

# Comparing Annotation Frameworks for Lexical Semantic Change

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## Diachr. Usage Relatedness (DURel)

### EARLIER

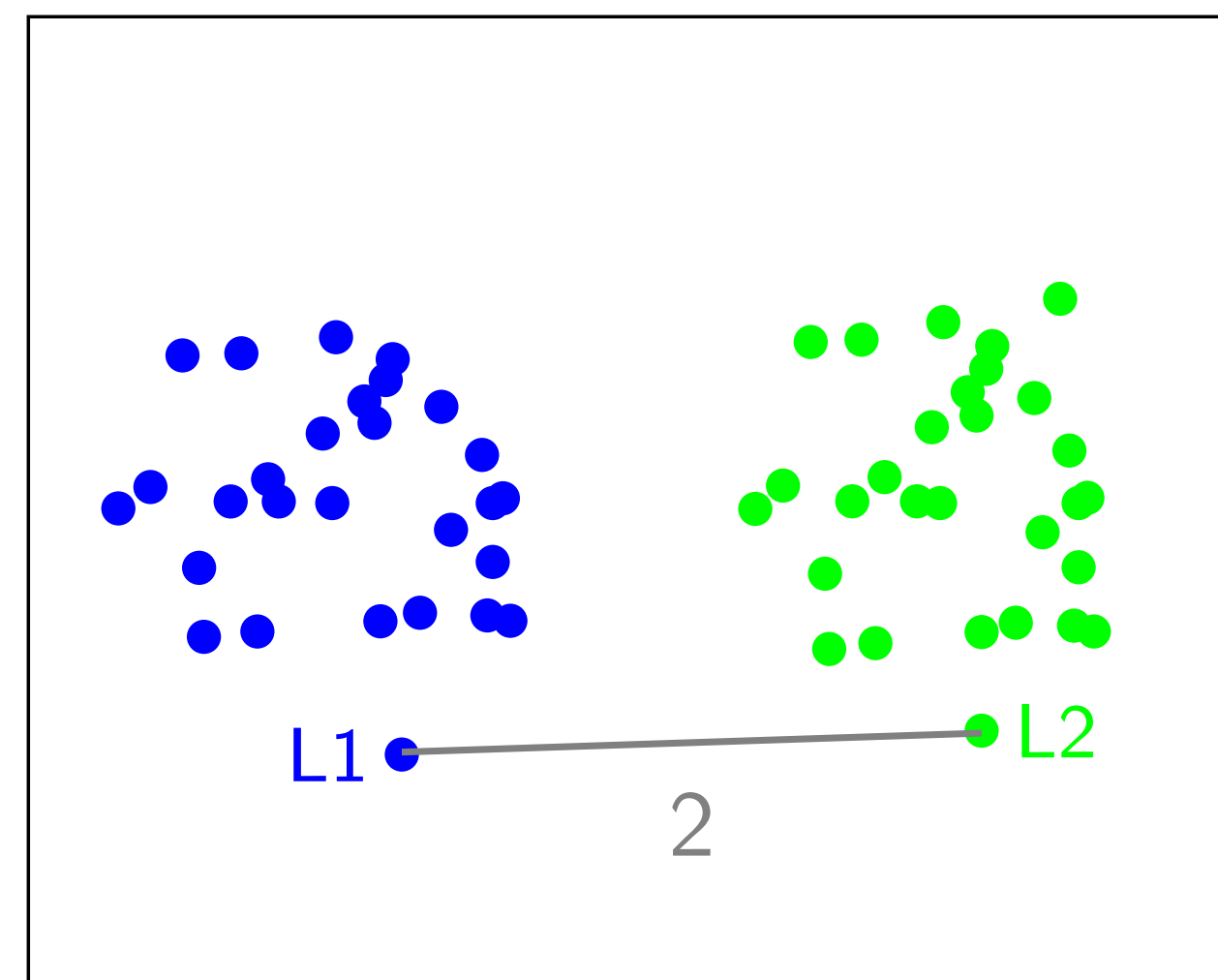
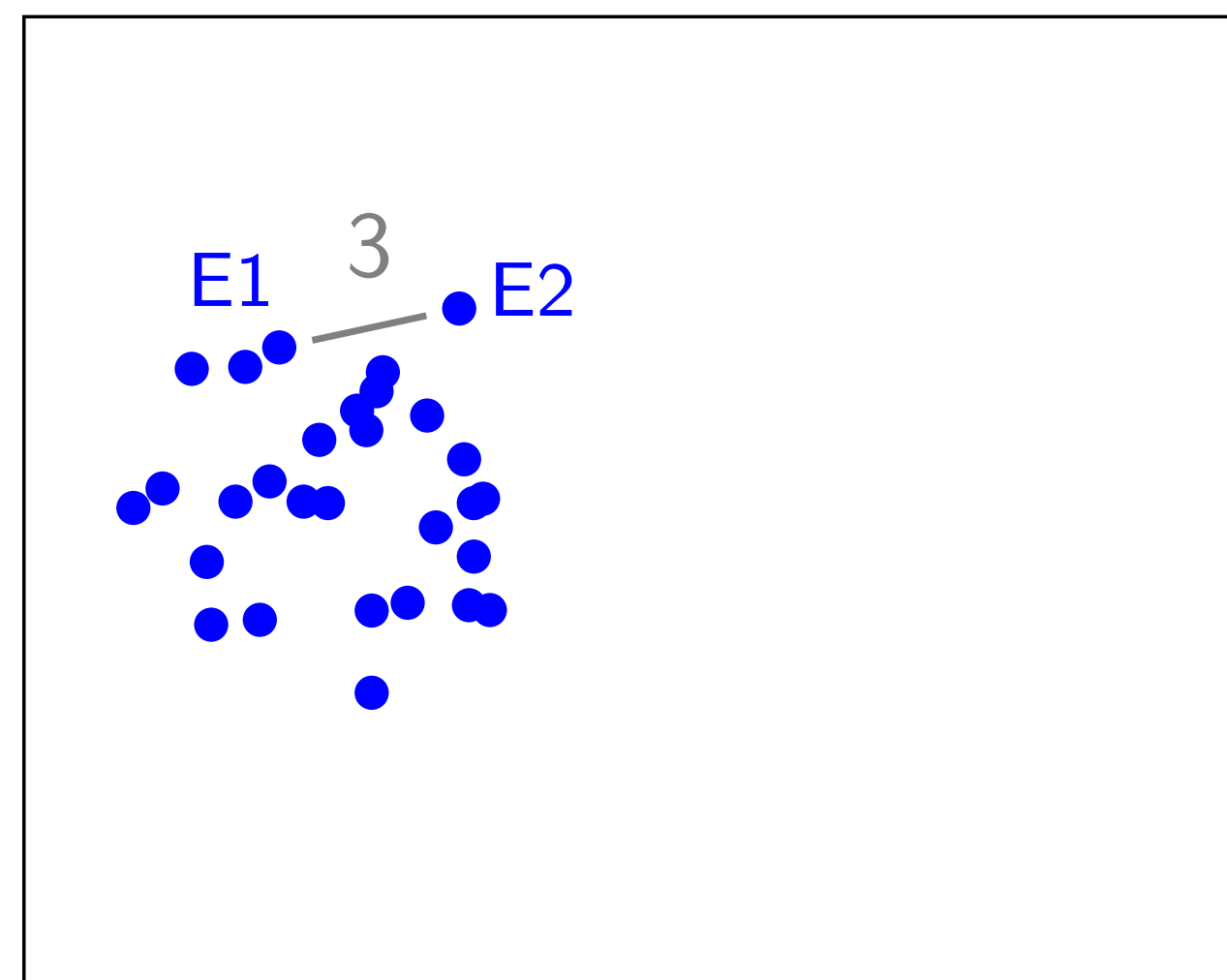
### LATER

An schrecklichen Donnerwettern und heftigen Regengüssen fehlt es hier auch nicht. (E1)

Oder es überschauerte ihn wie ein Donnerwetter mit Platzregen. (L1)

Bey Donnerwettern bekommt der Erdboden ausserordentlich viel electrisches Feuer (E2)

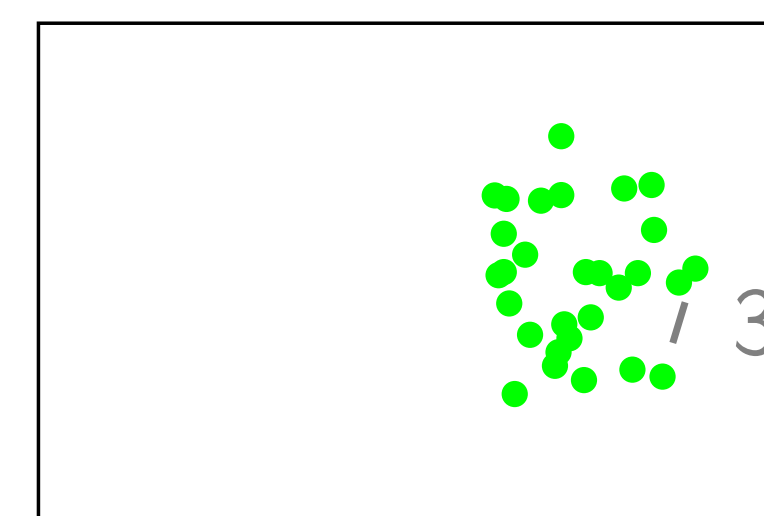
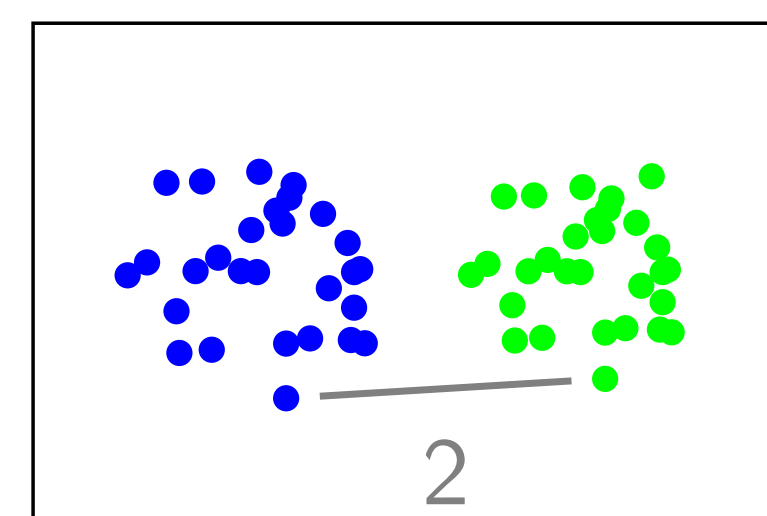
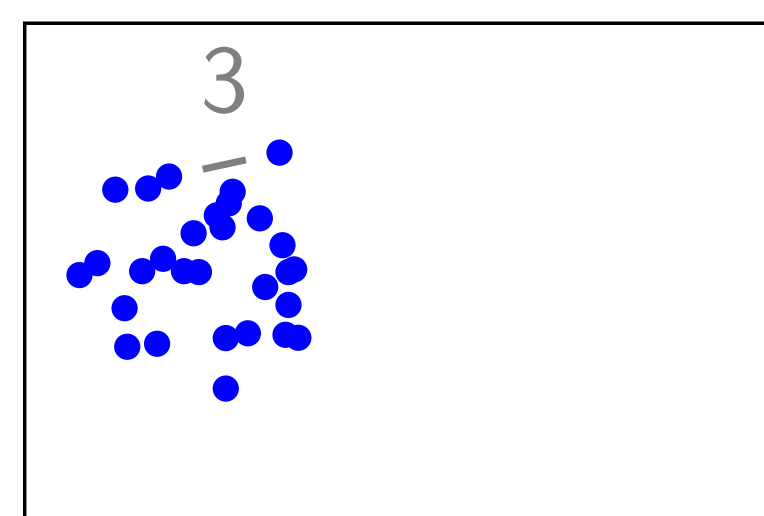
Potz Donnerwetter! (L2)



$t_1$ : EARLIER

$t_2$ : LATER

2-dimensional use spaces (semantic constellation) in two time periods with a target word  $w$  undergoing innovative meaning change. Dots represent uses of  $w$ . Spatial proximity of two uses means high relatedness [1, 2].

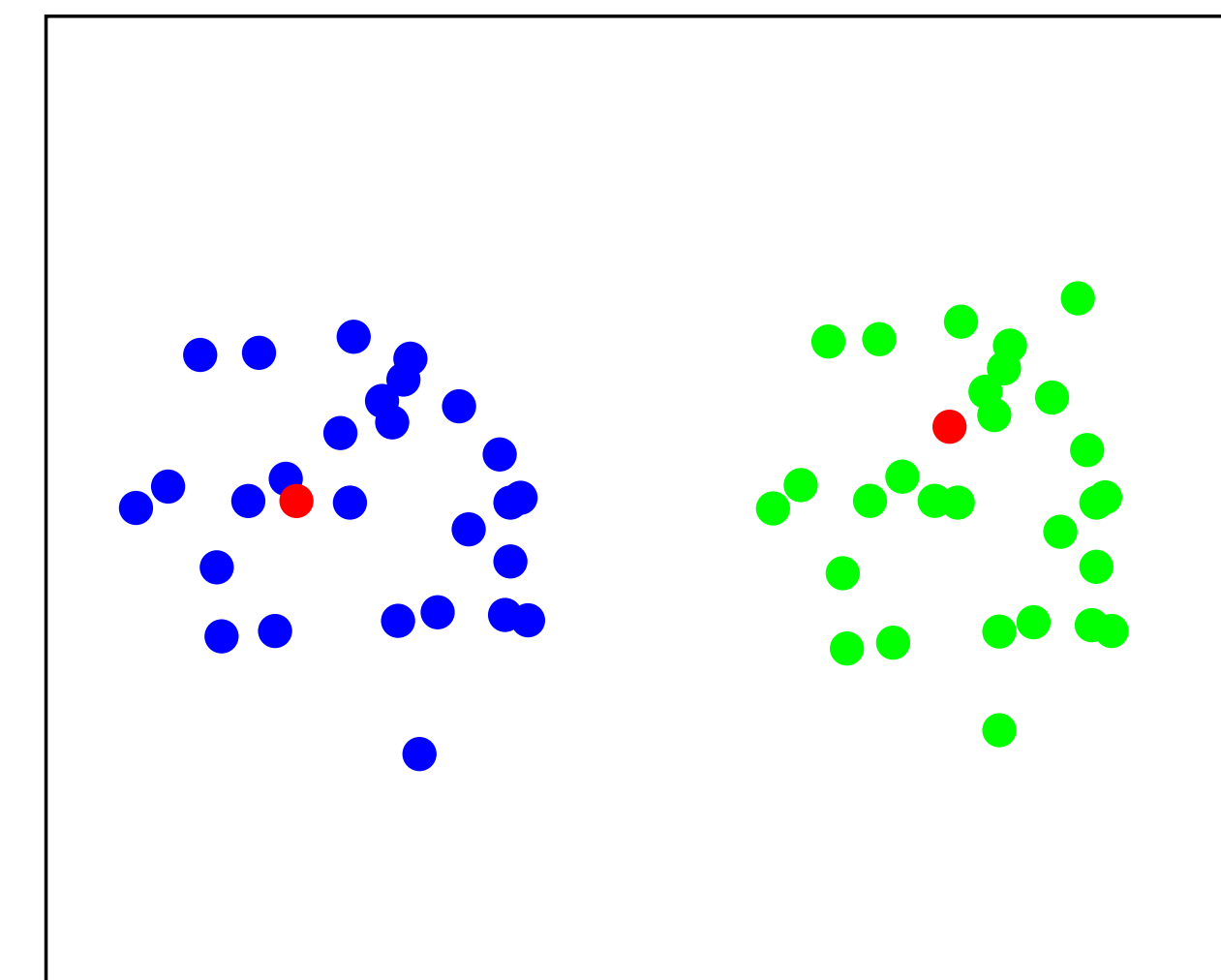
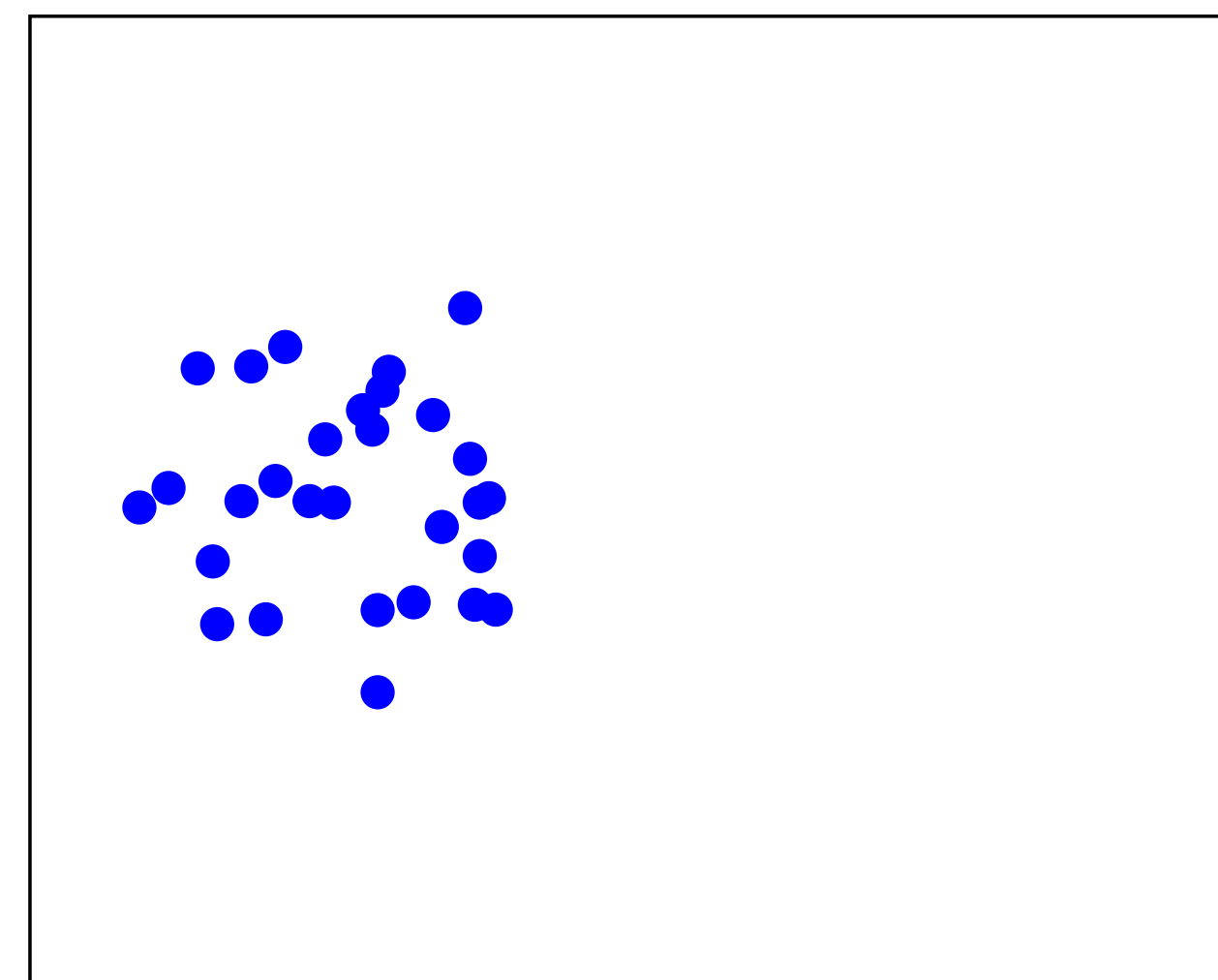


$t_1$ : EARLIER

$t_2$ : LATER

Innovative followed by reductive meaning change. Mean relatedness change predicts no LSC.

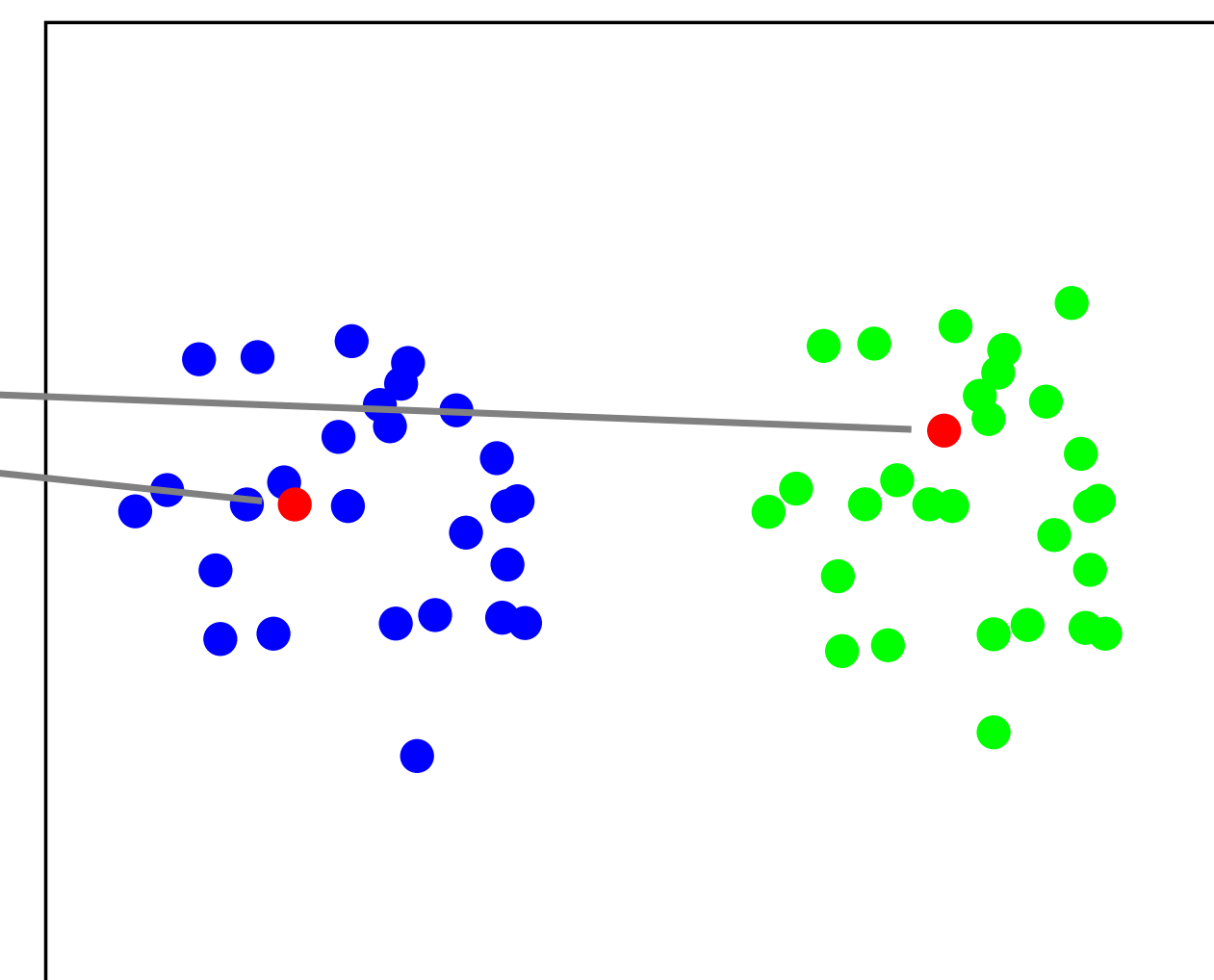
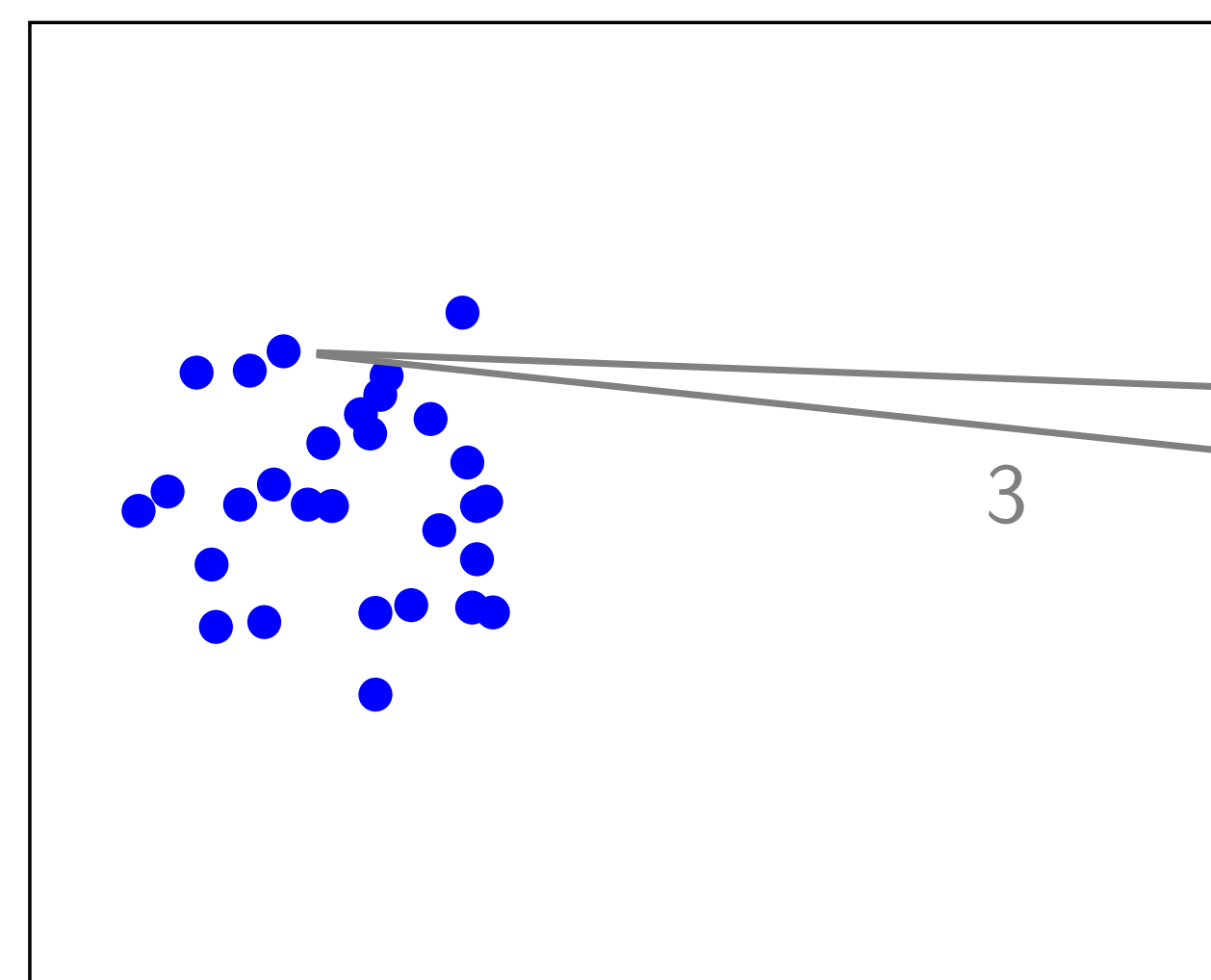
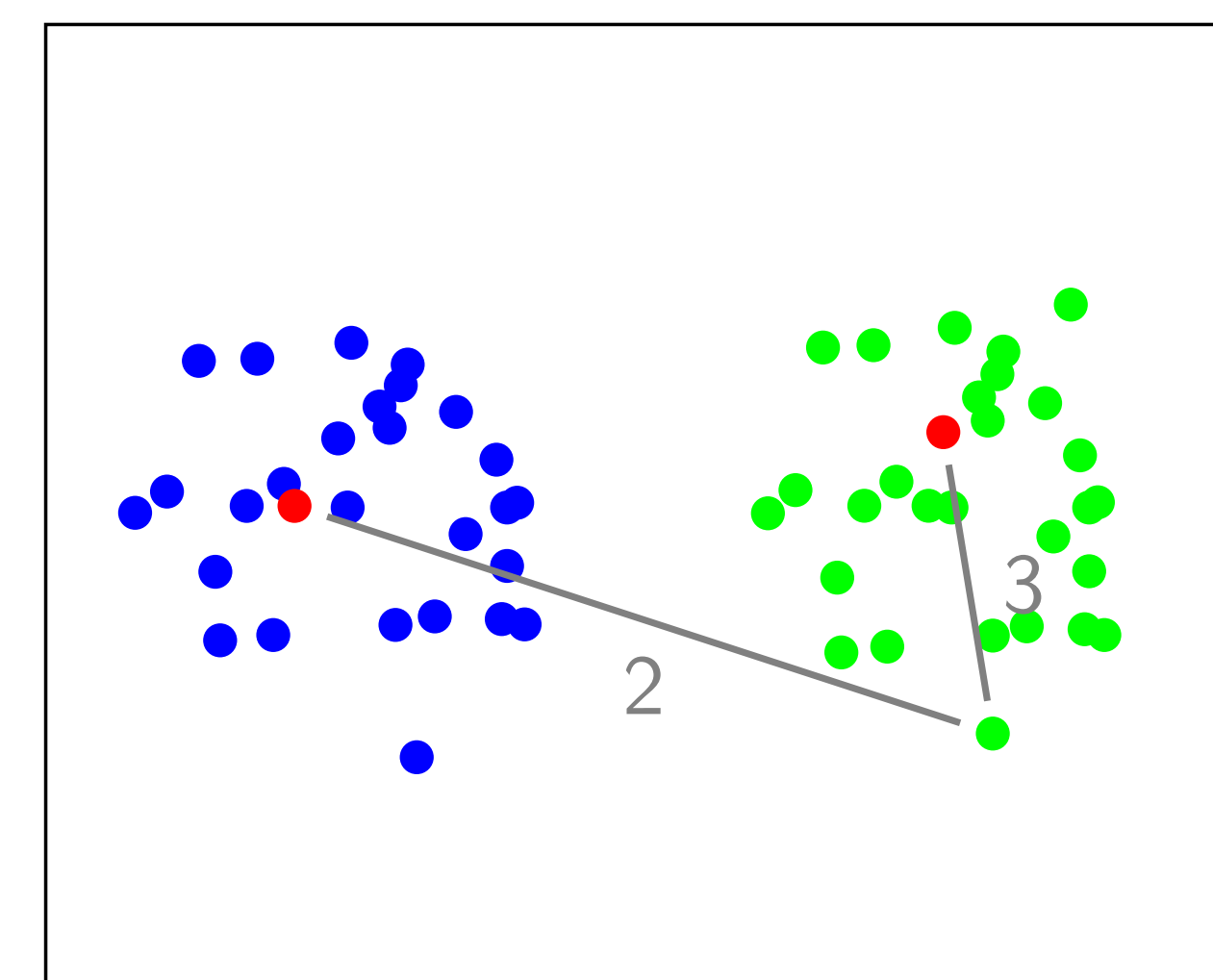
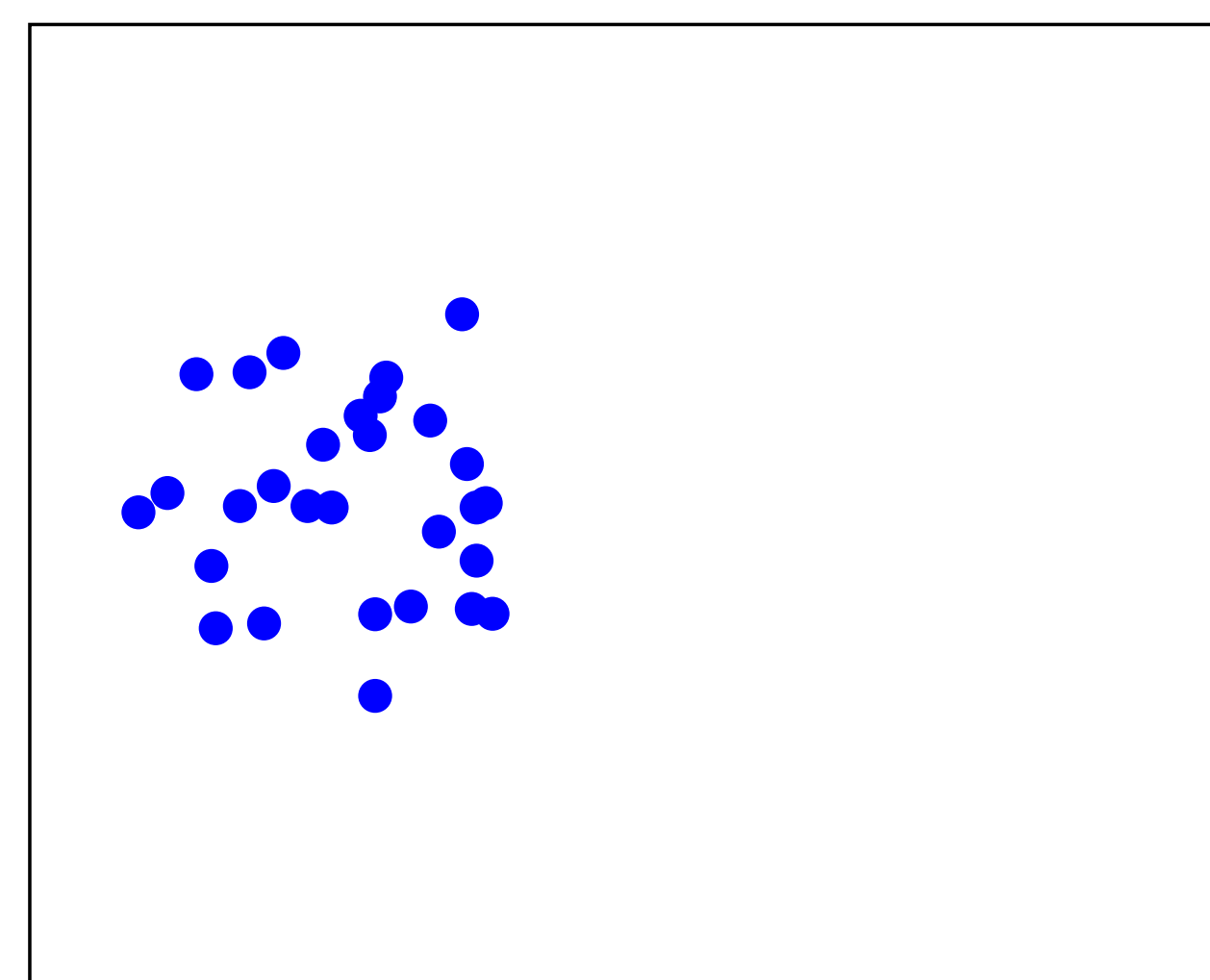
## DURel with Centroids



$t_1$ : EARLIER

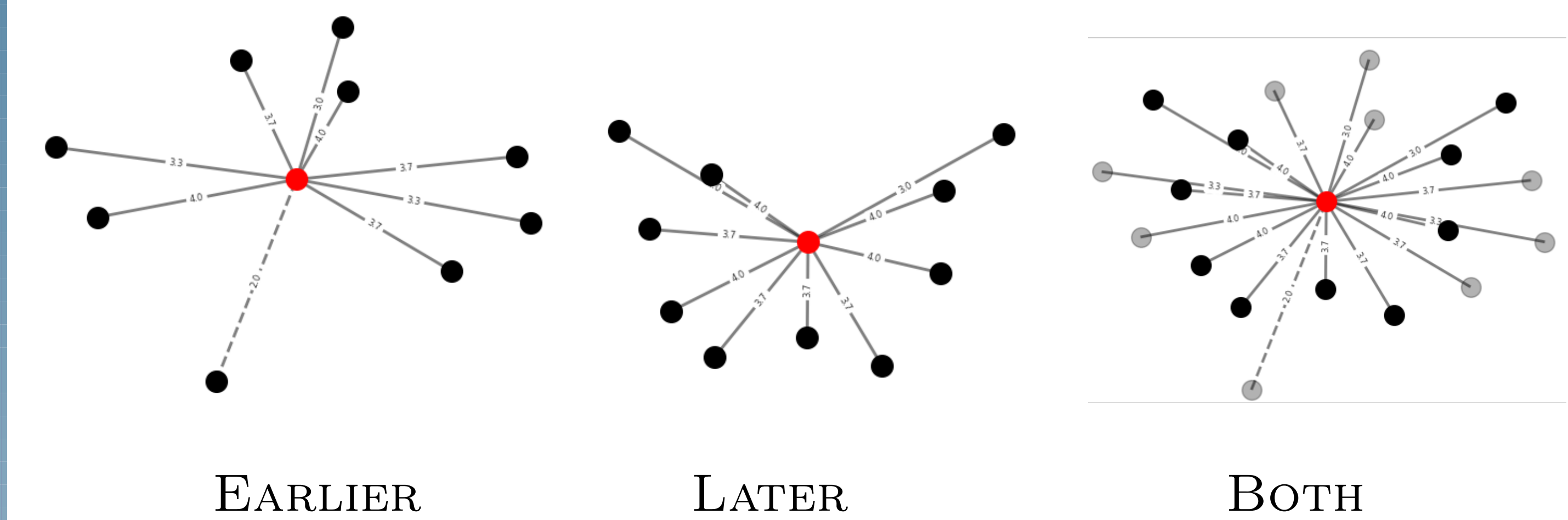
$t_2$ : LATER

Manually chosen **sense centroids** for each sense cluster.

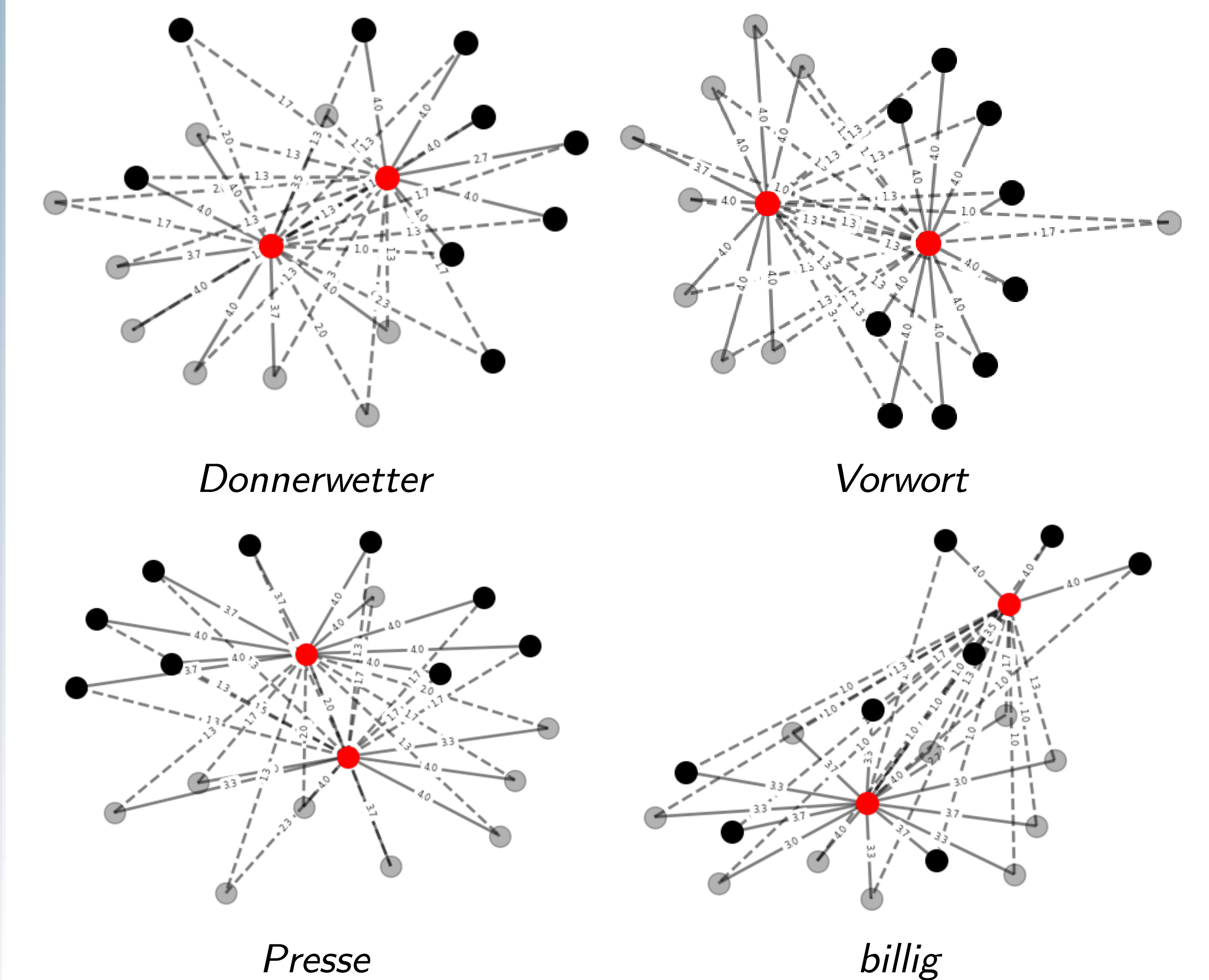


Comparison of uses from different time periods against sense centroids.

## Results



Graph visualization retrieved from annotation data from time periods for target *Abend*. **Centroids** are plotted red. Continuous lines mark edge judgments  $\geq 2.5$ , while dashed lines mark edge weights  $< 2.5$ . Node distance between connected nodes (mostly) reflects their judgment score (edge label).



## References

- [1] K. Erk, D. McCarthy, and N. Gaylord. "Measuring Word Meaning in Context". In: *Computational Linguistics* 39.3 (2013), pp. 511–554.
- [2] D. Schlechtweg, S. Schulte im Walde, and S. Eckmann. "Diachronic Usage Relatedness (DURel): A Framework for the Annotation of Lexical Semantic Change". In: *Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*. New Orleans, Louisiana, 2018, pp. 169–174.