# The Union of Conjunction and Disjunction: The Case of AND/OR

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## Introduction

**AND/OR** is a complex coordinator that shows properties of both *and* and *or*.
Well-attested in formal domains, including law, medicine, and linguistics.

(1) **Video and/or sound recordings** obtained by police personnel […] shall be made available for **hearing and/or viewing** by defense counsel. (Washington State Code; RCW 9.73.090b)

(2) **Brachydactyly and/or clinodactyly** was a consistent feature in the **hands and/or feet.**[1]

(3) …researchers who have defined **grammaticality and/or acceptability** in other ways might make a principled distinction between two types of judgment (Schütze 1996:26)

(4) It is standard to find that object extraction is more liberal than **subject and/or adjunct** extraction (Phillips 2013:94)

But it is also found in entertainment, casual speech, published works.

(5) So, who wants **to touch and/or be touched** by a famous person? (Bob's Burgers, 2x9)

(6) There's nowhere I won't go. As long as it's horribly, horribly **true and/or wrong.** (Louis CK)

(7) Give your figures and tables **titles and/or captions**. … You can also use **indentation, bold or italic font, outlining or borders, symbols, and/or bullets** to highlight important information. (LSA Poster guidelines: 6 total instances of *and/or*!)

**ROMEO AND/OR JULIET**
Choose-your-own-adventure book by Ryan North (2016)

## Research questions

A. What are the distinguishing properties of *and/or*?
B. What is the meaning of *and/or*?
C. What is the distribution of *and/or*?
D. Does the syntactic behavior of *and/or* differ in any way from either *and* or *or*?

## Properties

- *and/or* is an established coordinator in English that shows **systematic, regular, robust, and intentional use. It is not ad-hoc or a speaker error.**
- As shown above, *and/or* is attested in formal, informal, published, and spontaneous domains
- </> does not connect most other functional categories
  *a/the dolphin , *I know that/if John arrived.
- There are no other "slashed coordinators" (*and/but, or/but…*). The vanishingly rare exceptions are idiosyncratic
  (8) The challenge must be seen not as "either/or" but as "**and/and**." (AfricaArts journal; only found here)
  (9) …when using encoding **or/and** decoding variables to predict ending performance (Weiser 2012; only here)
- *and/or* is an addition to the closed functional category '&'
  - '&' is not so exclusive a category: *and/or, slash* (Woo, Ms.) *let alone, as well as* (Hulsey 2008)
  - Which is contrary to this: "[The category] '&' may constitute *the most exclusive of all categories*… only the so-called coordinating conjunctions (e.g. *and, or, but*) may head an &P" (Zoerner 1995)
- Prosody suggests *and/or* is not a repair. Compare with this:
  (10) You're a TA, or— AND you're a student.
- Usually (only) this "slashed coordinator" is in other languages (see Table)

Dating back to 1935, there are 15+ published articles in Law Reviews discussing *and/or* (usually proscribing it) in legal drafting.

…But nothing is published about it in linguistics!

| English | and/or |
|---|---|
| Czech | a/nebo |
| French | et/ou |
| Spanish | y/o, o/y[2] |
| Italy | e/o |
| Russian | и/или [i/ili] |
| Finnish | ja/tai |
| Serbo-Croatian | и/или i/ili |
| Hebrew | או/ו [v/o] |

[2]*or/and* - unexpected, yet attested example in Spanish:
"…las que tienen tres hijos y **padre o/y madre** discapacitado puedan ser considerados como categoría especial"

## Meaning

- *and/or* is the semantic combination of *and* and *or*, with a pragmatic component of **speaker uncertainty,** an implicature from the speaker's decision not to use a more specific coordinator. (Maxim of Quality)
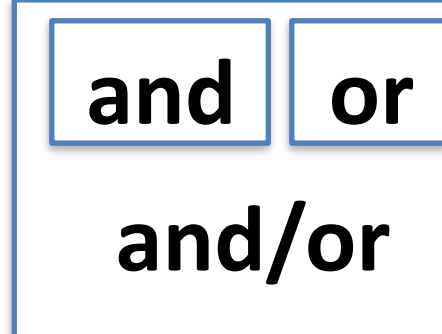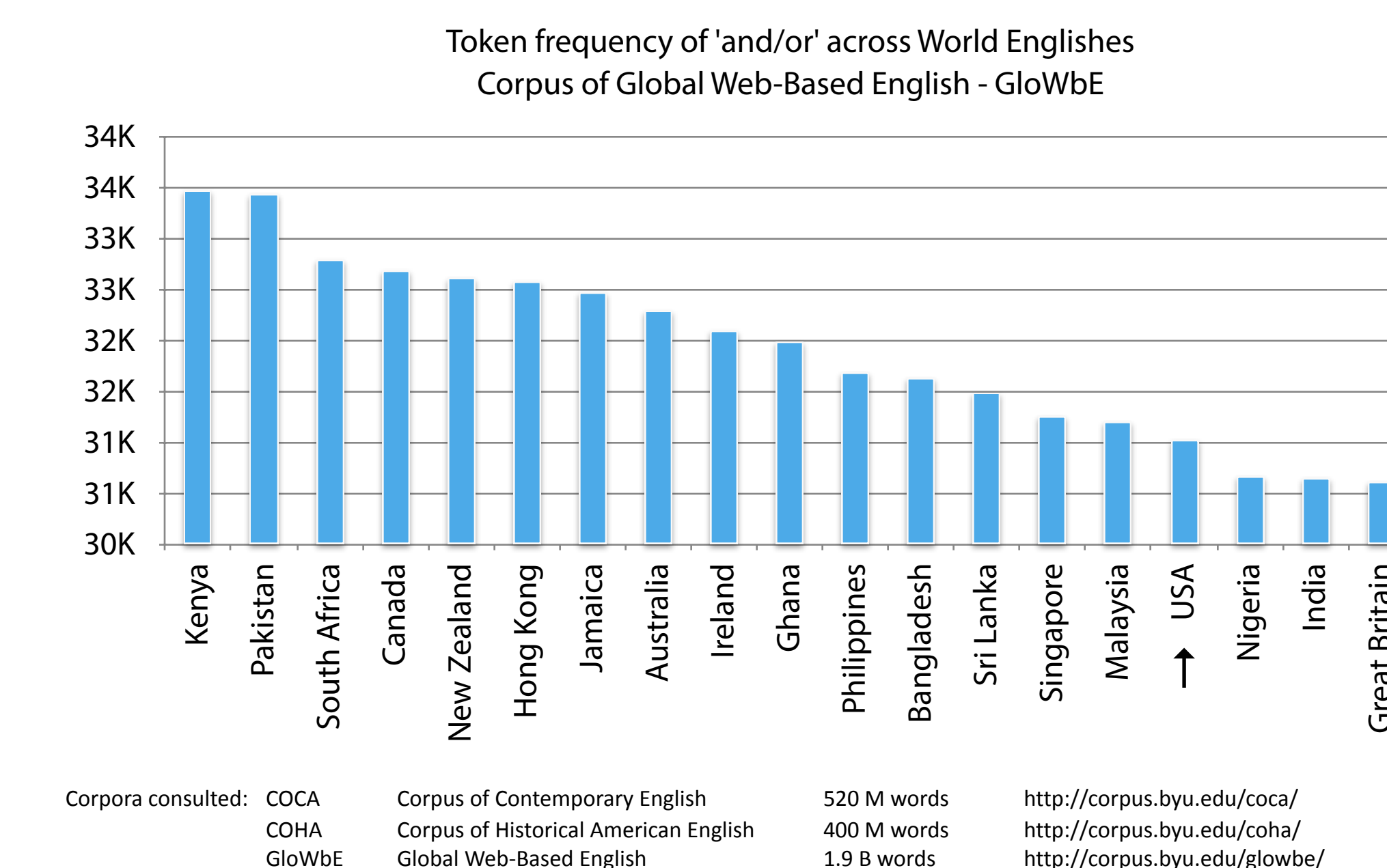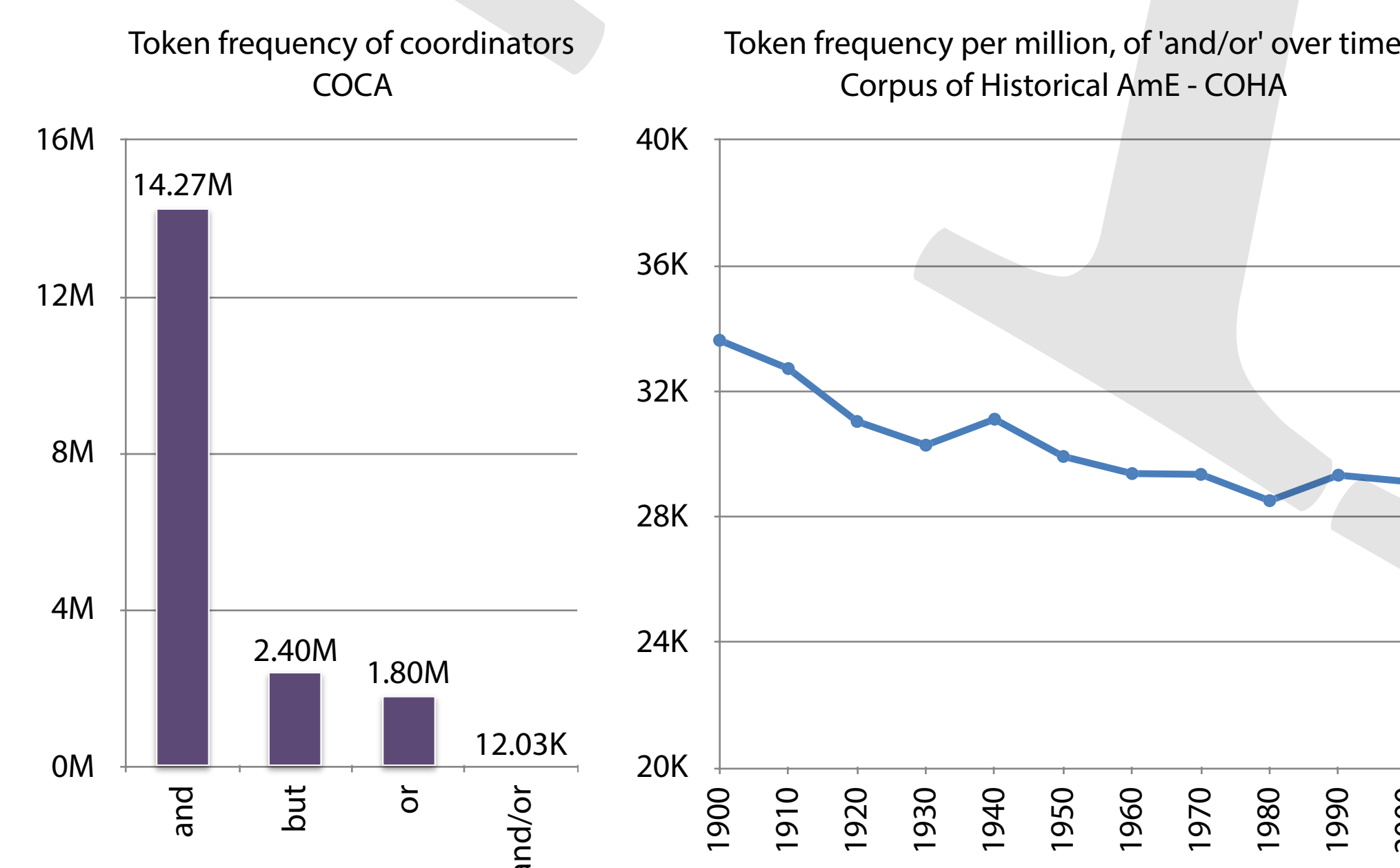
| and | or |
|---|---|
| **and/or** | |

- Speaker says sentences in (a), Hearer understands situation as (b).

  (11) a. John worked with **Adam and Brice.**
       b. John worked with these two people:

  (12) a. John worked with **Adam or Brice.**[3]
       b. John worked with one of these people:

  (13) a. John worked with **Adam and/or Brice.**
       b. John worked with one of these sets:
          (a) both Adam and Brice, (=*and*)
          (b) Adam or Brice, (=*or*)
          (c) one of them but I don't know which. (=*and/or*)

…but I don't know which.

[3]Exclusive meaning only. The inclusive meaning of *or* ("…or both") is typically not very salient in unconditioned declarative contexts (compare with interrogative: "Do you want coffee or tea?" "Sure".).

## Distribution

Token frequency of coordinators
COCA

| | Token frequency (M) |
|---|---|
| and | 14.27M |
| but | 2.40M |
| or | 1.80M |
| and/or | 12.03K |

Token frequency per million, of 'and/or' over time
Corpus of Historical AmE - COHA
(1900–2000, declining from ~33K to ~29K)

Token frequency of 'and/or' across World Englishes
Corpus of Global Web-Based English - GloWbE
(Kenya, Pakistan, South Africa, Canada, New Zealand, Hong Kong, Jamaica, Australia, Ireland, Ghana, Philippines, Bangladesh, Sri Lanka, Singapore, Malaysia, USA, Nigeria, India, Great Britain)

Corpora consulted: COCA — Corpus of Contemporary English — 520 M words — http://corpus.byu.edu/coca/
COHA — Corpus of Historical American English — 400 M words — http://corpus.byu.edu/coha/
GloWbE — Global Web-Based English — 1.9 B words — http://corpus.byu.edu/glowbe/

## Syntactic Behavior

**Any context where one of *and* or *or* is ungrammatical, *and/or* is ungrammatical.**

(14) Kyle {and | *or | *and/or } Pat met at the park.          *Collective predicates*

(15) Randy {and | *or | *and/or } Sandy sang the same song.          *Internal relational modifiers*

(16) Kim { and | *or | *and/or } Michel saw themselves / each other.          *Anaphors*

(17) John and Mary are happy { and | *or | *and/or } sad, respectively.          *'Respectively'*

(18) John is alive { #and | or | #and/or } dead.          *Contradiction*

**One exception:** We expect a ban on *and/or* with correlative constructions (*both..and, either…or*)

(19) I am going to pick up both John { and | *or | *and/or } Mary.          *Correlative 'both…and'*

(20) I am going to pick up either John { *and | or | *and/or } Mary.          *Correlative 'either…or'*

But there are examples in COCA that show that *and/or* can co-occur with *both*:

(21) Laity as well as priests can be **both** scholars **and/or** prophets.

(22) more than half of the European adventves are **both** predaceous **and/or** phytophagous

These anomalous cases are analyzed as repair — the meaning is "*both…and* plus the disjunctive meaning of *or*", which is added on as an afterthought. This predicts **either… and/or*, since "*either…and*" is never a coherent correlative.

↳ No **either…and/or* patterns were found in COCA. The prediction is borne out.

## Quantifiers

- ***And*** and ***or*** behave differently with quantifiers. (Champollion 2016 §6)
- Conjunctions of plural nouns are ambiguous between distributive and non-distributive readings (23a)
- Disjunction is *not*; it has only the non-distributive (23b)
- Similarly, *and/or* is *not* ambiguous; it has only the non-distributive reading (23c)
- Given the following instructions to form a team out of some animals, how many animals would you select? (irrespective of group composition)

(23) We are forming a team. Please select…
a. Ten dogs and cats.
   Distributive: 20 animals
   Non-distributive: 10 animals
b. Ten dogs or cats.
   Distributive: *20 animals
   Non-distributive: 10 animals
c. Ten dogs and/or cats.
   Distributive: *20 animals
   Non-distributive: 10 animals

↳*and/or* is interpreted as the more constrained option.

## Gapping + Negation

- ***And/or* permits gapping, like other coordinators.**
  (24) Tom drank a beer and Mary a martini.
  (25) Tom drank a beer or Mary a martini.
  (26) Tom drank a beer and/or Mary a martini.
- ***And*** and or behave differently when the scopal operator, auxiliary, and main verb are gapped.** (Johnson 2000, Lin 2002, Repp 2009, for *but* see Toosarvandani 2015)
- conjunction is ambiguous; has wide and distributive readings (27)
- disjunction is *not* ambiguous; it has only the wide reading (28)

(27) Ward can't eat caviar and Anna beans.          (Siegel 1987:53)
   Wide.   It's not possible for Ward to eat caviar and Anna eat beans.
           ¬(eWC & eAB)
   Dist.   Ward can't eat caviar and Anna can't eat beans.
           ¬eWC & ¬eAB

(28) Ward can't eat caviar or Anna beans.          (Oirsouw 1987:208)
   Wide.   It's not possible for Ward to eat caviar or Anna eat beans.
           ¬(eWC ∨ eAB) = ¬eWC & ¬eAB          [DeMorgan's]
   Dist.   *Ward can't eat caviar or Anna can't eat beans.
           *¬eWC ∨ ¬eAB

- *and/or* has a complex reading (29)
(29) Ward can't eat caviar and/or Anna beans.
   Reading: Either Ward can't eat caviar or Anna can't eat caviar (but I can't remember which). Or both of them can't eat caviar.

↳This should correspond to the wide scope reading, pending a precise denotation of *and/or*.

## Conclusions

- Future work on coordination ought to analyze *and/or* as a legitimate coordinator, and compare its syntactic and semantic behavior to other coordinators.
- *and/or* appears wherever *and* or *or* can, supporting the existence of a general coordination category such as '&'.
- *and/or* is a fully lexicalized item which has the union of the set of constraints on *and* and *or*.

## References

Champollion, L. 2016. Ten men and women got married today. *Journal of Semantics.* • Hulsey, S. 2008. *Focus sensitive coordination*, Diss. • Johnson, K. 2000. Few dogs eat Whiskas or cats Alpo. *UMOP 23: Issues in semantics and its interface.* • Lin, V. 2002 *Coordination and Sharing at the Interfaces*, Diss. • Muysken, P. 2008. *Functional Categories.* Cambridge. • Phillips, C. 2013. On the nature of island constraints, in Sprouse and Hornstein eds. *Experimental Syntax.* Cambridge. • Repp, S. 2009. *Negation in gapping.* Oxford. • Schütze, C. 1996[2016]. *The empirical base of linguistics.* • Toosarvandani, M. 2015. On gapping and negation. Ms for LI. • Woo, B. Ms. *Slash: A new coordinator in English and its behavior slash structure.* • Zoerner, C. 1995. *Coordination: The Syntax of &P*, Diss. • [1]Al-Qattan, M. 2014, ACAD: Plastic Surgery 22(4).