The Particular Negative

A Distributional Study on Some Aspects of Meaning Contradicting Logical Equivalence

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Introduction

- What are particular negative statements?
- What types of particular negative statements did we take into account?

The Distributional Study

- How did we carry out the distributional study?
- Which aspects did we take into account?
- Results and final observations
- Possible future work

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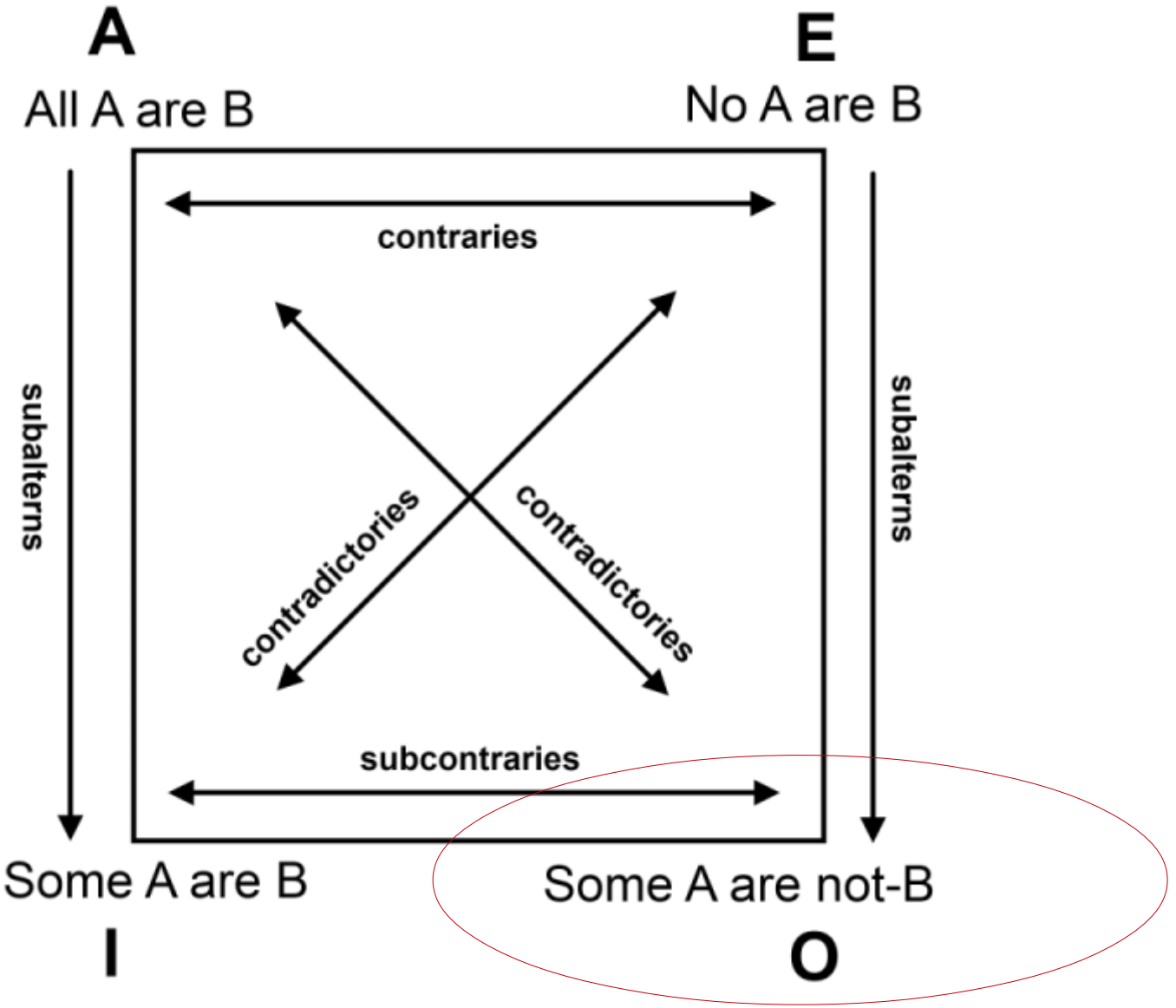
Introduction

- What are particular negative statements?

The Aristotelian Square of Opposition



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Introduction

- What types of particular negative statements did we take into account?

The Particular Negative:

Focus on the **O corner** of the Aristotelian Square of Opposition

- We want to account for two types of particular negative expressions, i.e. two expressions involving quantifiers which are used within particular negative statements:
- *Not all;*
- *Some* followed by a verbal negation (*some not*).

Two example statements fo the two expressions under discussion are:

- *Not all birds can fly*;
- *Some birds cannot fly*.

Not all *birds can fly* vs. ***Some*** *birds can****not*** *fly*

Even though the two statements are logically equivalent, we want to check whether *not all* and *some not* are used in **different contexts** and for **different purposes**.

So, we want to look for those **aspects of meaning** related to the two expressions which might **contradict their logical equivalence**.

So, there might be some sort of incompatibility between two levels of meaning:

- *Logical*
- *Conversational*

logical level vs. *conversational level*

This possible incompatibility has already been highlighted by Jespersen(1924), Grice (1975), Horn (1989) within the treatment of the inference from *some* to *not all:*

Some birds can fly = Not all birds can fly

The inference from the first sentence to the second is widely recognised as an example of **scalar implicature** (Grice, 1975).

'[…] no special logical treatment of the inference from *some* to *not all* (*some not*) is required – which is just as well, since the context dependance and epistemic qualification associated with the inference would vitiate a logical treatment in any case.' (Horn, 1989: 213)

Hence, the theoretical assumption at the basis of the study:

On the one hand, two quantified expressions that are not equivalent from a logical point of view might be equivalent from a conversational one...

Some birds can fly = Not all birds can fly

...on the other hand, two quantified expressions that are equivalent logically might not be equivalent conversationally.

Not all birds can fly ≠ Some birds cannot fly

Where are we going to look for such differences and such aspects of meaning?

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Within the **different contexts of occurrence** of *not all* and *some not*

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We want to check these aspects by carrying out a **corpus-based distributional study** on *not all* and *some not*:

- In which kind of contexts do they usually occur?
- What are the differences between the contexts surrounding *not all* and *some not* ?

Distributional Semantics

Distributional Hypothesis:

Words and phrases which appear in **similar contexts** have **similar meanings**; in statistical terms, if an expression is likely to appear in a certain context, that context has an i**nfluence** on its meaning.

The theoretical basis of distributional semantics traces back to structuralist linguistics and British corpus linguistics (Harris, 1954; Firth, 1957).

Up-to-date accounts of the framework and methods of analysis related to distributional semantics can be found in Widdows (2004), Padò and Lapata (2007), Lenci (2008), Baroni and Lenci (2010).

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The Distributional Study

- How did we carry out the distributional study?

Choosing a suitable corpus...

The distributional study has been carried out on a written corpus; since we needed a corpus which is likely to capture at least some **conversational** aspects of language, we chose an **Intenet-based corpus.**

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Nowadays, it is widely recognised that texts on the web are mostly characterized by a **conversational style**, and various manuals of web writing (Felder, 2012; Fortis, 2013) recommend using language of this kind, as it is more suitable for web users.

...the ukWaC corpus

We explored the **ukWaC corpus**, which was prepared by Adriano Ferraresi; the construction was carried out by crawling the .uk Internet domain. It contains more than **2 billions tokens** and includes 'both **pre-Web texts**' and '**texts representing Web-based genres**, like personal pages, blogs and postings in forums' (Ferraresi et al., 2008).

Retrieving the data

The ukWaC corpus has been explored within the **CIMeC** (University of Trento) server, where the corpus itself is stored and subdivided into 24 parts; the **extraction** of the occurrences of *not all* and *some not* has been made by using the basic commands of **CQP (corpus query processor) language.**

Portion of corpus explored: first 12 parts (half corpus)

Portion of context explored: 5 sentences, i.e. the one including either *not all* or *some not*, the two preceding and the two following.

> set context 3s

Not all can vs. ***Some cannot***

Analysing every single ocurrence of *not all* and *some not*, even considering only a half of the corpus, would have been particularly difficult, as we would have had to deal with an enormous number of:

- Verb and noun phrases;
- Lexical and syntactic variables.

We decided to narrow the field of the research by formulating a **more specific command**:

> “not” %c “all” [] {1,2} “can”

> “some” %c [] {1,2} “cannot|can.t”

So, we specifically focused on two strings of the type ***not all can*** and ***some cannot***.

Cleaning the data

Not all the occurrences extracted from the ukWaC corpus matched the patterns we wanted to account for.

e.g.

- We have some more information about some of these companies in our shop, just pop in. But that's *not all* you *can* do!
- We just keep up: but at the expense of *some* tasks we *cannot* tackle.

So, we carried out a **'cleaning' process** by examining each single context of occurrence:

Total number of occurrences	**Before** the cleaning process	**After** the cleaning process
Not all can	493	**454**
Some cannot	623	**469**

Once the data were **retrieved** and **cleaned**, our analysis on the **923** contexts of occurrence of *not all can* and *some cannot* could finally get started!

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The Distributional Study

- Which aspects did we take into account?

1 – Context analysis (1)

Focus on the following aspects:

1) The **quantity** with which the **two expressions** and their **alternatives** (i.e. 'those who cannot' and 'those who can') are most likely to be associated;

2) Which one of the two expressions is most likely to be **specified** by means of **examples** within its context of occurrence;

1 – Context analysis (2)

3)Which one is more frequently used within **disjunctive structures** (involving words such as *but*, *however*, *although*...);

4)Which one is more likely to be based on **presuppositions** related to the same predicate as applied to ***all***. (For example, for statements such as *not all humans are honest* and *some humans are not honest* to be understood properly, they need to be related to the presupposition that *all humans are honest* represents an ideal situation.)

...presuppositions related to *all*

By using either *not all can* or *some cannot*, what is one likely to presuppose on the same predicate as applied to the whole quantity? We considered **three kinds** of presupposition:

- *All* is the **ideal situation.** It is signalled by adverbs such as *unluckily* and *unfortunately*, or expressions such as *it's a pity that*.
- *All* represents an **unachievable condition**. This reading can be triggered by adverbs such as *obviously* and *of course*.
- *All* is connected with a **possible wrong belief** of the addressee (introduced by words and phrases such as *note that, beware tha*t, *be careful*:,etc.).

2- Word co-occurrence analysis

What are the words occurring most frequently along with *not all can* and *some cannot* within the first half of the ukWaC corpus?

- For the purpose, we considered only the **single sentences** in which the two expressions are included.
- **Grammar words** (*the*, *that*, *if*, *of*, etc.) have **not** been taken into account.
- **Total number** of co-occurring words (wordcounttools.com):
  - 8576 for *not all can*;
  - 10500 for *some cannot*.

The Particular Negative

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The Distributional Study

- Results and final observations

Results – Context analysis

1) *Not all can* is followed by a **reference to its complement** (i.e. to those who/which can) more frequently than is *some cannot* (12,4% of the contexts for *not all can* and 6% for *some cannot*); moreover, such alternatives are often associated with quantifiers such as *most*, *many*, *the majority of*;

2) *Some cannot* is more frequently followed by **examples** specifying who or what *some* refers to (14,9% vs. 6,3%);

3) Both *not all can* and *some cannot* are very often used within **disjunctive structures** (34,1% and 21,3% of the contexts);

4) Presuppositions related to *all* underlie more frequently the use of *not all can* than that of *some cannot* (8,1%, 9,4%, 6,8% vs. 2,5%, 2,3%, 4,3%).

Not all can	Items referred to *not all*		Items referred to the alternative		Disjunctive structures	Presuppositions		
	Ex.	Q	Ex.	Q		1	2	3
	29 (6,3%)	22 (4,8%)	23 (5%)	34 (7,4%)	155 (34,1%)	37 (8,1%)	43 (9,4%)	31 (6,8%)
Some cannot	Items referred to *some*		Items referred to the alternative		Disjunctive structures	Presuppositions		
	Ex.	Q	Ex.	Q		1	2	3
	70 (14,9%)	17 (3,6%)	0	28 (6%)	100 (21,3%)	12 (2,5%)	11 (2,3%)	20 (4,3%)

Results – Word co-occurrence analysis (1)

Not all can		***Some cannot***	
Words	Occurrences	Words	Occurrences
will	41 (5,6%)	people	81 (8,5%)
people	28 (3,8%)	will	40 (4,2%)
time	23 (3,2%)	because	38 (4,0%)
afford	21 (2,9%)	things	28 (2,9%)
work	20 (2,7%)	need	26 (2,7%)
used	18 (2,5%)	afford	23 (2,4%)
same	17 (2,3%)	children	21 (2,2%)
us	17 (2,3%)	time	20 (2,1%)
due	16 (2,2%)	simply	19 (2,0%)
should	16 (2,2%)	others	19 (2,0%)
browsers	14 (1,9%)	always	18 (1,9%)

Results – Word co-occurrence analysis (2)

Not all can		***Some cannot***	
Words	Occurrences	Words	Occurrences
support	14 (1,9%)	still	18 (1,9%)
because	14 (1,9%)	without	17 (1,8%)
get	14 (1,9%)	being	17 (1,8%)
students	14 (1,9%)	cannot	17 (1,8%)
need	14 (1,9%)	work	16 (1,7%)
way	13 (1,8%)	just	16 (1,7%)
course	12 (1,6%)	get	16 (1,7%)
new	12 (1,6%)	well	14 (1,5%)
see	12 (1,6%)	like	14 (1,5%)
up	12 (1,6%)	example	14 (1,5%)
users	12 (1,6%)	easily	14 (1,5%)

Final observations (1)

1) *Some* is often specified by one or more given **examples** – a situation in which *not all* is involved less freqently.

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'Uncertain' status of *some* in terms of quantity

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If within a zero-context environment we have no clues for associating this quantifier with a given quantity, the speaker may need to build a context specifying more details about what *some* refers to: the **examples** may help the addressee resolve the uncertain status.

Final observations (2)

2) *Some cannot* is clearly less focused on the definition of an **alternative** than is *not all can*.

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No examples referred to the **alternative** of *some cannot* – that is, to *those who can* – have been found throughout the first half of the ukWaC corpus.

Furthermore, even if the alternatives of both *some cannot* and *not all can* are often associated with a large quantity, there are **more alternatives** of *not all can* which are connected with quantifiers such as *most*, *many*, *the majority of*.

Final observations (3)

3) Both *not all can* and *some cannot* are frequently involved in **disjunctive structures**.

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The **particular negative** is used quite often for either contrasting a given condition or introducing one that will then be contrasted.

4) All three **presupposition types** lie more frequently at the basis of the use of *not all can*: of course, *not all* focuses more clearly on the quantifier *all*.

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We may argue that some presuppositions play an important role in triggering the choice of the **focus of negation**.

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The Distributional Study

- Possible future work

Possible future work

- When the modal verb *can* is used within particular negative statements – as happens in all the cases I considered in the corpus-based study, is it more likely to be related to **epistemic** modality, to **deontic** modality or to an **ability**?
- With regard to the use of particular negative expressions within **disjunctive structures**, are such expression more likely to be found in the **main** clause or the **subjunctive** clause? In this respect, do *not all* and *some not* behave in different ways?
- Focusing on **languages other than English**, do particular negative statements occur in conversational contexts that are somehow 'similar' to those surrounding *not all* and *some not*?

Thank you!

...any questions??