Does the rain hit the window playfullly? A frame-based analysis of German hit-verbs

Anja Goldschmidt[1] Ekaterina Gabrovska[2] Thomas Gamerschlag[2] Wiebke Petersen[2] Wilhelm Geuder[2]

UiL OTS, Utrecht University

Institute of Language and Information, Heinrich-Heine University Düsseldorf

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1. Introduction to data on *schlagen*
   - Animacy and the force component
   - Inanimacy and the force component
   - Modification by *spielerisch* - 1
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2. A frame analysis of *schlagen*
   - Modelling the hitting and to be hit entities
   - Modelling the movement component
   - Modelling the force component
   - Bringing it all together
   - *spielerisch* again
3. Conclusion

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≈ She hit him √lightly/√hard.

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- small questionnaire study shows that acceptance drops by 50% when *hart* is used as opposed to *leicht* in (1b)
- high force inference due to agentivity (agent has intention to hit with hight force); however, inference can be cancelled (cf. 1b), if e.g. the hit goes amiss

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	hit lightly	hit hard	hit, but lightly	hit, but hard
the rain & the window	100%	93,75%	36,37%	75%
the guitar & the table	100%	92,85%	37,50%	35,72%
the tree & the car	25%	63,63%	21,43%	36,37%

Table: Results of the inanimate constructions with *hart* and *leicht*: percentages show ratings for 'maybe good' and 'clearly good'

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- no animate agent = no intention (to hit with high force) = no inference about force

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- prototypical example with tree (one hit, clearly not animated) shows pattern as expected

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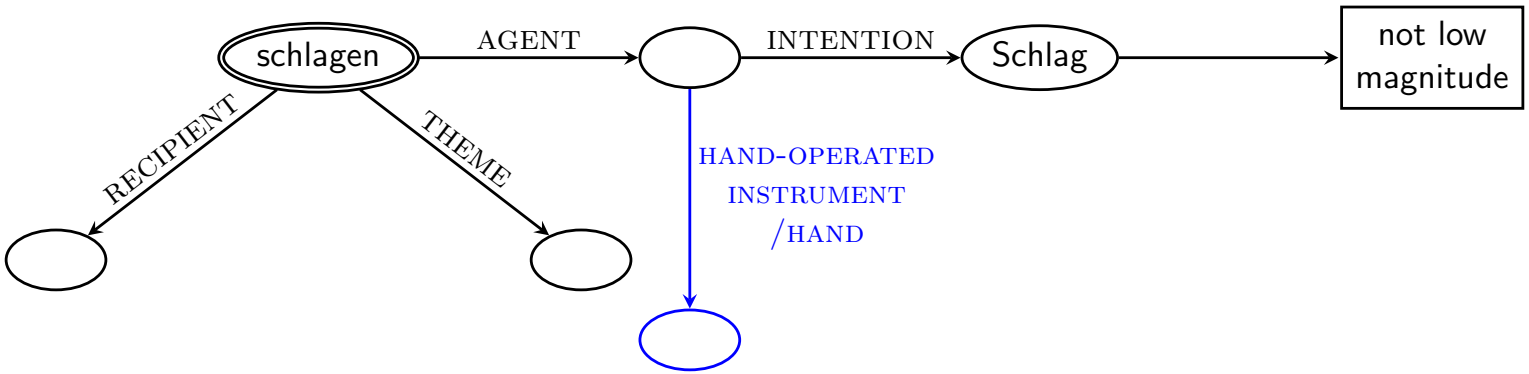
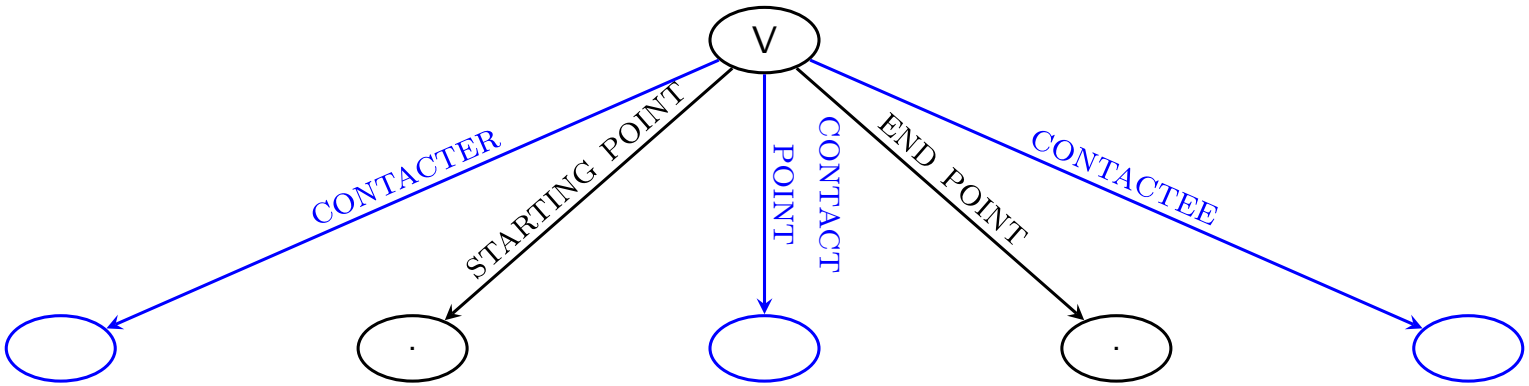


Modelling the movement component

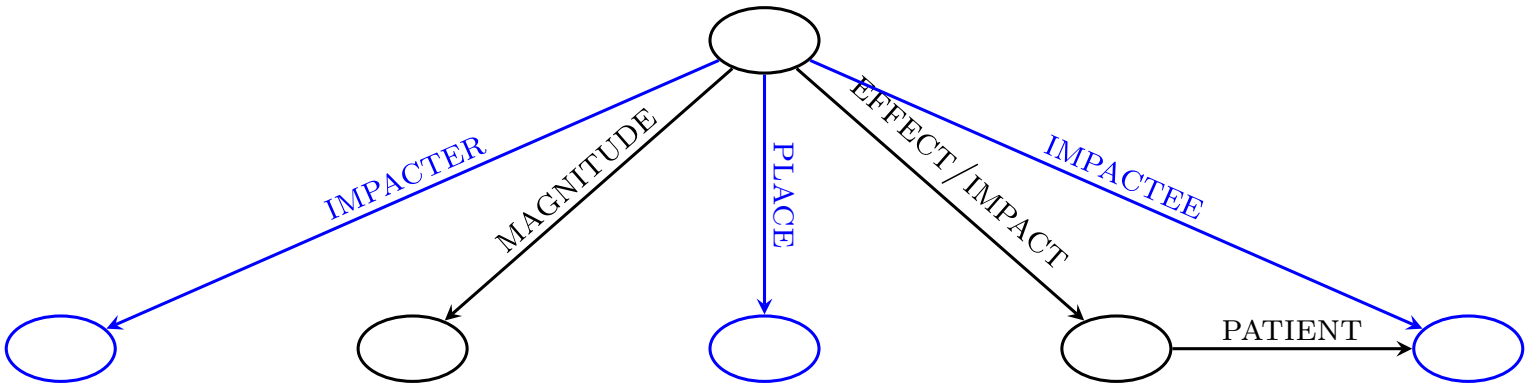
path: (cf. Zwarts, 2005; Naumann, 2013)



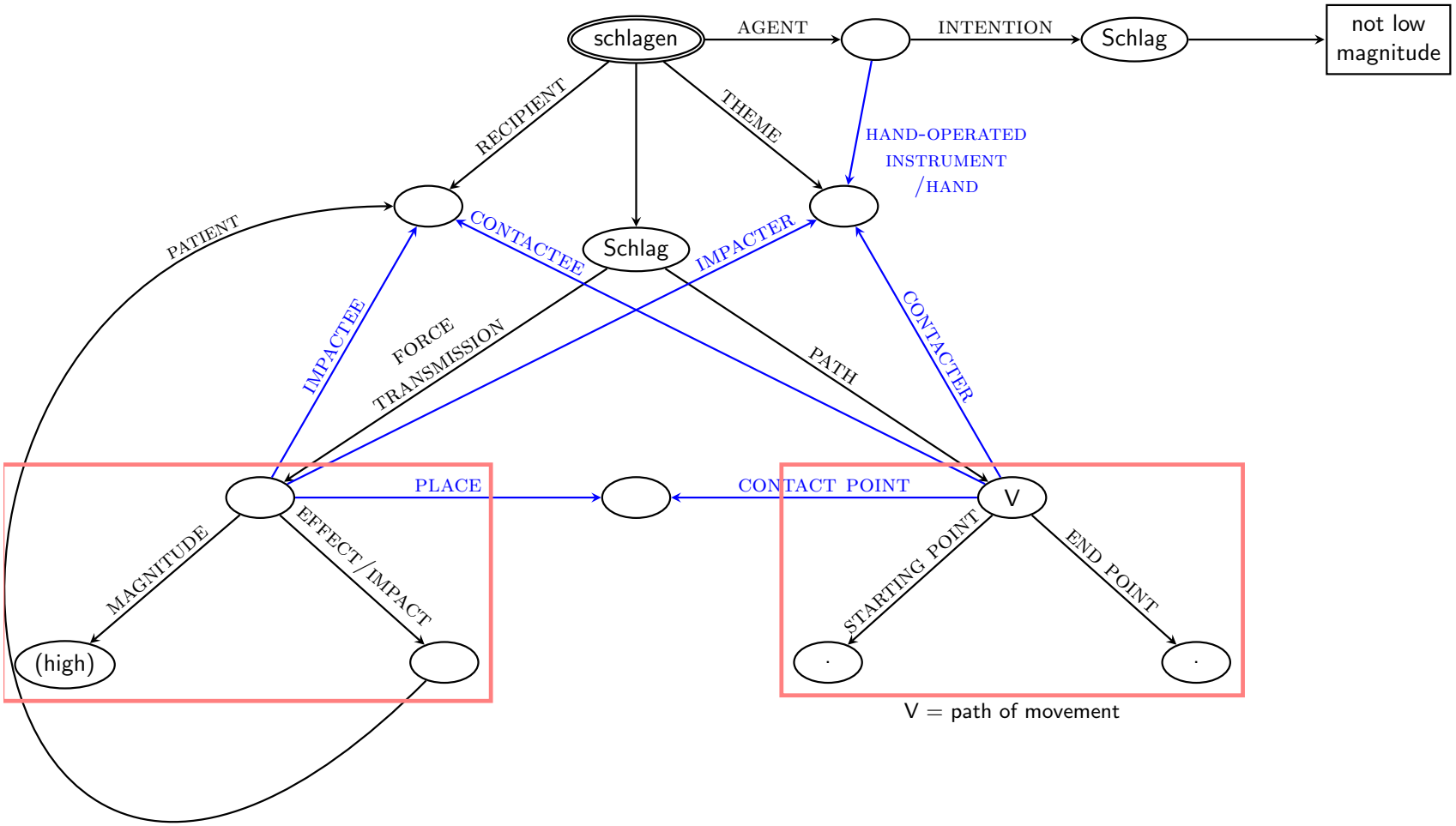
V = path of movement

Modelling the force component

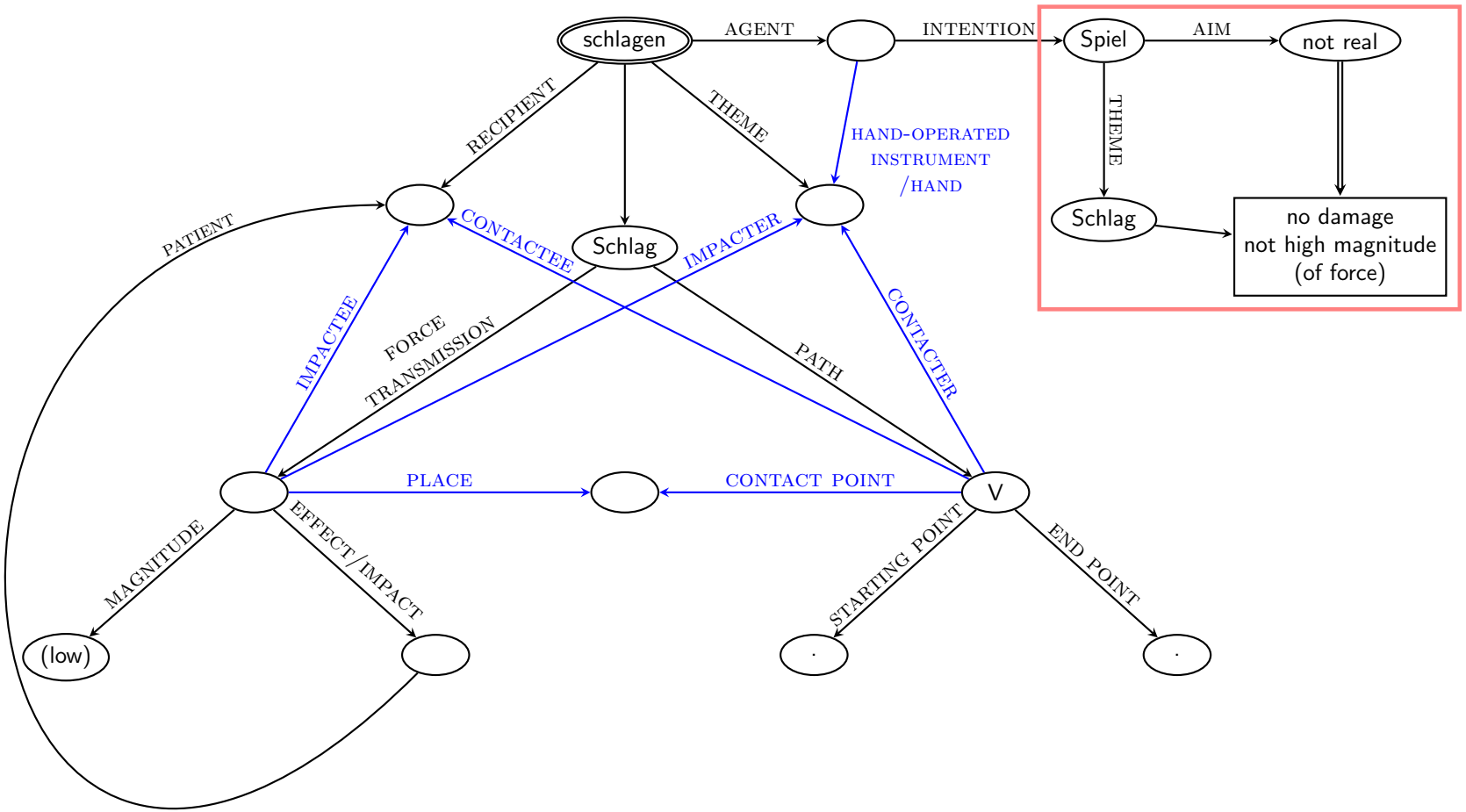
force transmission: (cf. Talmy, 2000; Copley & Harley, 2015)



Bringing it all together



spielerisch again



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- how to model the lexical aspects of *schlagen* and *spielerisch* in Frame Semantics á la Barsalou (1992) and Petersen (2007)

References

Barsalou, L.: Frames, concepts, and conceptual fields. In A. Lehrer and E. Feder Kittay (eds.), Frames, fields, and contrasts, 21–74, Lawrence Erlbaum Associates, (1992)

Copley, B. and Harley, H.: A force-theoretic framework for event structure. Linguistics and Philosophy, 38, 103–158 (2015)

Levin, B.: English Verb Classes and Alternations – A Preliminary Investigation. The University of Chicago Press (1993)

Naumann, R.: Outline of a dynamic theory of frames. In G. Bezhanishvili, S. Lbner, V. Marra and F. Richter (eds.), Logic, language, and computation, LNCS, 7758, Springer, 115–137 (2013)

Petersen, W.: Representation of Concepts as Frames. In: J. Skilters, F. Toccafondi and G. Stemberger (eds.), Complex Cognition and Qualitative Science. The Baltic International Yearbook of Cognition, Logic and Communication, 2, p. 151-170, University of Latvia, (2007)

Talmy, L.: Force Dynamics in Language and Cognition. The MIT Press (2000)

Zwarts, J.: Prepositional Aspect and the Algebra of Paths. Linguistics and Philosophy, 28(6), 739–779 (2005)

Thank you for your attention!