rightarrow \exists x.x$ is a couch (identified by other than direct evidence) & Tom is sleeping on x in w
b.   *Ignorance effect*
It's not the case that $\exists x.x$ is a couch directly identifiable by the speaker & $\forall w \in B_{\text{speaker}}(w_0) \rightarrow$ Tom is sleeping on x in w

Evidential markers

Unlike epistemic modals, evidentials mark the available evidence rather than the missing evidence (required for knowledge). It seems that the CC-shift induced by the epistemic indefinite is guided by the evidential marker (the identification method relies on reported evidence: some couch that somebody mentioned).

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[6]Again, the ignorance should be stated on top of the whole epistemic statement: 'There's no couch directly identifiable by the speaker such that the speaker knows that Tom might be sleeping on that couch.'

(66) Tom **prý**   spí   na **jakémsi** gauči.
      Tom allegedly sleeps on some.SI   couch
      'They say that Tom sleeps on some couch (I don't know which).'

Since there is no conventional statement of there being no evidence required for knowledge (though this might be conversationally implicated), the ignorance induced by the epistemic indefinite is not entailed.

(67) a. *Core meaning*
          They say that $\exists x.x$ is a couch (identified by reported evidence) & Tom is sleeping on x
      b. *Conversational implicature*
          The speaker has no more reliable evidence than the reported one that $\exists x.x$ is a couch &
          Tom is sleeping on x
      c. *Ignorance effect*
          It's not the case that $\exists x.x$ is a couch identifiable by the speaker in the way required for
          knowledge & $\forall w \in B_{\text{speaker}}(w_0) \to$ Tom is sleeping on x in w

IR uses of the indefinite

I have assumed that SU uses genuinely differ from IR uses. The idea is that only SU uses of the epistemic indefinite employ a CC-shift. The prediction therefore is that IR uses are compatible with epistemic modals.

(68) Její dům   byl **určitě jakýmsi** středem Procházkovy rodiny.
      her house was surely some.SI   center   Procházka's family
      'Surely, her house was something like a center of Procházka family.'   (modified from (15))

4.5   Open issues

- Are there any correlates of the observed effect in other languages? Candidates: German *so'n* in German (Malte Zimmermann, p.c., Umbach and Ebert 2009) English indefinite article in combination with proper names (Luis Vicente, p.c.).

- Why are epistemic indefinites in other languages compatible with epistemic modals?

- Can we find contexts where epistemic indefinites are good under epistemic modals after all? Perhaps when the ignorance is expressed with respect to different aspects of direct evidence (Luis Vicente, p.c.)?

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