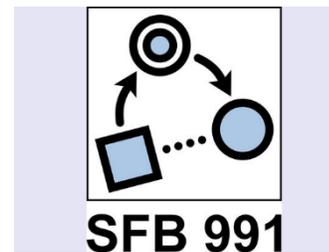


# Modeling the semantics of *out-* prefixed verbs

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# Intro: polysemy in derivation

- Most derivational processes polysemous (Bauer et al. 2013; Lieber 2004; Rainer 2014)

**locative nouns**

outhouse, outstation

**locative participle adjectives**

out-hanging, outstretched

**locative verbs**

outgas (sth.), outsource sth., out-migrate

**comparative verbs**

outrun so., outdollar so., outstubborn so.

# Intro: polysemy in *out-*?

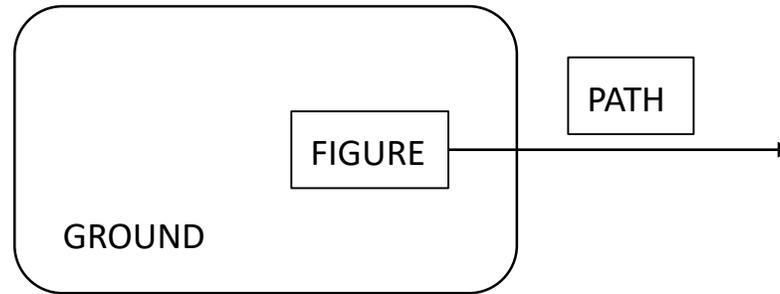
Locative:

1) ...some **energy will be outradiated** in a O<sub>2</sub>/N<sub>2</sub> atmosphere only (iWeb)

Comparative:

2) Volume was tough to compare [...] So equipped, it **out-blasted the other two**. (iWeb)

- *out-* introduces a SOURCE-PATH
- PATH=SCALE metaphor?



(Talmy 2000; Tolskaya 2014; see Kotowski 2020 for arguments against)

# Intro: polysemy in *out*-?

- What is polysemous, if anything?
- One underspecified affix meaning / polysemy in derivatives?
- Different morphological processes?
  
- Point of departure: **Synchronic semantic relationship**

(see Lieber 2004; Rainer 2014; Plag 1999; Olsen 2019)

# Today: outline

- Based on attestations from (mostly) COCA/iWeb (~1,500 tokens/~800 types; see Davies 2008; 2018)
- Comparative far more productive than locative (see Schröder 2011); only 75 types (exhausts COCA, BNC)

- What are the properties of these two versions of verbal *out*-?
- Same or different (homophonous) derivational processes?
- How can they be modeled?

1. Intro
2. Comparison of (verbal) locative and comparative *out*-
  - Non-semantic properties
  - Semantic properties
3. Frame modeling as descriptive lexeme formation rules
4. Conclusion

2.

Comparing the properties of locative and comparative *out-*

# Non-semantic factors: Stress properties

1) Hispanics as well as Asians are **óut-marrying** by something like 60%. (COCA)

2) ...between 1890 and 1920, black men **out-márried** white men. (iWeb)

3) óutshipped            óouthaul            óutradiate            [locative]

4) outshíp            outhául            outrádiate            [comparative]

- Locative: stress on prefix
- Comparative: stress on base
- No polysemy, but partial homonymy, if stress is a lexical property

# Non-semantic factors: Syntactic frames and applicativity

## Comparative

- 1) On and off camera, more girls are dishing about discharge, **outfarting their friends...** (COCA)
- 2) We try to **outdrink our friends** and end up as alcoholics. (COCA)
- 3) ??We try to outdrink.

- Always transitive; irrespective of base
- Clearly applicative

# Non-semantic factors: Syntactic frames and applicativity

## Locative

- 1) ...thousands [...] were **forced to out-migrate** to safe havens such as Eritrea and Sudan. (iWeb)
- 2) I have to run down to the armory **to outprocess a Soldier** mid month. (iWeb)

- Transitivity variable

- 3) They were nearly **forced to migrate to Minnesota** in the mid-1800s (COCA)
- 4) The **PCFs process soldiers** who are returning to military control while in desert status. (COCA)

- Follows properties of base; non-applicative

# Non-semantic factors: Competing forms

## **Locative** (cf. *outprocess*, *outload*)

- 1) When he returned to the US last month, he had 90 days **to process out of the Army**. (COCA)
- 2) It may be the friend who's always helping you [...] **load out equipment** at the end of the night. (iWeb)
  - Syntactic paraphrases (PPs/particles)

## **Comparative**

- 3) ??We drank out our friends.
  - No syntactic paraphrases
  - No free form counterpart of *out* (see Tyler & Evans 2003)

# Selectional restrictions: locative *out-*

- locative *out-* **not category-changing**
- All verbal bases semantically **dynamic**
- Nearly all base verbs including a **motion component** (see Croft 1990; Dixon 2005; VerbNet, Kipper et al. 2008)

- 1) outpour, outload, outgas (verbs of PUTTING)
- 2) outhaul, outdrag, outship (verbs of CARRYING/SENDING)
- 3) outradiate, outpop, outstream (verbs of EMISSION)

~80% of attested base verbs from these classes(cf. VerbNet)

- PATH-component part of base semantics

# Selectional restrictions: comparative *out-*

Stative bases (pace Levin 1999)

1) outweigh, out-know

Change-of-state/Achievement (pace Tolskaya 2014)

2) out-sweeten, out-assassinate, outspot, outwin

Adjectival/nominal/phrasal bases (pace Nagano 2011) --> **category-changing**

3) out-poor, out-obnoxious, out-horsepower, out-industry, out-dirty-mouth, out-good-ol'-boy

- All aspectual classes, all major parts of speech attested as base

# Compatibility with result semantics

Both prefix versions compatible with result semantics (Goldberg & Jackendoff 2004; Rappaport-Hovav & Levin 2001)

1) CAUSATIVE PROPERTY RESULTATIVE

Semantics: X1 cause [Y2 become Z3]

--> ***outsit your neighbors.*** (COCA) [comparative *out-*]

2) CAUSATIVE PATH RESULTATIVE

Semantics: X1 cause [Y2 go path3]

--> ***outblast scent.*** (OED) [transitive locative]

3) NONCAUSATIVE PATH RESULTATIVE

Semantics: X1 go path2

--> ***out-migrate to safe havens*** (iWeb) [intransitive locative]

# Semantic factors: Event complexity

Comparative *out-* always includes 3 subevents (usually adding 2)

1) **We try to outdrink our friends** and end up as alcoholics. (COCA)

SUB<sub>1</sub>: Subject-argument participant (CAUSE) – drink X amount

SUB<sub>2</sub>: Object-argument participant (CORRELATION) – drink Y amount

SUB<sub>3</sub>: Object-argument participant (EFFECT) – surpassed wrt amount/beaten in competition

2) Whatever you do to stay active this summer, make sure to stay hydrated and to properly fuel with healthy meals pre and post-burn. And remember, **you can never outrun a crappy diet!** (iWeb)

(van Valin & La Polla 1997; Rappaport-Hovav & Levin 1998)

# Semantic factors: Event complexity

Locative *out-* adds no or 1 subevent(s)

1) Federally endangered **dry forest species to be outplanted** in the Kaupulehu preserve (COCA)

- Transitives usually include a causative base verb
- *out-*formation takes over causative semantics
- Specifies the EFFECT on Object-argument's RESULT LOCATION

2) ...**gas out-streaming** from the young stars in the clusters can feed [...] the black hole. (iWeb)

- Intransitives are non-causative: RESULT LOCATION is added

# Semantic factors: Argument mapping

1) The crane ratchets of the later arrivals could still be heard clearly as **their crews outramped**. (BNC)

- Intransitive locative: **ACT(SUBJECT) & BE/BECOME(OUT\_OF\_GROUND(SUBJECT))**

2) Mosquito repellent will **outblast scent**. (OED)

- Transitive locative: **ACT(SUBJECT) &<sub>CAUSE</sub> BE/BECOME (OUT\_OF\_GROUND(OBJECT))**

- FIGURE-argument needs to be realized
- Transitive: FIGURE = Object
- Intransitive: FIGURE = Subject

# Taking stock

## Locative *out*-

## Comparative *out*-

### Differences

Not very productive

Primary stress on prefix

Variable transitivity

Category-preserving

Non-applicative

Equivalent free forms/paraphrases

No stative bases or readings

FIGURE transitivity-dependent

GROUND/GOAL flexible

Addition of 0/1 sub-events

Robustly productive

Primary stress on base

Always transitive

Regularly category-changing

Clearly applicative

No equivalent free forms/paraphrases

Stative bases & readings

(Alleged) FIGURE Subject

(Alleged) GROUND Direct Object

Addition of 2 sub-events

### Commonalities

Resultative (change-of-location v change-of-(property-)state)

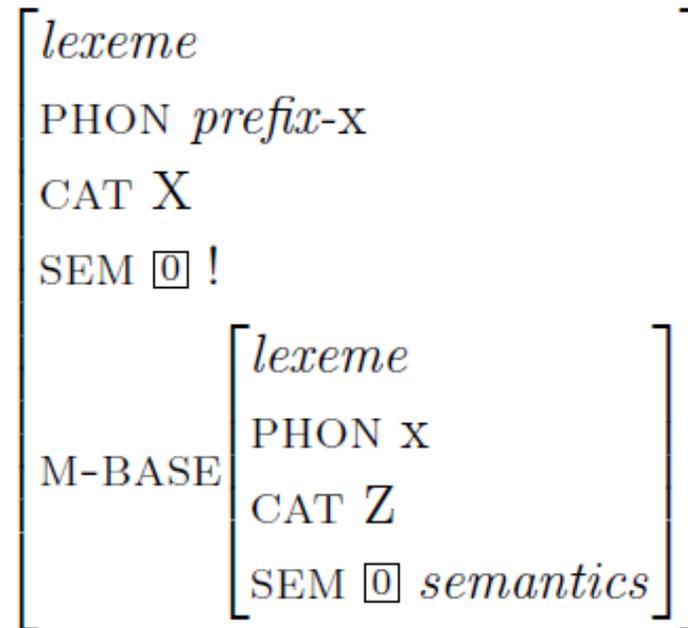
(Sub-event adding)

# 3.

## Modeling lexeme formation rules in frames

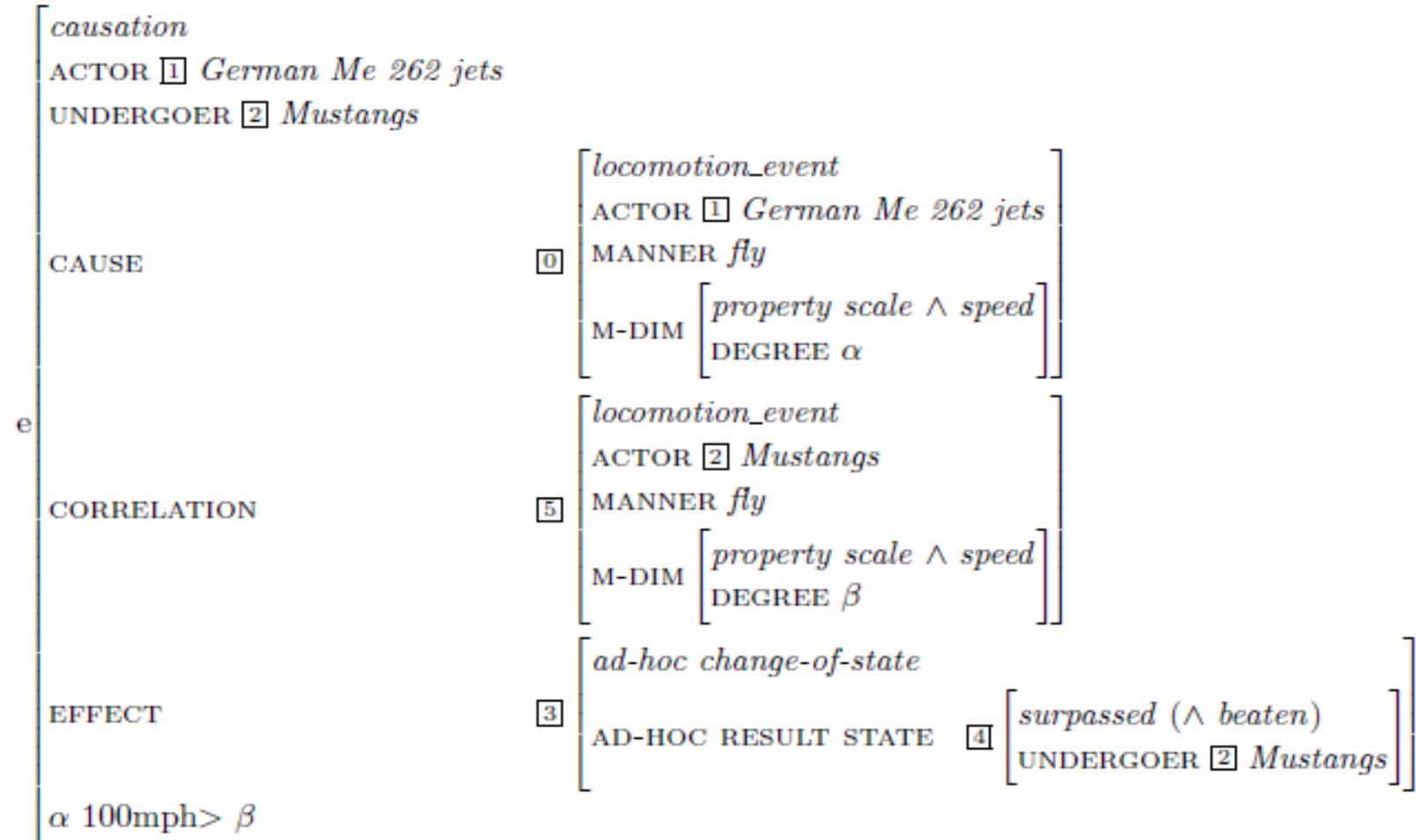
# Modeling: Frame semantics

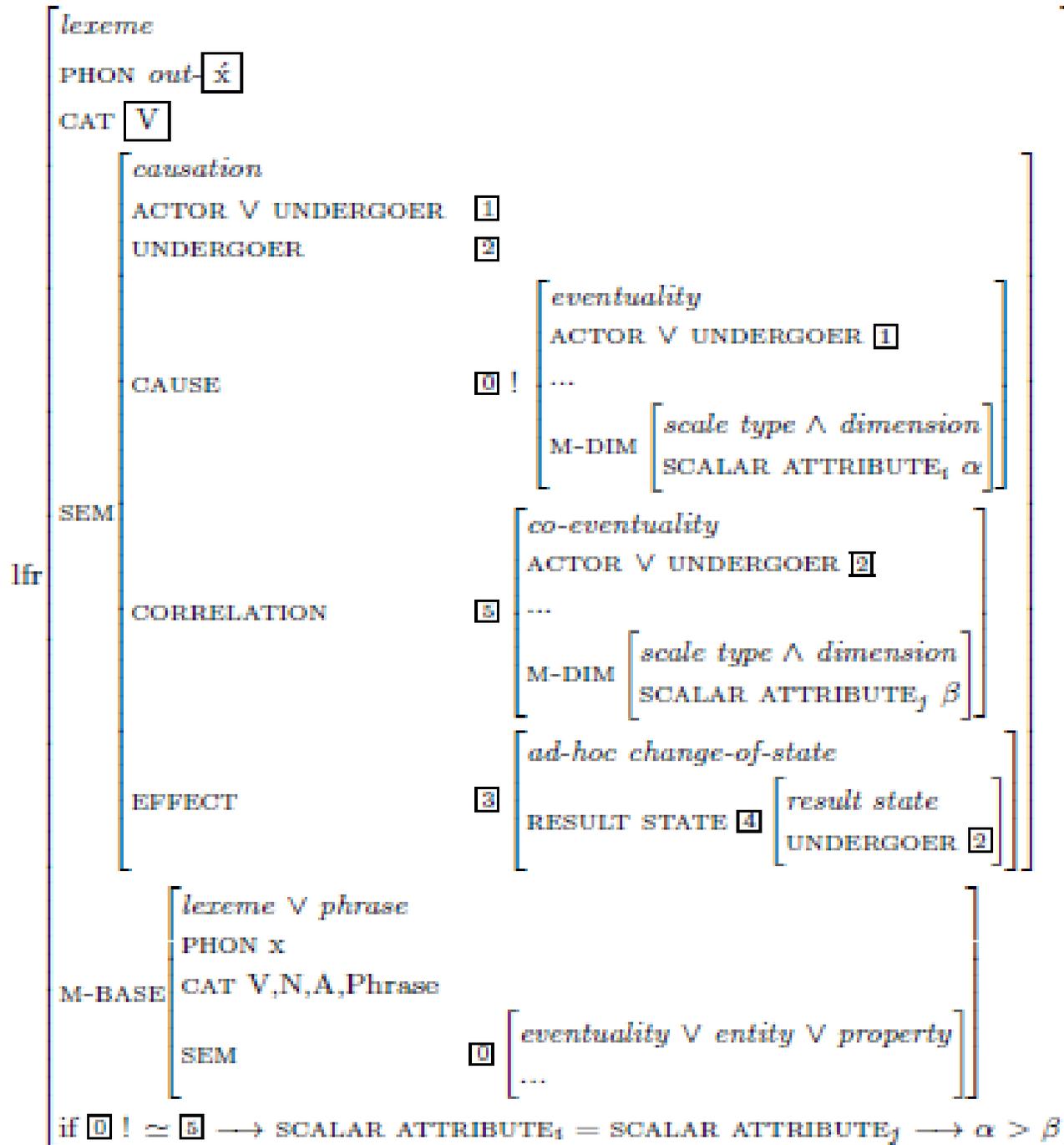
- A frame is a recursive attribute–value structure (Barsalou 1992; Löbner 2014; Petersen 2007)
- Attributes are unique to the attribute holder and take a single value at one point in time
- Lexical rules operating on and manipulating base structures (Andreou 2017; Bonami & Cysmann 2016; Koenig 1999)
- Descriptive rules: generalization over attestations and in consequence the lexicon



# Actual example for “comparative” *out-*

***The German Me 262 jets could outfly the Mustangs by 100 MPH in level flight. (iWeb)***



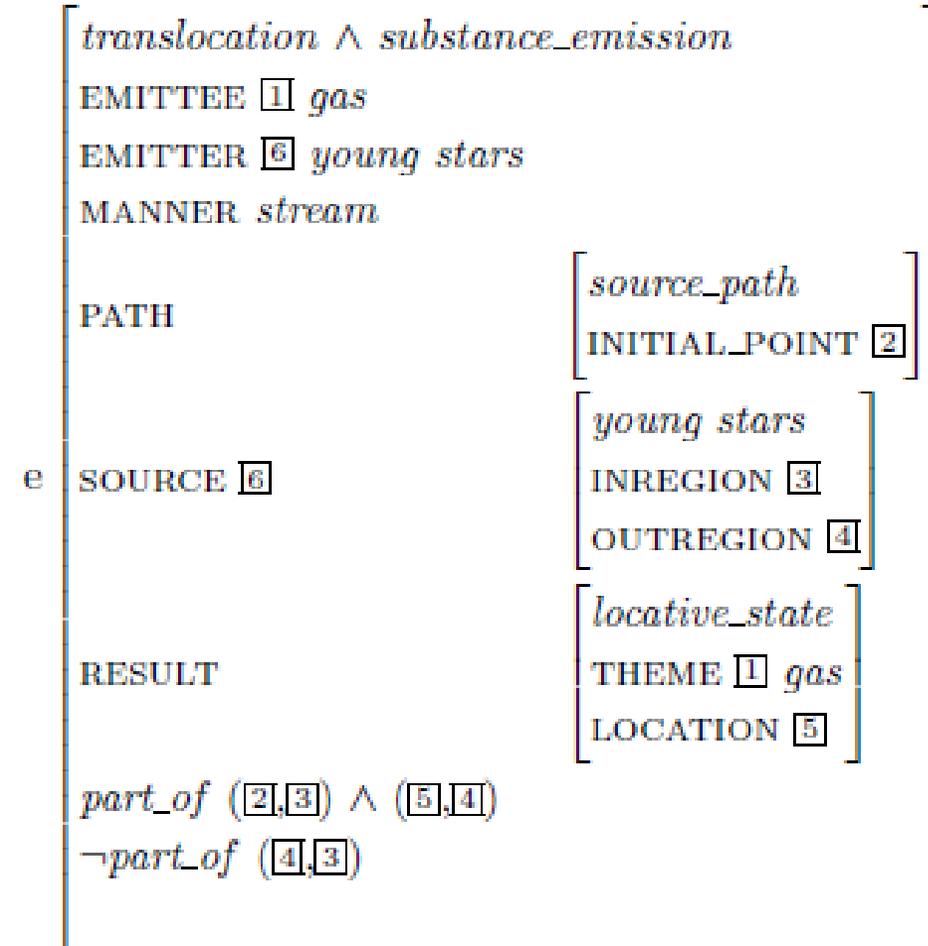
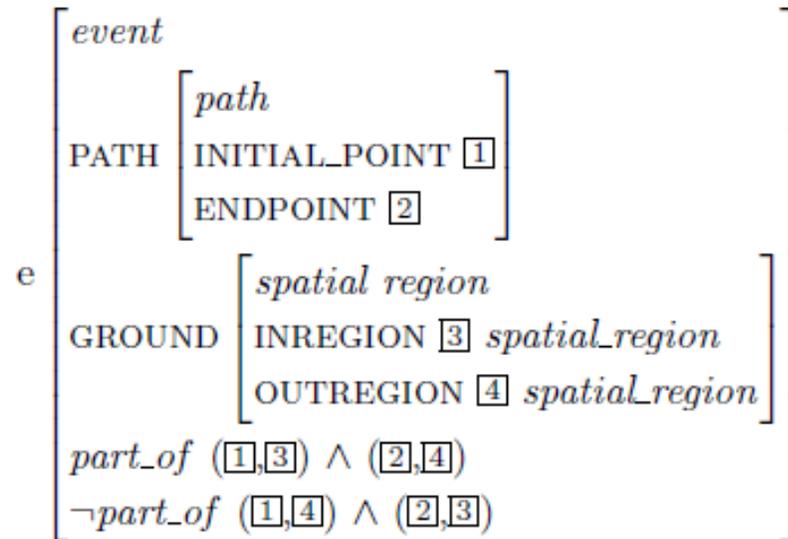


# lfr for “comparative” *out-*

- Based on causation frames in Kallmeyer & Oswald (2013)
- Assumption of 2 new subevents added to the base structure: CORRELATION and EFFECT
- Making use of Andreou’s (2017) “0!”-notation for structure copying (see Sag 2012)
- coerces any base into an eventuality and searches for similarity / compatibility of CAUSE on CORRELATION
- Constraint regulates applicability of comparative semantics

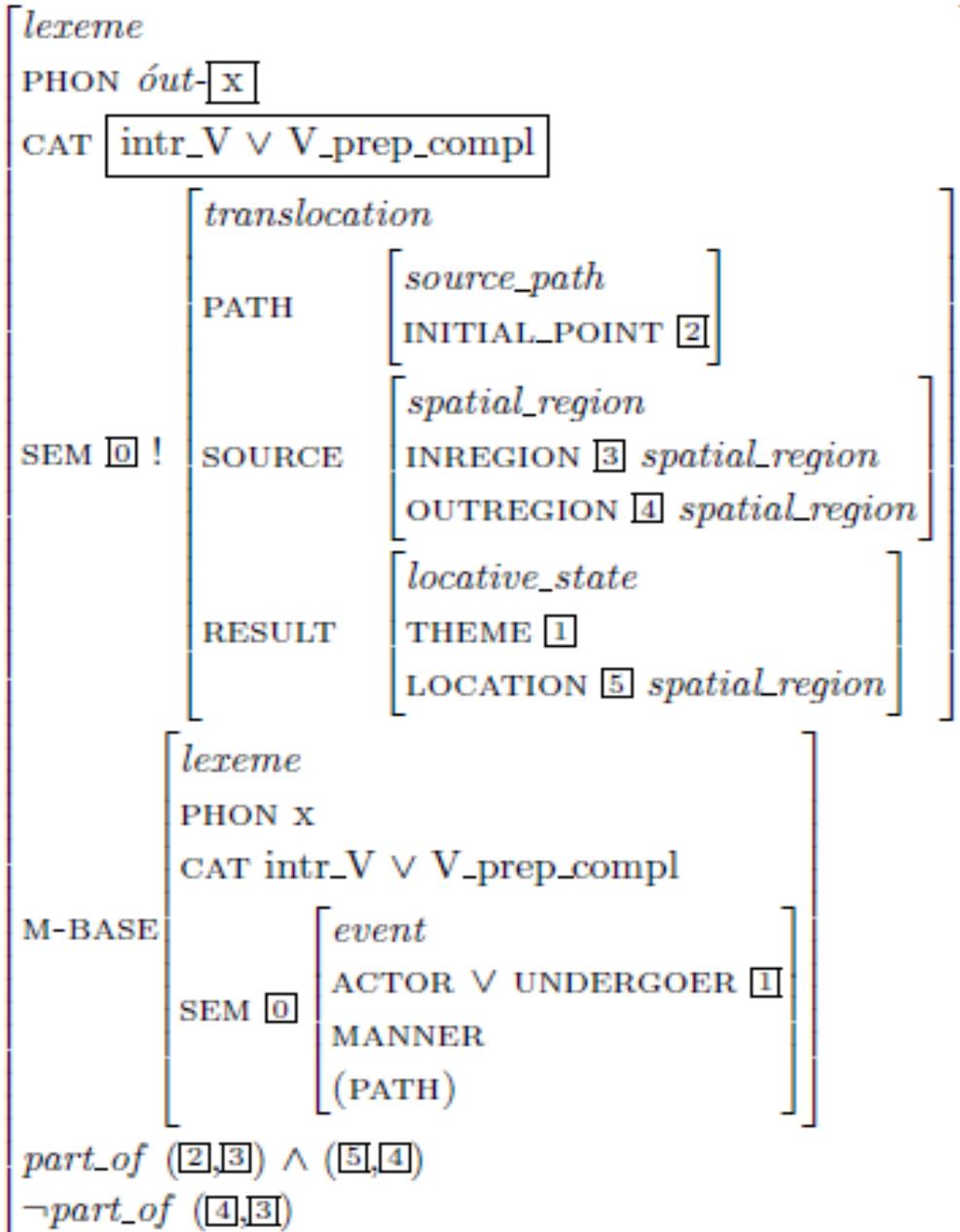
# Actual example for intransitive locative *out-*

*In turn, gas out-streaming from the young stars in the clusters can feed and energise the black hole. (iWeb)*



# lfr for intransitive “locative” *out-*

lfr



- Denotes *translocation* event
- Assumption of 1 new subevent added to the base structure: EFFECT
- Mereological constraints regulate the configurations between LOCATION (GROUND) and RESULT LOCATION

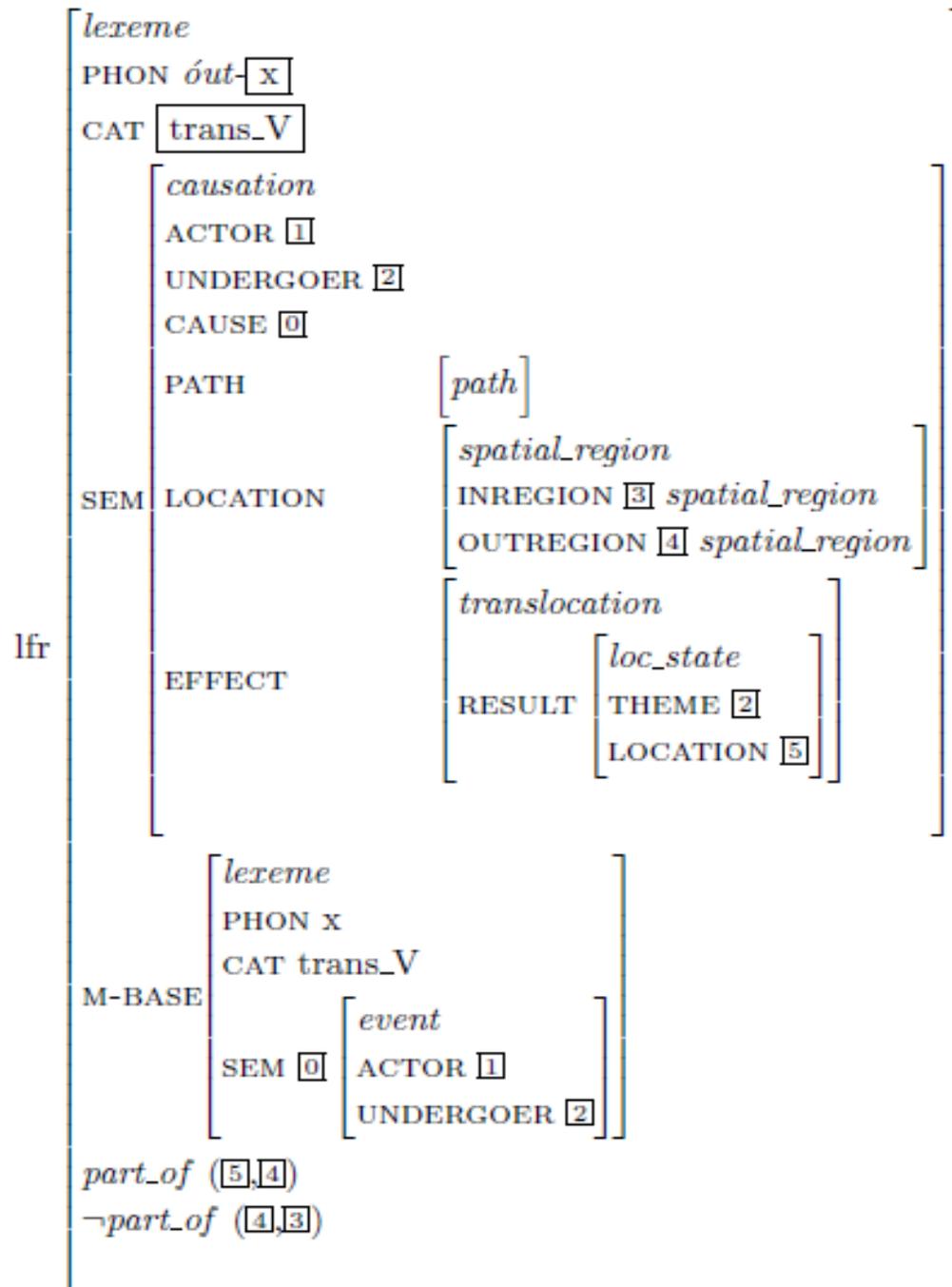
# Conclusion

- Locative/comparative *out*- both fall in the resultative spectrum
- Structural differences between two senses outweigh commonalities by far
- One core meaning for verbal *out*-? Unclear what is gained; large amount of structure needed to disentangle senses
- More likely: locative and comparative *out*- have developed into homophones (and partial ones at best)
- Obviously, there's a historical story to tell

# Thank you

- Andreou, M. 2017. Stereotype negation in Frame Semantics. *Glossa* 2(1):1-30.
- Barsalou, L. W. (1992). Frames, concepts, and conceptual fields. In Lehrer, A., editor, *Frames, fields, and contrasts*, pages 21-74. Erlbaum, Hillsdale.
- Bauer, L. and Huddleston, R. (2002). Lexical word-formation. In Huddleston, R. and Pullum, G. K., editors, *The Cambridge Grammar of the English Language*, pages 1621-1721. Cambridge University Press, Cambridge.
- Bauer, L., Lieber, R., and Plag, I. (2013). *The Oxford reference guide to English morphology*. Oxford University Press, Oxford.
- Bonami, O. and Cysmann, B. (2016). The role of morphology in constraint-based lexicalist grammars. In Hippisley, A. and Stump, G. T., editors, *Cambridge Handbook of Morphology*. Cambridge University Press, Cambridge.
- Kallmeyer, L. and Osswald, R. (2013). Syntax-driven semantic frame composition in lexicalized tree adjoining grammars. *Journal of Language Modelling*, 1(2):267-330.
- Kipper, K., Korhonen, A., Ryant, N., and Palmer, M. (2008). A large-scale classification of English verbs. *Language Resources and Evaluation*, 42(1):21-40.
- Koenig, J.-P. (1999). *Lexical relations*. CSLI, Stanford.
- Kotowski, S. (2020). The semantics of English out-prefixation: A corpus-based investigation. To appear in *English Language and Linguistics*.
- Löbner, S. (2015). Functional concepts and frames. In Gamerschlag, T., Gerland, D., Osswald, R., and Petersen, W., editors, *Meaning, Frames, and Conceptual Representation*, pages 35-62. Düsseldorf University Press, Düsseldorf.
- Marchand, H. (1969). *The categories and types of present-day English word-formation*. C.H. Beck, München, 2<sup>nd</sup> edition.
- McIntyre, A. (2003). Preverbs, argument linking and verb semantics. In Booij, G. and Marle, J., editors, *Yearbook of Morphology 2003*, pages 119-144. Kluwer Academic, Dordrecht and London.
- Nagano, A. (2011). The right-headedness of morphology and the status and development of category-determining prefixes in English. *English Language and Linguistics*, 15(01):61-83.
- Petersen, W. (2007). Representation of concepts as frames. In Skilters, J., editor, *The Baltic international yearbook of cognition, logic and communication*, volume 2, pages 151-170.
- Plag, I., Andreou, M., and Kawaletz, L. (2018). A frame-semantic approach to polysemy in affixation. In Bonami, O., Boyé, G., Dal, G., Giraudo, H., and Namer, F., editors, *The lexeme in descriptive and theoretical morphology*. Language Science Press, Berlin.
- Rainer, F. (2014). Polysemy in derivation. In Lieber, R. and Stekauer, P., editors, *The Oxford handbook of derivational morphology*, Oxford handbooks in linguistics, pages 338-353. Oxford Univ. Press, Oxford.
- Sag, I. A. (2012). Sign-based construction grammar: An informal synopsis. In Boas, H. C. and Sag, I. A., editors, *Sign-based construction grammar*, CSLI lecture notes, pages 69-202. CSLI Publ. Center for the Study of Language and Information, Stanford, Calif.
- Talmy, L. (2000). *Toward a cognitive semantics, Vol.II: Typology and Process in Concept Structuring*. Language, speech, and communication. MIT Press, Cambridge, MA.
- Tolskaya, I. (2014). *Verbal Prefixes: Selection and Interpretation*. PhD thesis, University in Tromsø, Tromsø.

# lfr for transitive “locative” *out-*



- Also denotes *causation* event
- Assumption of 0/1 new subevents added to the base structure: EFFECT
- Mereological constraints regulate the configurations between LOCATION (GROUND) and RESULT LOCATION