Of *old couples* and *important committees*: modification and group member accessibility

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Group nouns

- This talk is about group nouns.
- Denote groups of individuals that are in some relationship with each other.

  (1) committee, jury, company, club, audience, family

  (2) a. a deck of cards
      b. a bunch of flowers

- Attributive adjectives can target properties of both the group and the members.

  (3) a. a large staff (at a company)
      b. an important committee

  (4) a disgruntled army

- Conceptually, seem to denote both atoms (groups) as well as individuals (members of the group).

Modification, group nouns, and accessibility of members

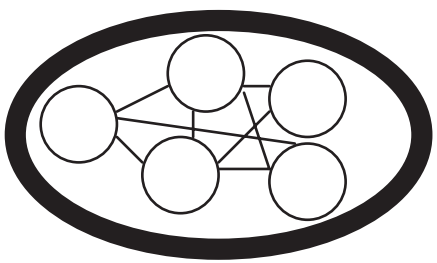
- Focus of this talk: Group nouns differ in how accessible their members are to modifiers.
- This fact has not be widely discussed or even noted in the formal literature on groups.

(5) a. ??The blonde committee is standing in the corner. (members inaccessible)

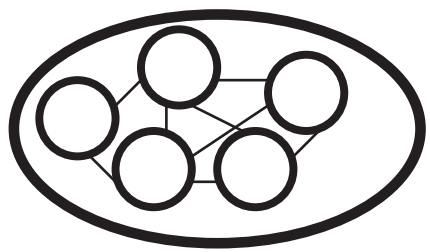
b. The blonde couple is standing in the corner. (members accessible)

(6) an anxious staff/??association

(7) a bilingual family/??orchestra



club



audience

Goals

- Additional empirical evidence that different group term profile their members to different degrees.
- Provide an initial semantics for group nouns using Düsseldorf Frame Semantics.
- Give an explanation for this variation between different groups.

Roadmap

- Data regarding accessibility of members.
- Some background on Düsseldorf Frame Semantics and an ontology for individuals and events.
- Sketch an analysis of group nouns using frames, treating groups as atomic, following Barker 1992.
- Provide an initial explanation for why member accessibility differs between nouns.

Joosten et al. (2007)

- Joosten et al. (2007): different group nouns in Dutch conceptually profile their members to different degrees.
- Corpus and experimental work showing this.
- Type 1: Low member accessibility
  ereniging 'association', *maatschappij* 'company', *club* 'club', *organisatie* 'organisation', *comite* 'committee', *regering* 'government', *orkest* 'orchestra', ...
- Type 2: Medium member accessibility
  familie 'family', *ploeg* 'team', *staf* 'staff', *klas* 'class', *jury* 'jury', *panel* 'panel', *delegatie* 'delegation', ...
- Type 3: High member accessibility
  duo 'duo, pair', *echtpaar* 'married couple', *gezin* 'family, household', *bemanning* 'crew', *tweeling* 'twins', ...

Corpus data

- Attempt to recreate Joosten et al.'s findings in English using attributive modifiers.
- Pulled adjective–noun pairs from BNC. Nouns:

  (8) couple, public, family, staff, trio, pair, congregation, gang, household, duo, choir, jury, crew, team, class, party, army, panel, orchestra, club, delegation, committee, organization, union, government, firm, company, association, tribe

- Excluded adjectives that were not simple property adjectives.
- Coded for whether adjective applied to the group or to the individuals making up the group. 995 pairs of adjective and noun.
- Work only partially completed.

Corpus data

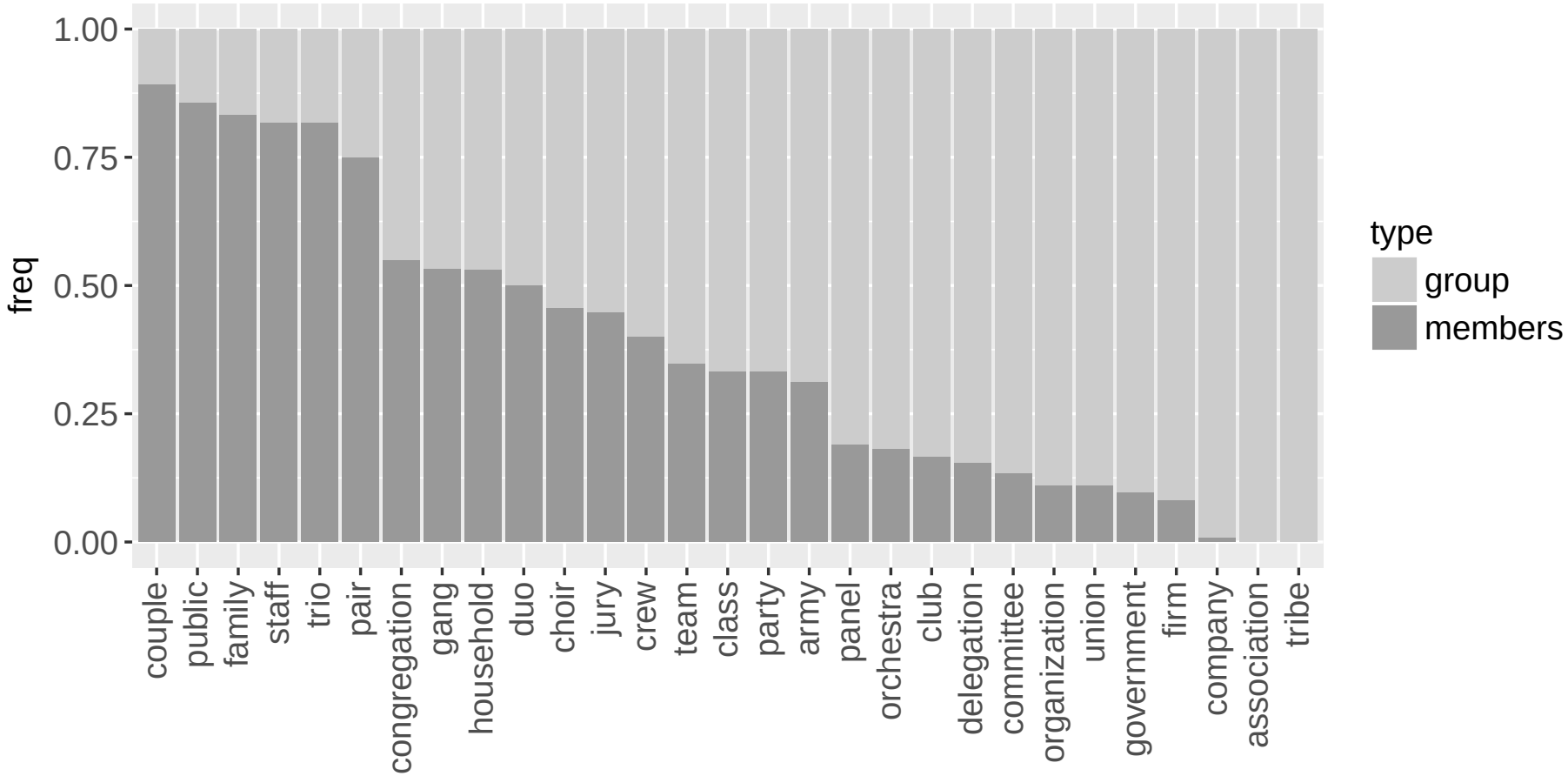


Figure: For each noun, percentage of adjectives that target attribute of group/members.

Corpus data

- Corpus data also shows variability in accessibility of members, in line with Joosten et al.'s findings in Dutch.
- Adjective–noun data not S-shaped! Cline from nouns with a high degree of member accessibility to a low degree of accessibility.
- Grammatical distinctions predict S-shaped distributions.
- Therefore, differences in group nouns is conceptual, rather than grammatical.
- Still useful to talk about the ends of this cline by naming them: *committee*-type nouns have a low degree of accessibility, while *couple*-type nouns have a high degree of accessibility.

Frame Semantics

- Assume Düsseldorf Frame Semantics, a theory of meaning representation (Petersen, 2007; Löbner, 2014; Kallmeyer & Osswald, 2014, a.o.).
- These frames represent lexical and world knowledge (and not only argument structure) in the same representation. Decompositional.
- Related to Barsalou frames in cognitive psychology (Barsalou, 1992).
- Structure:
  - A frame is a recursive attribute–value structure. Values can have their own attributes.
  - Attributes and values are unique. An attribute is held by a frame node only once, and each attribute has only one value (for any particular input).
  - Values are typed in a type-feature hierarchy (Carpenter, 1992).

Social ontology

- A social ontology provides for social entities: persons and institutions, roles, offices, functions, actions by social agents (e.g. voters, politicians, police, parents, spouses, teachers, and such).
- Entities in the social ontology are (ultimately) implemented by entities in a physical ontology (e.g., "brute facts," Searle (1995)).
  - Persons are implemented by human animals.
  - Social acts are implemented by doings that (under appropriate circumstances) count as particular social acts (Searle, 1995).
- Ontological distinction between events that are at the social level and the individual level.

Social ontology visualization

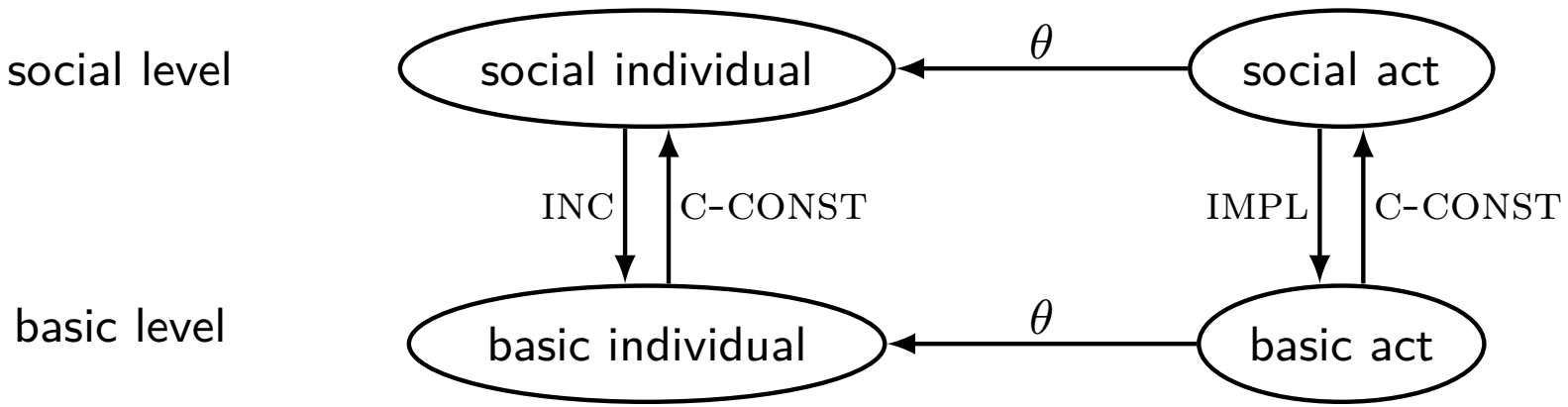


Figure: Diagram of social ontology and mappings between ontological sorts

Social ontology

- "Downward" mapping from social level to another level.

(9) a. $\text{INC}_t(x_s) \stackrel{\text{def}}{=} \iota x_o.x_o$ implements the social individual x_s at time t

b. $\text{IMPL}_t(e_s) \stackrel{\text{def}}{=} \iota e_o.x_o$ implements the social act e_s at time t

- "Upward" mapping from a level (not necessarily social) to a social level. (See also Löbner submitted.) Inspired by Searle's "counts-as" relation and Goldman's level-generation.

(10) $\text{C-CONST}_c(x) \stackrel{\text{def}}{=} \iota y_s$. under circumstances c, x counts as y

- Stipulate that social individuals/events must be grounded by basic individuals/events; its necessary that there be a downward path from the social level to the basic level.

Groups are atomic

- View groups as atomic social individuals, using ontology developed in Anderson & Löbner 2018.
- Note: subscript variables with s for social-level individuals and events, and o for basic-level individuals and events. x, y for individuals, e for events
- $x_s, y_s, e_s, x_o, y_o, e_o, \ldots$

Tentative frame structure for group nouns

- All groups have frames with a social-level object corresponding to the group, and a basic-level entity corresponding to the individuals making up the group.
- Downward INC mapping maps groups to their members.

(11) a. $[\![\textit{committee}]\!] = \lambda x_s \exists y_o [\textbf{committee}(x_s) \wedge \text{INC}_i(x_s) = y_o \wedge \ldots]$
b. $[\![\textit{couple}]\!] = \lambda x_s \exists y_o [\textbf{couple}(x_s) \wedge \text{INC}_i(x_s) = y_o \wedge \ldots]$

- Straightforward frame-based implementation of Barker 1992: atomic individuals and groups, with mappings between them.
- Frame structure provides a way of hanging these two pieces together.

Founding of groups: how groups differ

- Groups differ in how they originate.
- Some groups are "founded." They are associated with a creation event that brings the group into existence at some time.
- Other groups are merely composed.
- This can be shown linguistically:

(12) a. The committee/club was founded in March, but ...

(13) a. ??The couple began in March, but ...
b. ??The audience started at 21:00, but ...

Founding of groups

- Founded groups may have members that vary over time.

(14) a. The senator left the committee, but the committee continued with its mandate.
b. Theresa May and Margaret Thatcher belonged to the same club.

- Other groups do not allow their members to vary.

(15) a. *Kevin and Kendra stopped dating, but they remained a couple.
b. The show had the same audience each night. (=same individuals)

Founding of groups

- Group founding is modeled within a frame as a **found** social-level event.
- This is not the verb *found*, but an abstract event for group creation.
- **found** events (minimally) have as an attribute CREATED-GROUP, valued by the group individual that is created by the event.

(16) $[\![\textit{committee}]\!] =$

$$\lambda x_s \exists y_o \exists e_s \left[\begin{array}{c} \textbf{committee}(x_s) \wedge \text{INC}(x_s) = y_o \wedge \\ \textbf{found}(e_s) \wedge \text{CREATED-GROUP}(e_s) = x_s \wedge \ldots \end{array} \right]$$

Founding of groups

- *Couple*-type nouns must have a different frame structure.
- Key difference is the inclusion of the C-CONST mapping.
- Groups like *couple* or *audience* have their group generated by being classified as a group due to the situation (circumstances) they are found in (x is considered to be y in circumstances c).

(17) $[\![\textit{couple}]\!] =$

$$\lambda x_s \exists y_o \left[\begin{array}{l} \textbf{couple}(x_s) \wedge \textsc{inc}(x_s) = y_o \wedge \textsc{c-const}(y_o) = x_s \wedge \\ \exists w_o, z_o [x_o = w_o \oplus z_o \wedge \textbf{person}(w_o) \wedge \textbf{person}(z_o)] \wedge \ \ldots \end{array} \right]$$

Comparison of groups

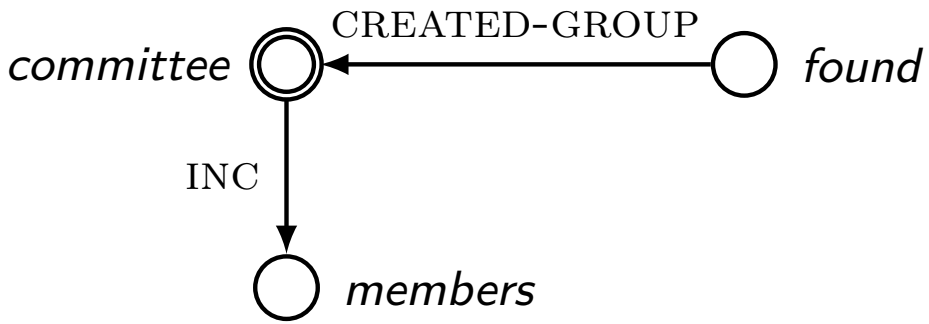


Figure: Frame for a founded group

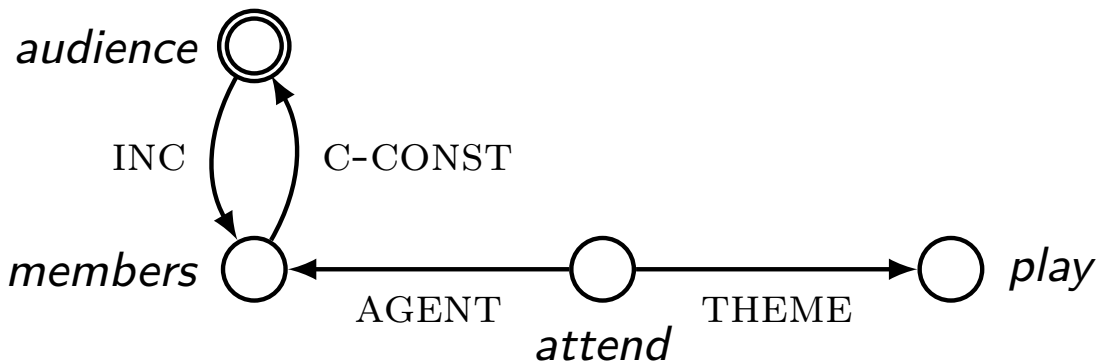


Figure: Frame for a generated group

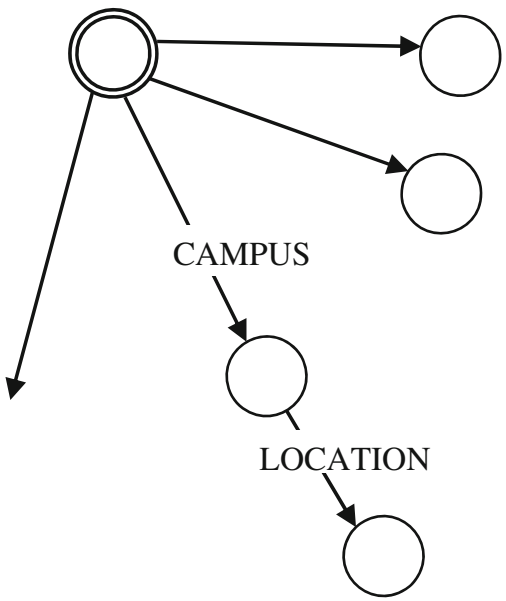
Detour: Referential shifts

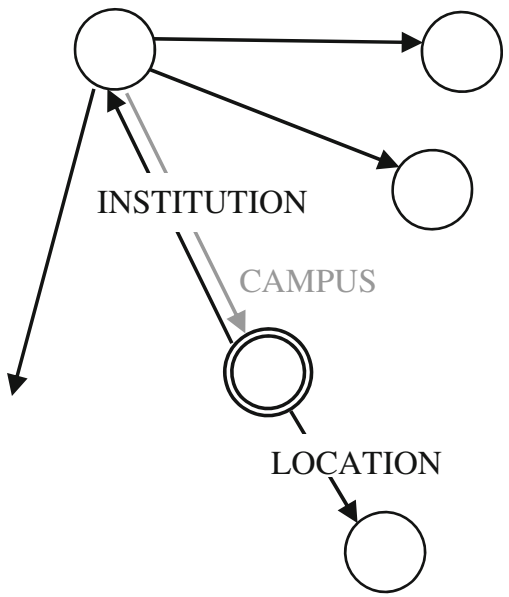
- Shifts of reference within a frame.

(18) a. The university has closed down the faculty of arts. (institution)
b. The university starts again on April 15. (classes)
c. The university lies in the eastern part of the town. (campus)

- Licensed by 1 to 1 correspondence between nodes (Löbner, 2013; Schulzek, 2014).

- *University* can shift to *university campus* because a university has one campus, and a campus belongs to one university.





Explaining variation in accessibility

- For composed groups, membership across time is stable.
- For founded groups, membership not necessarily stable.
- Variation in accessibility is related to the degree to which 1 to 1 correspondence holds.
  - Holds for *couple*-type groups, due to presence of both downward (INC) and upward mappings (C-CONST).
  - For *committee*-type groups, (i) no upward C-CONST mapping, or (ii) the value of the INC attribute is non-stable across contexts
- Variation is due to ease/difficulty of establishing a one to one mapping between the members of a group and the group.

Conclusion

- Analysis of group terms in Düsseldorf Frame Semantics.
- Groups have as their referent atomic individuals.
- Corpus evidence via attributive adjectives to support independent findings that groups differ in their member accessibility.
- Differences are conceptual in nature.
- Variation in member accessibility is related to how the creation of the group is conceptualized; groups can be founded, or constituted.
- How groups are created impacts how they relate to their members, and whether a metonymic relationship between the group and its members can be formed.

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References I

Anderson, Curt & Sebastian Löbner. 2018. Roles and the compositional semantics of role-denoting relational adjectives. In Uli Sauerland & Stephanie Solt (eds.), *Proceedings of Sinn und Bedeutung 22*, vol. 1, 91–108.

Barker, Chris. 1992. Group terms in English: Representing groups as atoms. *Journal of Semantics* 9(1). 69–93.

Barsalou, Lawrence. 1992. Frames, concepts, and conceptual fields. In Adrienne Lehrer & Eva Feder Kittay (eds.), *Frames, fields, and contrasts: New essays in semantic and lexical organization*, 21–74. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Carpenter, Bob. 1992. *The logic of typed feature structures*. Cambridge University Press.

Goldman, Alvin I. 1970. *A theory of human action*. Princeton University Press.

Joosten, Frank, Gert De Sutter, Denis Drieghe, Stef Grondelaers, Robert J. Hartsuiker & Dirk Speelman. 2007. Dutch collective nouns and conceptual profiling. *Linguistics* 45(1). 85–132.

Kallmeyer, Laura & Rainer Osswald. 2014. Syntax-driven semantic frame composition in lexicalized tree adjoining grammars. *Journal of Language Modelling* 1(2). 267–330.

Löbner, Sebastian. 2013. *Understanding semantics*. Routledge.

Löbner, Sebastian. 2014. Evidence for frames from human language. In Thomas Gamerschlag, Doris Gerland, Rainer Osswald & Wiebke Petersen (eds.), *Frames and concept types*, 23–67. Springer.

Löbner, Sebastian. submitted. Cascades. unpublished manuscript, Heinrich-Heine-Universität Düsseldorf.

Petersen, Wiebke. 2007. Representation of concepts as frames. *The Baltic International Yearbook of Cognition, Logic and Communication* 2. 151–170.

Schulzek, Daniel. 2014. A frame approach to metonymical processes in some common types of German word formation. In Thomas Gamerschlag, Doris Gerland, Rainer Osswald & Wiebke Petersen (eds.), *Frames and concept types*, 221–242. Springer.

Searle, John R. 1995. *The construction of social reality*. Simon and Schuster.