Free choice items as fossils*

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Workshop on Indefiniteness Crosslinguistically (DGfS)
Berlin – February 25/26, 2010

1 Introduction

GOAL: report on a cross-linguistic synchronic and diachronic corpus study on free choice and epistemic indefinites and the first attempt at an analysis.

Starting point:

Two observation from two different areas of linguistic theory:

- **Formal pragmatics:** Use of expressions with existential meaning (e.g. plain indefinites like Dutch *iemand* or German *jemand* or Czech *někdo*) can give rise to different pragmatic effects. Relevant here:
  - Free choice implicature:

    (1) a. You can invite somebody.
    b. Logical form: $\Diamond\exists x \in D : \phi$
    c. Free choice implicature: each individual is a permissible option

  - Ignorance implicature:

    (2) a. Somebody called.
    b. Logical form: $\exists x \in D : \phi$
    c. Ignorance implicature: speaker doesn't know who

- **Typology:** Many languages have developed specialized forms for such meanings:
  - Free choice indefinites: Spanish *cualquiera*, Italian *qualunque*, Czech *kterýkoli*, Hungarian *akárki*, ...
  - Epistemic indefinites: Russian *to*-series, Czech *si*-series, German, *irgend*-series, Spanish *algun*, ...

- **Main hypothesis**: Different indefinite forms as fossilizations of different pragmatic effects.

  > It may not be impossible for what starts life, so to speak, as a conversational implicature to become conventionalized. (Grice 1975:58)

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Ways in which implicatures can fossilize

Fossilization of ignorance implicature

- Illustration:

(3) *plain indefinite (Czech/German)*

a. **Někdo** volal.
somebody called

b. **Jemand** hat angerufen.
somebody has called

c. Conventional meaning: Someone called

d. Ignorance implicature: Speaker does not know who

(4) *epistemic indefinite (Czech -si/German irgend-)*

a. **Kdosi** volal.
somebody:UNKNOWN called

b. **Irgendjemand** hat angerufen.
somebody:UNKNOWN has called

c. Conventional meaning: Someone called and I do not know who

- Characteristics of fossilized ignorance implicature: non-cancelable, but not embeddable

(5) a. #Pochybuju, že **kdosi** volal.
doubt that somebody:UNKNOWN called
'I doubt that somebody [such that I don't know who it is] called.'

b. Ich habe Zweifel dass **irgendjemand** angerufen hat.
I have doubt that somebody called has

c. Conventional meaning: I doubt that anyone called

d. Impossible meaning: I doubt that someone called and I don't know who it is.

- Formalization: via lexically encoded blocking of contextual restrictions on the domain (see Port 2010 for discussion). This blocking will lead to

(i) obligatory shifts to non-rigid identification methods (i.e. conceptual covers, cf. Aloni 2001) in epistemic cases like (4) and (5a) [CC]

(ii) domain widening (cf. Kadmon and Landman 1993) in NPI uses like (5b). [DW]

- German *irgend-* allows for both options: DW [in non-specific contexts] and CC [in specific contexts]

- Czech *-si* only allows for CC shifts [fine only in specific contexts].

Fossilization of free choice implicature

- Illustration:

(6) *plain indefinite (Spanish)*

a. Puedes traerme **un** libro.
can:2SG bring:INF:me a book

b. Conventional meaning: You can bring me a book

c. Free choice implicature: each book is a possible option

(7) *FC determiner (Spanish)*

a. Puedes traerme **cualquier** libro.
can:2SG bring:INF:me any book

b. Conventional meaning: You can bring me a book and each book is a possible option

- Characteristics of fossilized free choice implicature: non-cancelable, and embeddable

(8) a. No puedes traerme **cualquier** libro.
NEG can:2SG bring:INF:me any book
b. Conventional meaning: You cannot choose which book you bring me

- Formalization via mechanism of propositional quantification in alternative semantics (Kratzer and Shimoyama 2002)
- We turn to this later in the discussion.

2 Corpus study: diagnostics and methodology

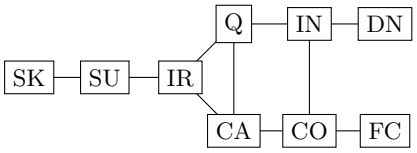
- We studied the following indefinite forms:[1]
  - Spanish: *cualquiera*
  - Czech: *kterýkoli*
  - German: *irgendein*
  - Italian: *(uno) qualunque*
  - Dutch: *wie dan ook*
- We carried out
  - syntactic and semantic annotation
  - functional (context/meaning) labeling
- The goal of corpus study is the understanding of
  - what is fossilized (synchronic)
  - how it happened (diachronic)

Implicational maps

Haspelmath's map

- Haspelmath's (1997) original functional map identifies 9 main functions (context/meaning) for indefinite forms:

(9) *Haspelmath's map*



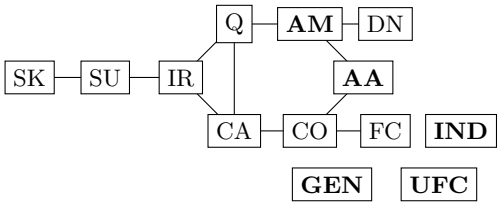
  - Haspelmath proposes that an indefinite form will always express a set of functions that are contiguous on the map;
  - The prediction is that items which acquire new functions will develop first those functions that are adjacent to the original function.

[1] We are grateful to Machteld de Vos for the preliminary study of Dutch.

Our fine-grained version

- For the purpose of our more detailed corpus study, we extend on certain functions (IN becomes AA, AM; FC becomes FC, UFC, GEN, IND):

(10) *Our map*



(11) *Functions on the map*

		Abbr	Label	Example
	a.	SK	specific known	*Somebody* called. Guess who?
	b.	SU	specific unknown	I heard *something*, but I couldn't tell what it was.
	c.	IR	irrealis	You must try *somewhere* else.
	d.	Q	question	Did *anybody* tell you anything about it?
	e.	CA	conditional antecedent	If you see *anything*, tell me immediately.
	f.	CO	comparative	In Freiburg the weather is nicer than *anywhere* in Germany.
	g.	DN	direct negation	John didn't see *anybody*.
→	h.	AM	anti-morphic	I don't think that *anybody* knows the answer.
→	i.	AA	anti-additive	The gravity of such act goes beyond *any* justification.
→	j.	FC	free choice	*Anybody* can solve this problem.
→	k.	UFC	universal free choice	John kissed *any* woman with red hair.
→	l.	GEN	generic	*Any* dog has four legs
→	m.	IND	indiscriminative	I do not want to go to bed with *just anyone* anymore.

(Horn 2000)

- In order for an indefinite to qualify for a function, it must

(i) be grammatical in the context the function specifies; for SK/SU cf. *somewhere* vs. **anywhere* in (12a); and

(ii) have the semantics that the function specifies; for CO cf. *any* vs. **some* in (12b)

(12) a. He went somewhere / *anywhere else.
b. Berlin is bigger than any / *some Czech city.
'For all Czech cities it holds that Berlin is bigger than they are.'

Areas in the map

Specificity area

- Continuation test:

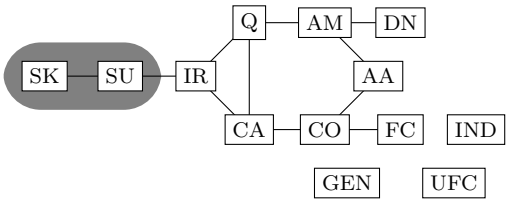
(13) (... indefinite$_i$ ...). She$_i$/he$_i$/it$_i$ ...

- Examples:

(14) I heard *something*$_i$. It$_i$ was very loud. [specific]

(15) You must try *somewhere*$_i$ else. # It$_i$ is a very nice place. [non specific]

(16) *Specificity area*



Wide scope universality area

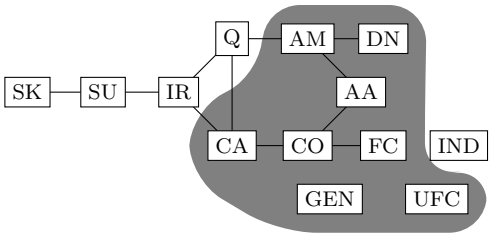
- In these functions, the indefinite expresses wide scope universal meaning.
- Test for wide scope universal meaning:

(17) $Op(\ldots \text{indefinite} \ldots) \Rightarrow \forall x(Op \ldots x \ldots)$

- Examples:

(18) a. I saw somebody. [NO] ($\not\Rightarrow$ for all x: I saw x)
b. You may kiss anybody. [YES] ($\Rightarrow$ for all x: you may kiss x)
c. I want to see somebody. [NO] ($\not\Rightarrow$ for all x: I want to see x)
d. Did you see anybody? [NO] ($\not\Rightarrow$ for all x: did you see x?)
e. I didn't see anybody. [YES] ($\Rightarrow$ for all x: I didn't see x)

(19) *Wide scope universal area*



Anti-additivity area

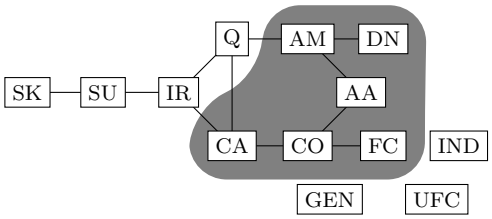
- Test for anti-additivity:

(20) $Op(a \vee b) \Rightarrow Op(a) \wedge Op(b)$

- Examples:

(21) a. You may kiss anybody. [YES] (You may kiss John or Mary ⇒ you may kiss John and you may kiss Mary)
b. You must answer any question. [NO] (You must answer question a or question b $\not\Rightarrow$ you must answer question a and you must answer question b)
c. Any dog has four legs. [NO] (Fido or Bobby has four legs $\not\Rightarrow$Fido has four legs and Bobby has four legs)
d. I didn't see anybody. [YES] (I didn't see John or Mary. ⇒ I didn't see John and I didn't see Mary)
e. Bill is taller than anybody. [YES] (Bill is taller than John or Mary. ⇒ Bill is taller than John and Bill is taller than Mary)

(22) *Anti-additivity area*



- Two facts:

(23) a. anti-additivity ⇒ wide scope universality
b. wide scope universality ⇏ anti-additivity

Narrow scope universal/generic area

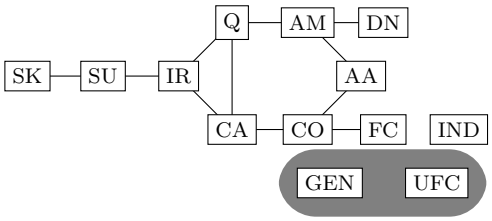
- Test: wide scope universality without anti-additivity

(24) $Op(a \vee b) \not\Rightarrow Op(a) \wedge Op(b)$

- Examples:

(25) a. You must answer any question. (You must answer question A or question B ⇏ You must answer question A and you must answer question B)
b. John kissed any girl with a red hat. (John kissed Mary or Sue ⇏ John kissed Mary and John kissed Sue)

(26) *Narrow scope universal/generic area*



Negative area

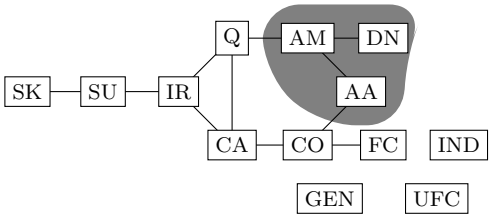
- Test for negativity:

(27) $Op(a \vee \neg a)$ is inconsistent

- Examples:

(28) a. I avoided going or staying (inconsistent) [YES]
b. No door is open or close (inconsistent, unless there is no door) [YES]
c. The door is not open or close (inconsistent, unless there is no door) [YES]
d. The door may be open or close (consistent) [NO]
e. Sleeping is better than smoking or non-smoking (consistent) [NO]

(29) *Negative area*



Restrictors area

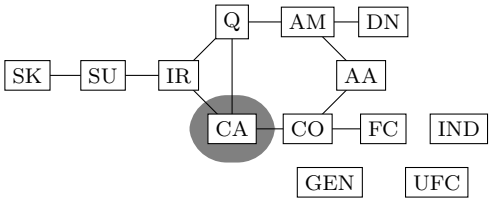
- Test for quantifier's restrictors:

  (30) If $Op(a \vee \neg a)$ is non informative

- Examples:

  (31) a. If John comes or doesn't come, I will go to the party. (antecedent is trivial)
  b. Every door that was open or close was painted red. (restriction is trivial)

  (32) *Restrictor area*



Free choice area

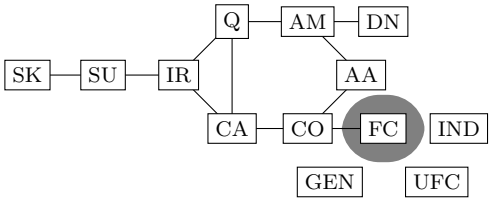
- The test

  (33) $Op(a \vee \neg a)$ is consistent and informative

- Examples:

  (34) a. You may go or stay. (consistent and informative)
  b. I would pay 1000 euro or not pay 1000 euro to make you happy, (this is a bit weird pragmatically, but still consistent and informative)

  (35) *Free choice area*

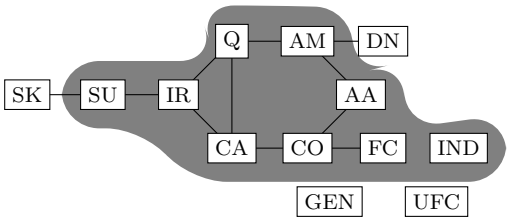


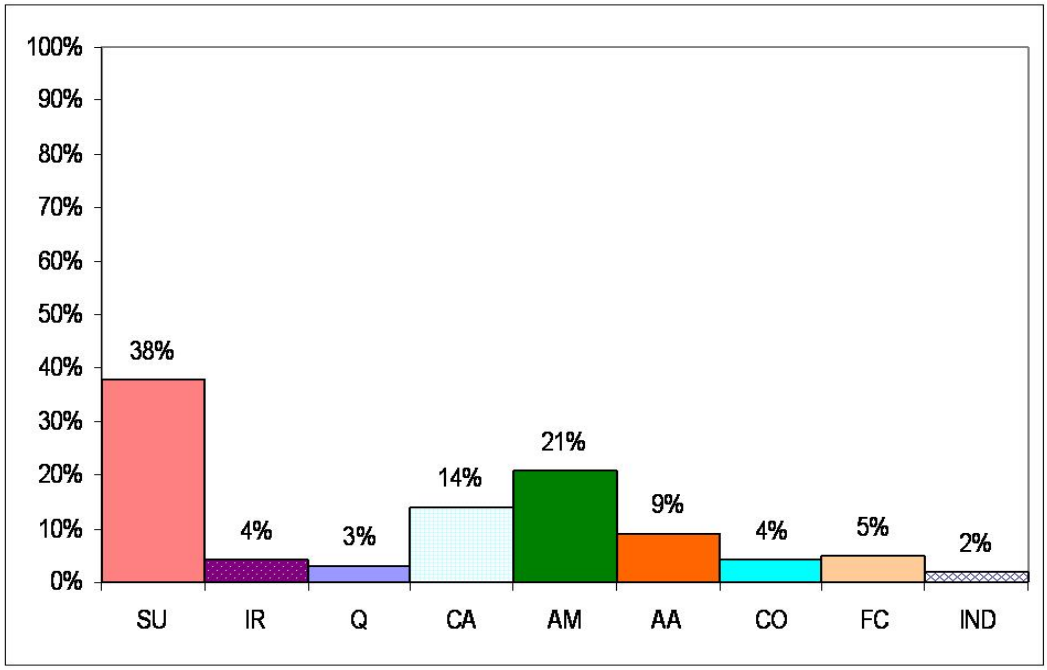
3 Synchronic corpus study

German

- Item: *irgendein* [*irgend* + *ein* 'a']
- Corpus: DWDS (Berlin-Brandenburgische Akademie der Wissenschaften; 100 million tokens, written, various registers)
- Query: irgendein* [six possible forms: *irgendein, irgendeine, irgendeiner, irgendeines, irgendeinen, irgendeinem*]
- Time of search: June 2008
- Number of occurrences: 5975 out of which 4835 available (due to copyright)
- Labeled: 300 random occurrences

(36) *Distribution*

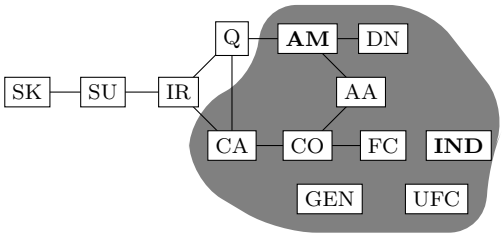


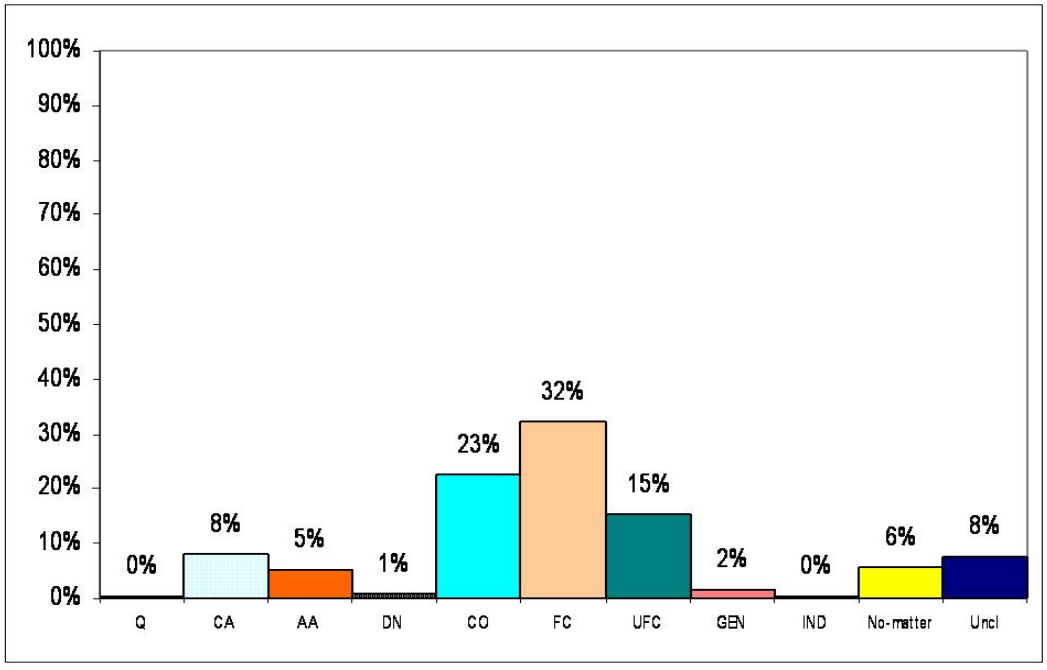


Czech

- Item: *kterýkoli* [*kter* 'which' + *koli*; *li* is a particle used in yes/no questions and conditionals in present Czech]
- Corpus: Český národní korpus ČNK (Czech national corpus); subcorpus: SYN (synchronic corpus); URL http://korpus.cz/corpora/
- Query: kterýkoli [22 forms: 6 grammatical cases / 6 noun classes / capital/small initial letters]
- Number of occurrences: 7843
- Labeled: 300 random occurrences

(37) *Distribution*

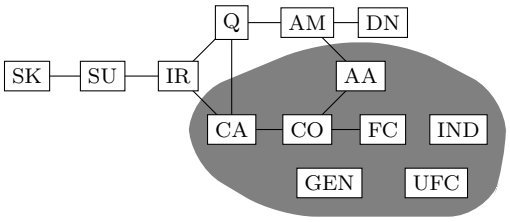


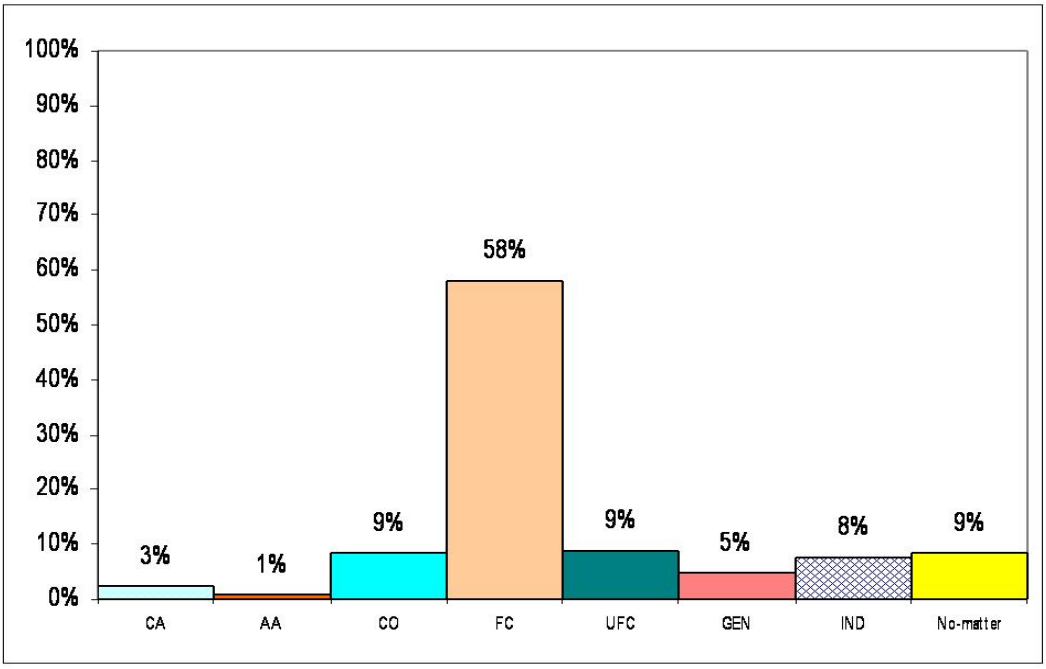


Spanish

- Item: *cualquiera* [*cual-* 'which' + *quiera* 'want:PRES.SUBJ.3']
- Corpus: CORPUS DEL ESPAÑOL (by Mark Davies; 100 million words)
- Query: *ualq* [all possible forms of *cualquier(a)* + 10 instances of completely unrelated words, which were excluded]
- Number of occurrences: 7744
- Labeled: 200 random occurrences

(38) *Distribution*

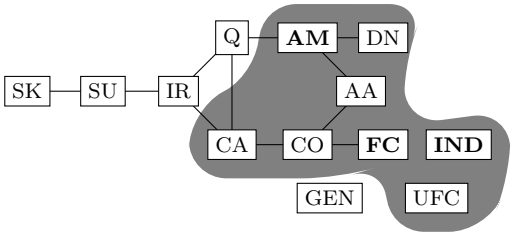


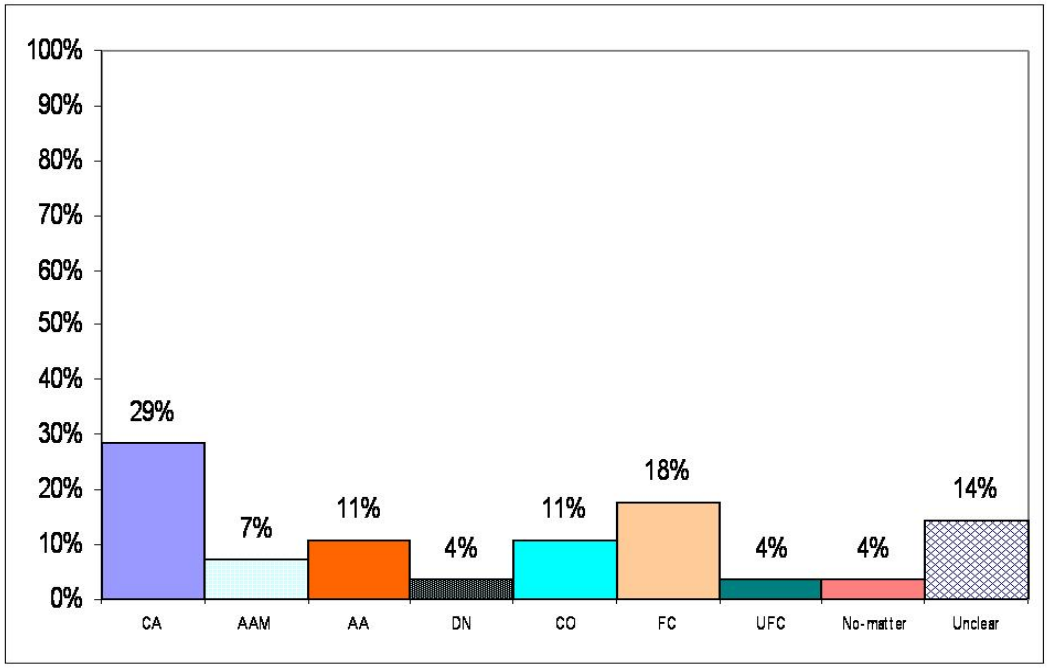


Dutch

- Item: *wie dan ook* [*wie* 'who' + *dan* 'then' + *ook* 'also']
- Corpus: Corpus Gesproken Nederlands CGN (Spoken Dutch Corpus; 10 million words)
- Query: wie dan ook
- Number of occurences: 29
- Labeled: all 29 occurrences

(39) *Distribution*

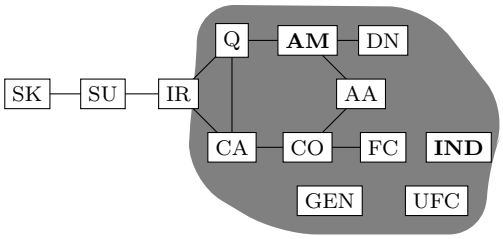


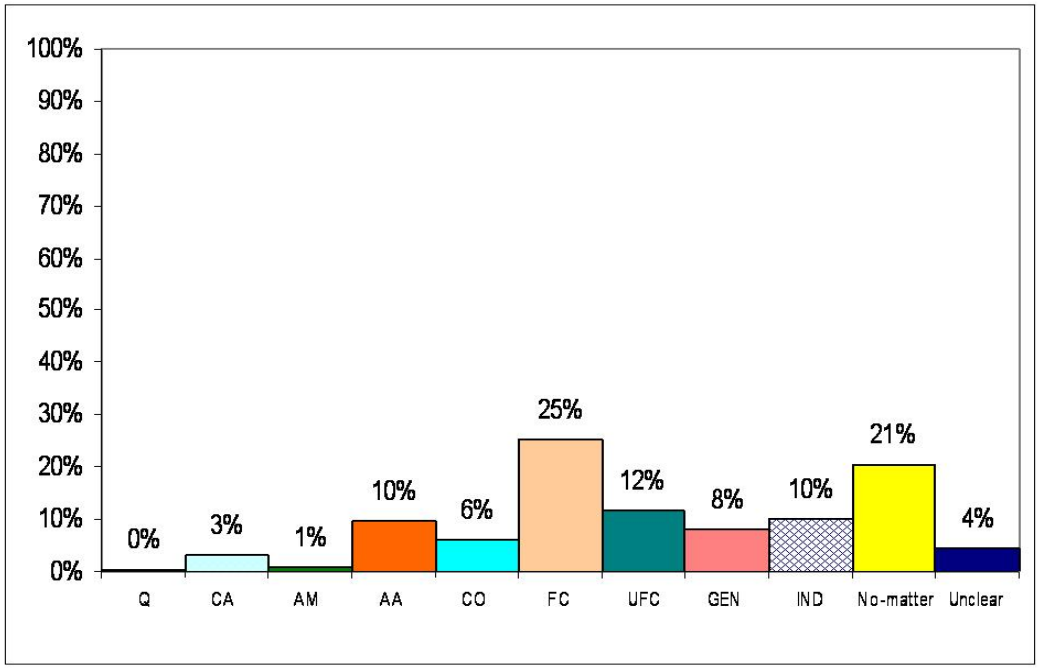


Italian

- Item: *qualunque* [from Latin *qualiscúmque* composed from *qualis* 'what' + *cúmque* 'ever']
- Corpus: CORIS (100 million words; various registers; a synchronic corpus of written language, whose component texts belong, roughly speaking, to the 1980s and 1990s, with a somewhat wider temporal collocation as far as narrative is concerned)
- Number of occurrences: 7591
- Labeled: 300 random occurrences

(40) *Distribution*



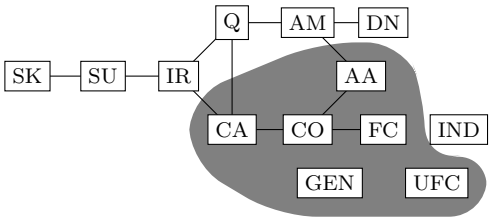


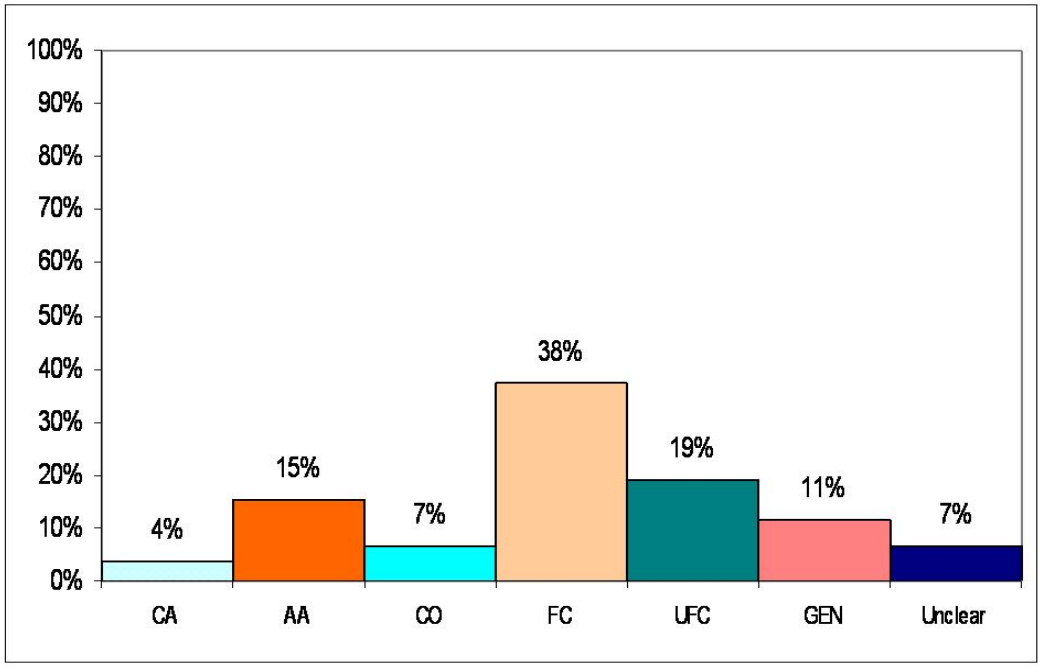
- *Qualunque* can occur in these forms:

(41)	a.	Plain determiner: qualunque + N	184 (61,33%)
	b.	Existential determiner (ExD): un(a/o) + qualunque + N	20 (6,66 %)
	c.	PostN (probably Adj): Det + N + qualunque	32 (10,66 %)
	d.	Unclear PostN or ExD:	2 (0,68 %)
	e.	In no-matter constructions:	62 (20,66 %)

Qualunque + N

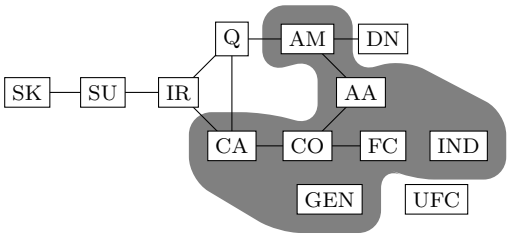
(42) *Distribution*

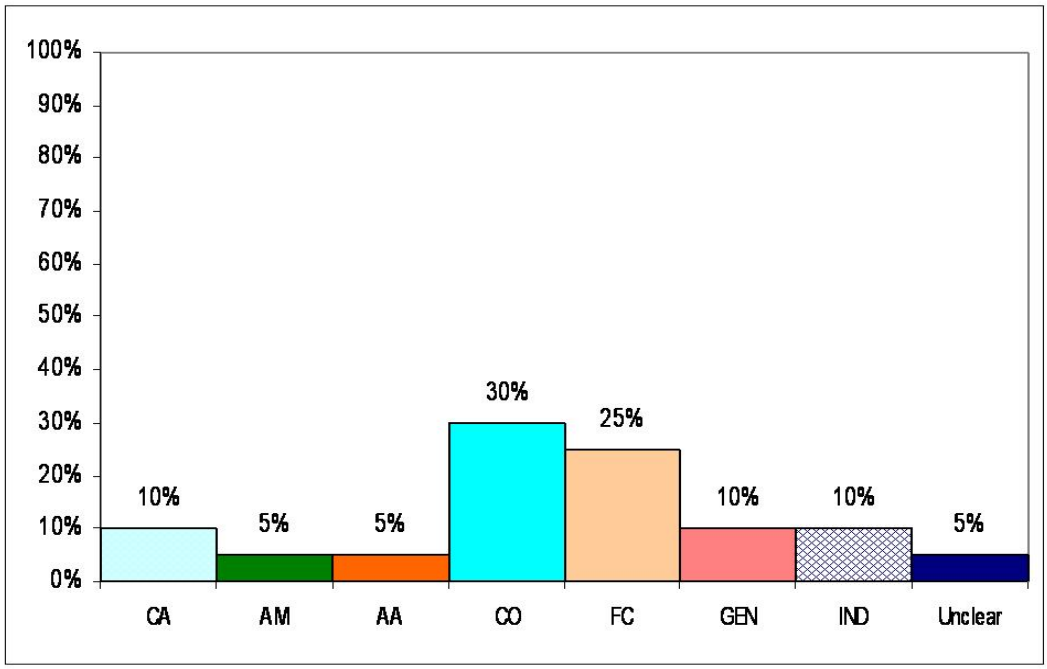




Uno + qualunque + N

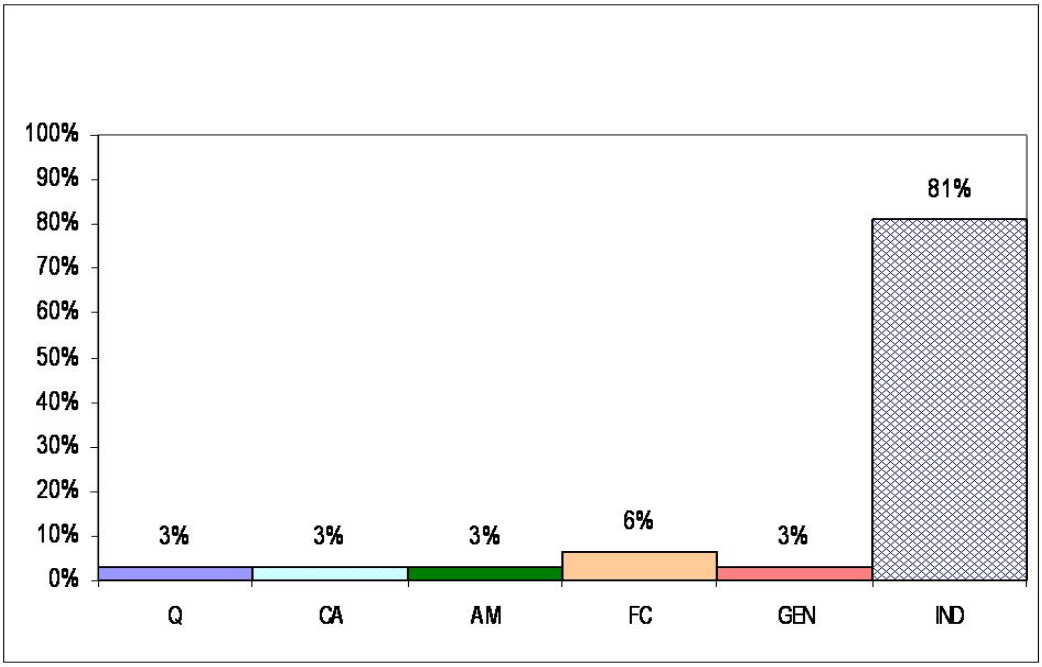
(43) *Distribution*





Det + N + qualunque

(44) *Distribution*



4 Diachronic corpus study

PLAN: Classify 50-150 items for each diachronic stage in the studied languages

Grammaticalization of Spanish *cualquiera*

- *Cualquiera*, just like other indefinite compounds in Spanish (*quiquier, quequier, quien quiera*), was born in the language as a result of grammaticalization processes and not just as calques of Latin impersonal indefinites *quivis* 'who or what you please', *quilibet* 'no matter who', *uterlibet* 'whichsoever of the two', *ubilibet* 'anywhere' (cf. Company-Company and Pozas-Loyo 2009):

(45) Hypothesized gramaticalization process

a. *free relative clause*
Haga en él **cual** castigo **quiera**.
do on him which punishment want:3.PRES.SUBJ

b. *phrasal compound*
Haga en él **cual quiera** castigo.
do on him which want:3.PRES.SUBJ punishment

c. *word*
Haga en él **cualquier(a)** castigo
do on him whichever punishment

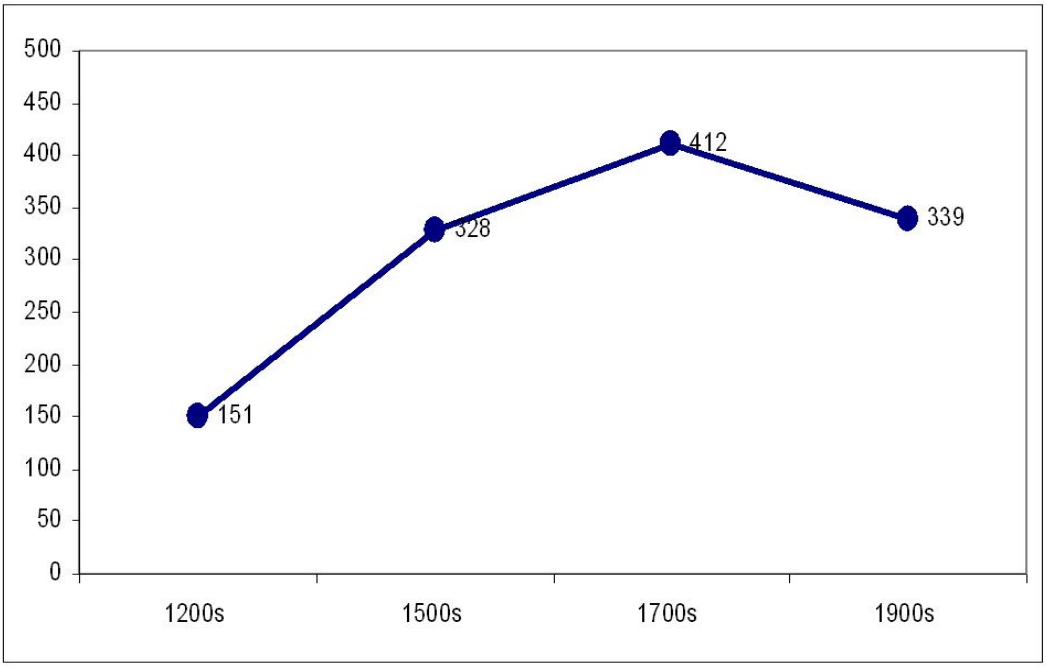
- Summary of diachronic changes *cualquiera* has experienced (Company-Company and Pozas-Loyo 2009):
  - PHONOLOGY
    - Loss of the last vowel in *-quiera*:
      97%(1200s) > 69% (1500s) > 48% (1700s) > 84% (1900s)
  - MORPHOLOGY

    - Categorical reanalysis of the construction:
      sentence > predicative phrase > complex word > simple word
    - Reanalysis of *cual-*:
      (pronominal) word > morpheme
    - Reanalysis of *-quiera*:
      (verbal) word > morpheme
    - Loss of variants and generalization of *cualquier(a)* over the other three compounds:
      four indefinite compounds (*quiquier, quequier, quien quiera, cualquiera*)> two indefinite compounds (*quien quiera* and *cualquiera*) > one indefinite compoun (*cualquiera*)
    - Reduction of the morphophonemic variation of the verbal constituent *-quier(a)*:
      present and past> present (indicative and subjunctive) > subjunctive
  - Syntax
    - Expansion of the use of *cualquier(a)* as a determiner:
      33% (1200s) > 73% (1500s) > 75% (1700s) > 76% (1900s)
    - Decrease of the use of modifiers of *cualquiera*:
      82% (1200s) > 73% (1500s) > 58% (1700s) > 53% (1900s)
    - Decrease of relative sentences modifying *cualquier(a)*:
      45% (1200s) > 46% (1500s) > 21% (1700s) > 12% (1900s)
    - Categorial specialization of *cualquiera* as a pronoun and of *cualquiera* as a determiner
  - Semantics
    - Increase of polysemy:
      Free choice meaning: 71% (1200s) > 56% (1500s) > 24% (1700s) > 19% (1900s)
    - Other meanings (e.g. generic, pejorative):
      29% (1200s) > 44% (1500s) > 76% (1700s) > 81% (1900s)
    - Loss of anaphoricity:
      64% (1200s) > 38% (1500s) > 25% (1700s) > 16% (1900s)

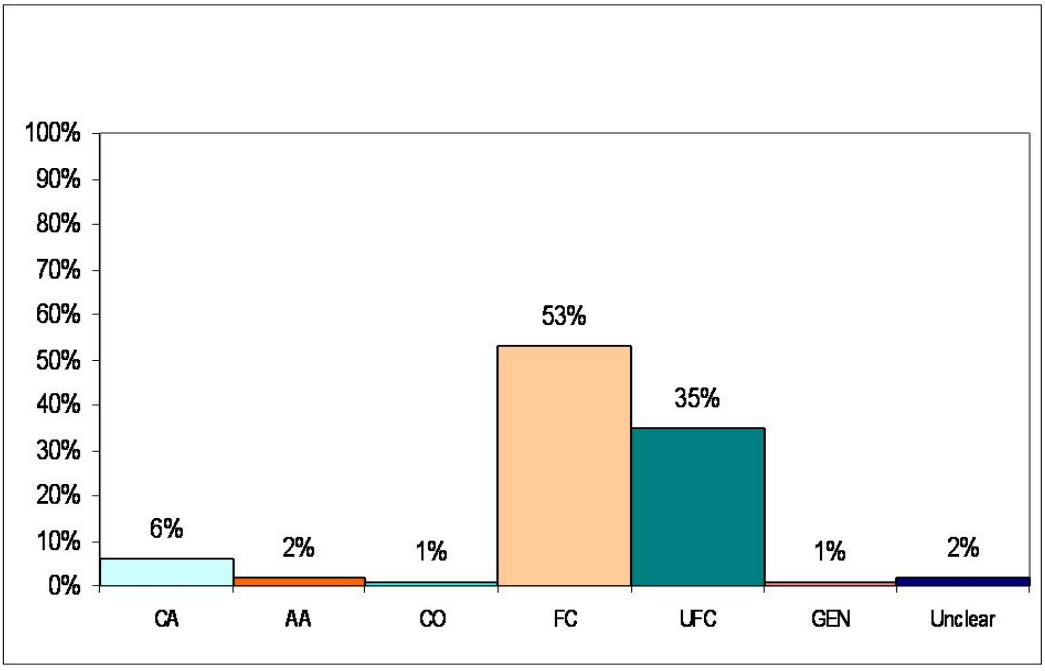
Corpus search

- Corpus: CORPUS DEL ESPAÑOL by Mark Davies
- Sections: 1200s, 1500s, 1700s, 1900s. These centuries represent the periods in which the history of Spanish language has been divided (Lapesa 1964; Penny 1993; Melis et al. 2004cf.).
- Number of words per section: 1200s (7.9 millions), 1500s (19.7 millions), 1700s (11.5 millions), 1900s (22.8 millions).
- Query: *ualq*, which gave *cualquier(a)* in all their different written versions + 10 instances of completely unrelated words, which were excluded .
- Number of occurrences per section: 1200s (1012), 1500s (5591), 1700s (4048), 1900s (7744).
- Labeling of 100 items per period

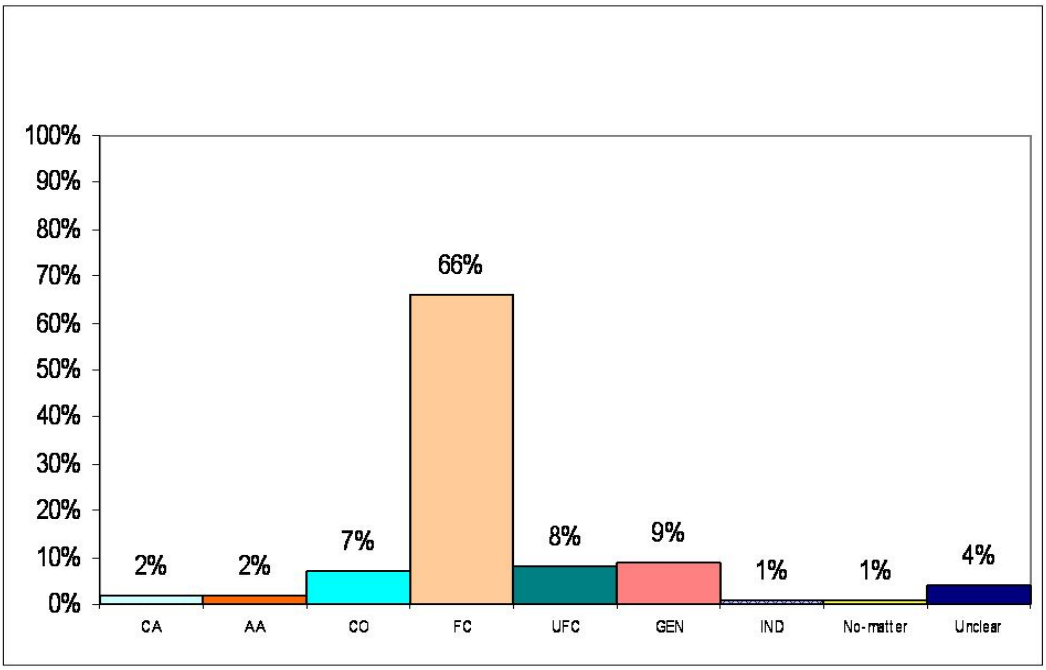
(46) *Number of occurrences per million*



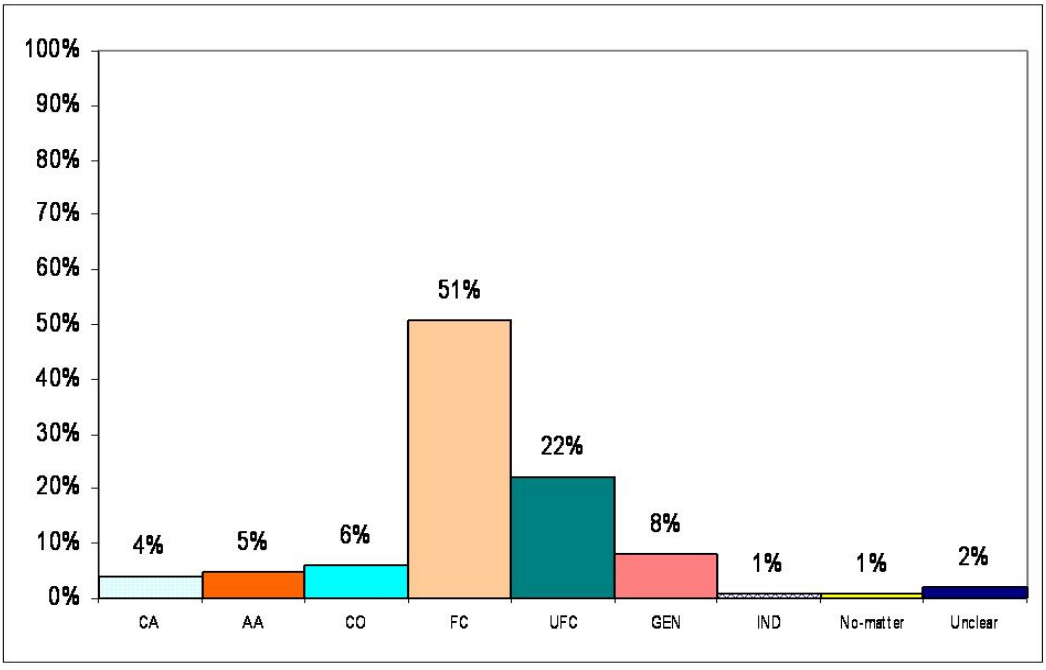
(47) *Cualquiera in 1200s*



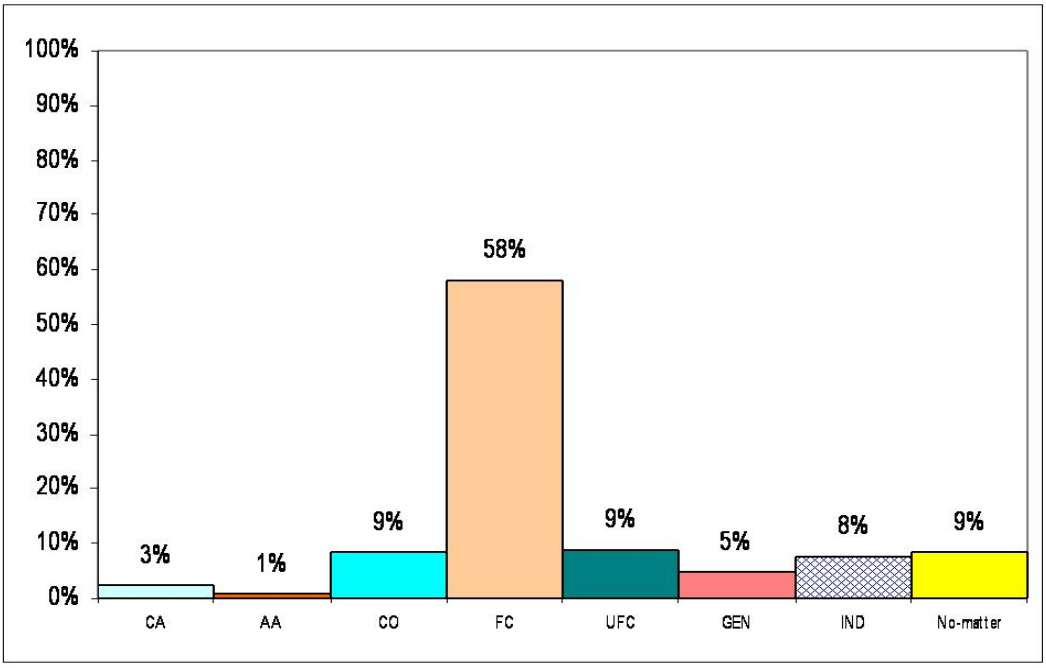
(48) *Cualquiera in 1500s*



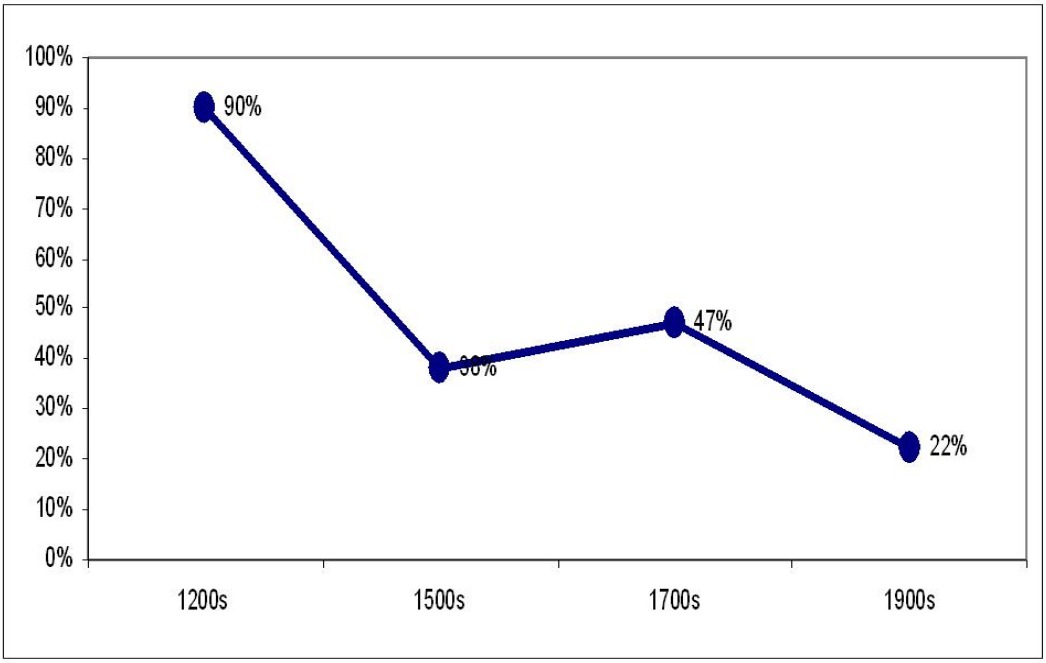
(49) *Cualquiera in 1700s*



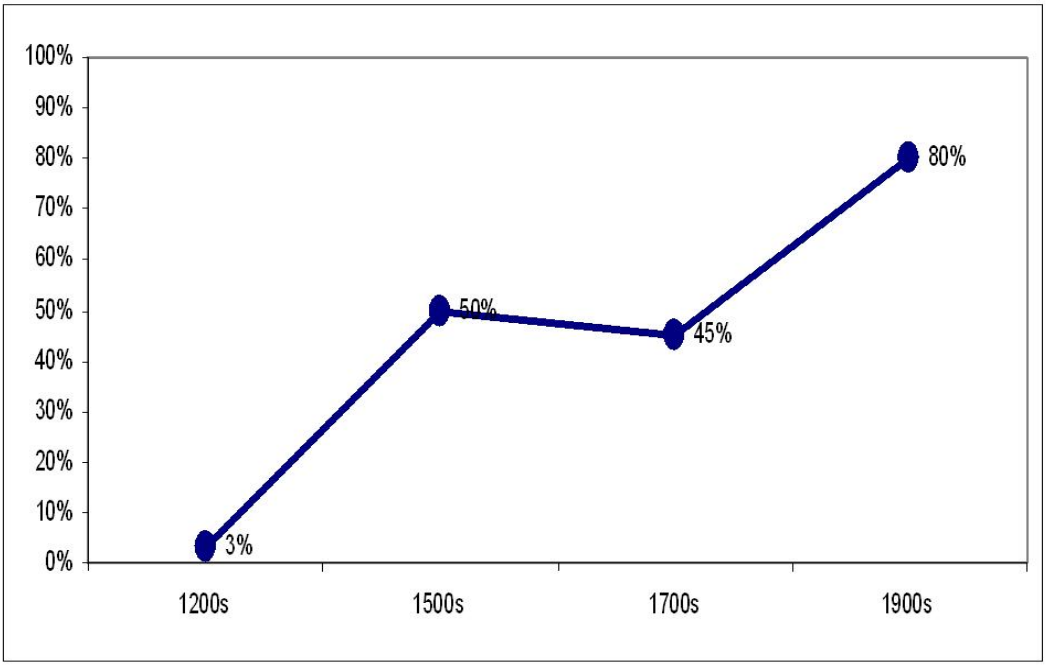
(50) *Cualquiera in 1900s*



(51) *Frequency of post-nominal modification*



(52) *UFC cases without post-nominal modification*



Summary

- Dominance of the FC function since early stages
- UFC remains in use, despite the overall decrease of post-nominal modification
- Appearance of two new functions: IND and No-matter.

5 Discussion

Framework: Alternative semantics (Kratzer and Shimoyama 2002)

- Main Ideas
  - Indefinites 'introduce' sets of propositional alternatives;
  - These are bound by propositional operators: [∃], [∀], [Neg], [Q];
  - Different indefinites associate with different operators.
- Examples

(53) a. [∃] (someone fell)
b. [∀] (anyone$_{FCI}$ fell)
c. [Q] (who fell)
d. [Neg] (anyone$_{NPI}$ fell)

e.

(only) d_1 fell	(only) d_2 fell	(only) d_3 fell	...

FCIs as fossils

- As a result of implicature-fossilization, FCIs require the application of covert operators
- Following Menéndez-Benito (2005) and Aloni (2007), these covert operators are
  - [∀] propositional universal quantifier
  - **Exh** exhaustification operator (Aloni's extension of Menéndez-Benito's exclusiveness)

(54) [∀] . . . **Exh**(. . .FCI. . .)

Predictions

- FCIs never have existential functions: SU, SK, NS, Q
- Licensed under *Op* iff [∀] *Op* **Exh** (... FCI ...) is consistent
- Equipped with the right notion of exhaustification (cf. Aloni 2007) M-B predict the following possible functions for FCIs:
  - Propositional operators (**Exh** applies on the propositional level):
    - FC (test: $Op(a) \wedge Op(\neg a)$ is informative)
    - CA (test: $Op(a) \wedge Op(\neg a)$ is trivial) (no-matter effect)
    - Negative functions: AA, AAM, DN (if **Exh** does not produce partitions of the logical space)
  - Non-propositional operators **Exh** can apply on a different syntactic level, such as AP or DP
    - CO
    - UFC

Applications

(55) *Canonical FCI*

a. Sentence: Puedes traerme cualquier libro.
b. Logical form: [∀](◇(SHIFT$_{(s,t)}$(**Exh**[any book, λx. you bring me x])))
c. Predicted meaning: For each book it is possible that you bring me only that book.

(56) *Embedding of the FC effect*

a. Sentence: No puedes traerme cualquier libro.
b. Logical form: [¬][∀](◇(SHIFT$_{(s,t)}$(**Exh**[any book, λx. you bring me x])))
c. Predicted meaning: You cannot freely choose which book you bring me

(57) *Ruling out FCIs in episodic contexts*

a. Sentence: # Anyone fell.
b. Logical form: [∀]((SHIFT$_{(s,t)}$(**Exh**[anyone, fell]))
c. Predicted meaning: ⊥

(58) *Licensing by subtrigging* (see Aloni 2007)

a. Sentence: Anyone who tried to jump fell.
b. Logical form: [∀](↓SHIFT$_e$(**Exh**[anyone, who tried to jump]) fell)
c. Predicted meaning: All persons who tried to jump fell

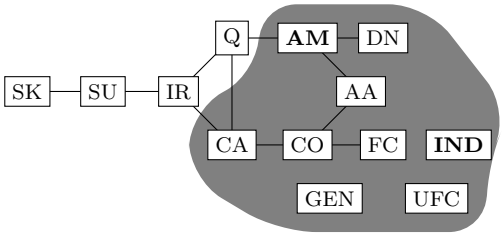
(59) *FCIs in Comparatives* (see Aloni in prep)

a. Sentence: John is taller than any girl.
b. Logical form: [∀](SHIFT$_e$(**Exh**[$d, \lambda d.T(j,d)$]) >SHIFT$_e$(**Exh**[$d, \lambda d.T$(any girl, d)])
c. Predicted meaning: For all girls x, John is taller than x

Remarks on the synchronic distributions

Czech *kterýkoli*

(60) *Distribution*

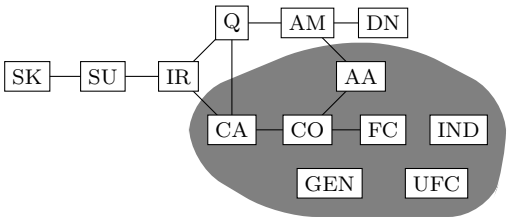


- Observation:
  - The Czech FCI takes up the whole universal space
- Explanation:
  - The distribution is readily explained by the assumption that [∀] and **Exh** are fossilized.
  - The negative contexts require that **Exh** does not produce a partition.
  - In the majority of DN contexts, the FCI is blocked by the more specific negative concord item (cf. Pereltsvaig 2004); FCIs are licensed in such DN contexts that can be reanalyzed as AM contexts, i.e. in so-called restructuring contexts:

(61) Není třeba [$_{CP/VP}$ mít z **čehokoli** / **ničeho** strach]
NEG:is necessary have:INF from anything:FCI / anything:NCI fear
'It's not necessary to fear anything.'

Spanish *cualquiera*

(62) *Distribution*



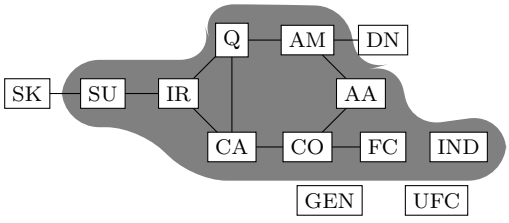
- Observation:
  - The Spanish FCI takes up the whole universal space except for the negative contexts AM and DN
- Explanation:
  - The distribution is readily explained by the assumption that [∀] and **Exh** are fossilized.
  - The negative contexts can be ruled out either by blocking: there is a more specific item that fits the context, namely the negative concord item:

    (63) No es necesario temerle a nada
    NEG is necessary fear:INF to anything:NCI
    'It is not necessary to fear anything.'

  - Alternatively, the **Exh** associated with *cualquiera* produces a partition, resulting in a contradictory statement.

German *irgendein*

(64) *Distribution*



- Observation:
  - The German *irgendein* appears in all existential contexts except for SK and in most universal contexts except for DN, GEN, and UFC.
- Explanation:
  - Due to the distribution in existential contexts, the indefinite must be associated with [∃].
  - Ruling out SK: By hypothesis, in specific contexts, *irgend* involves a fossilized ignorance implicature (see §1); this makes it incompatible with SK.
  - Ruling out DN: German indefinites in DN contexts are blocked by corresponding negative indefinites (*kein*).
  - Ruling in FC: Pragmatically, by free choice implicature.
  - ...

Remarks on diachrony

Two source constructions

- It has been argued (cf. Haspelmath 1997) that FCIs can evolve from free relatives and unconditionals (among other constructions)
- On the present account, unconditionals (questions) give rise to FC and free relatives give rise to UFC:
  - Question → FC; common denominator: **Exh** applies at the IP level
  - Free relative → UFC; common denominator: **Exh** applies at the DP level
- By hypothesis, the position of **Exh** application can "shift", either from IP to DP (FC → UFC) or from DP to IP (UFC → FC).
- Arguably, *cualquiera* underwent the latter development.

More on Spanish *cualquiera*

- Observation: Our corpus research shows that there has been a gradual rise of UFC cases without postnominal modification.
- We suggest that this could be modeled by the fossilization of **Exh** at the DP level:
  - Stage 1: *cualquiera* is part of a free relative, which generally supports the application of **Exh**
  - Stage 2: *cualquiera* "mimics" the original free relative use and needs postnominal modification in order to support **Exh**
  - Stage 3: **Exh** becomes fossilized, appears irrespective of the postnominal modifier, which can remain implicit.

6 Summary and conclusion

- The main prediction of Haspelmath confirmed by our corpus research: there is no indefinite that violates the function contiguity
- Our more specific predictions partially confirmed, but a number of areas require further investigation:
  - Indiscriminacy
  - Generic use (cf. Menéndez-Benito 2005, to appear)
  - No-matter constructions (esp. Czech and Italian)

(65) A u jsme v kterkoli zemi, vude nachzme slun lidi.
let already be:1PL in any country everywhere find:1PL polite people
'No matter in which country you are, you can find polite people everywhere.'

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