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Constructions and Frames in Scientific and Everyday Communication:
Towards a Web-based 'Constructicon' of Technical Language

I. Aims

❖ Set-up of a web-based network of interrelated frames and syntactic constructions ("constructicon") of technical language (as opposed to everyday language)

❖ Collecting and illustrating empirically 'approved' constructions, including 'rich' semantic descriptions and relations holding between constructions

❖ Illuminating the gap between scientific and everyday communication

❖ The constructicon as a helpful tool for practitioners (e.g. journalists)

II. Collaborations

❖ The project is designed as a joined project with the 'International Computer Science Institute' in Berkeley, California, USA. It profits from computer-based annotation tools and software developed within the FrameNet project.

❖ The project is also integrated in the working group "Construction Grammar of German" founded by Alexander Lasch (Kiel) and myself in 2009

   ❖ Close collaboration (particularly in terms of implementation issues) with Hans C. Boas (director of German FrameNet, Austin/USA), FuD (Trier) [http://fud.uni-trier.de], and semtracks GmbH.

III. Background

❖ Construction Grammar (CxG)

   • Comprehensive approach to linguistic structures & their cognitive representations

   • 'Bottom-up' & usage-based model (Boas *in press*, Goldberg 1995, Ziem 2009)

   • Construction as a format for *all* conventional form-meaning pairings in German (e.g. morphemes, idioms; verb-argument/resultative/passive constructions etc.), including register variations (ordinary vs. technical/scientific language use)

❖ Frame Semantics

   • Frames as conceptual structures underpinning word meanings & constructional, including idiomatic, meanings (Ziem 2008, 2011a, Ziem/Staffeldt 2011, for application in the domain of advertisement cf. Ziem *im Druck*)

   • Focus on the semantics-syntax interface (Fillmore/Ruppenhofer/Collin 2004)

❖ Constructions and Frames in Scientific Communication

   • Data basis: Corpus of scientific and public communication on 'crises' comprising app. 18.000 texts

   • High relevance of 'rich' semantic descriptions associated to linguistic units of varying degrees of complexity (cf. Ziem 2008, Handwerker 2008)

   • Lack of a theoretical and computational framework addressing both 'core' grammar and linguistic 'idiosyncrasies', such as idiomatic variation, argument variation, metaphorical shifts etc.
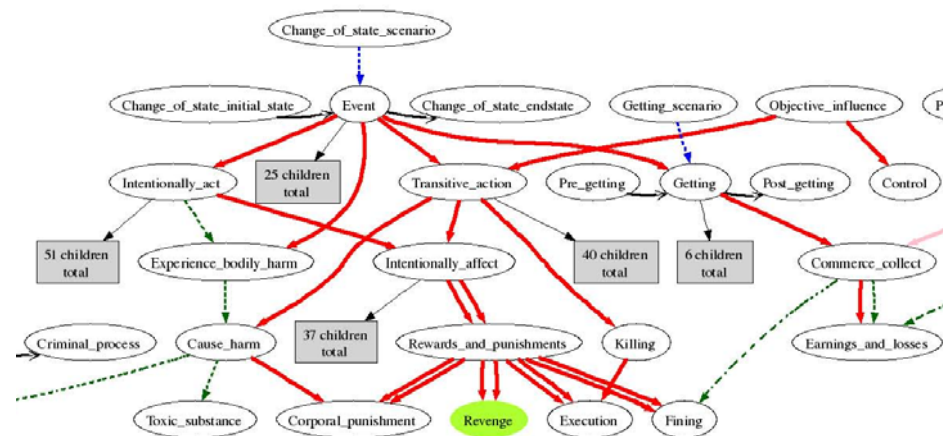
• Lack of a construction-based platform

➔ - CxG as a general framework for modeling knowledge in communication domains
   - Frames as a tool to model 'rich' constructional meanings (cf. Ziem 2011)
   - Relevance of FrameNet and its web-based tools (e.g. the FrameGrapher for illustrating semantic roles and frame-to-frame-relations) for scientific in contrast to everyday communication

IV. Design of a web-based 'constructicon' for scientific communication

❖ **FrameNet and the 'constructicon' of technical language use** – extending FrameNet from lexical to constructional units (cf. Fillmore et al. *in press*):

FrameNet lexicon	'Constructicon'
Lexical entries: description of frame elements (= valency pattern/semantic roles), frame-to-frame-relations, annotated examples	Constructional entries: description of (i) constructional elements (= syntactic components/functions), (ii) meaning of the construction, (iii) the position in the network
Frame elements = semantic roles in a frame	Constructional elements = syntactic functions
Examples illustrate lexical units in context	Examples illustrate constructional units in context
Illustration of frame-to-frame-relations and inheritance links in a network	Illustration of relations to familiar constructions and inheritance links

❖ **FrameGrapher as a didactic tool** – the example of the `revenge` frame:
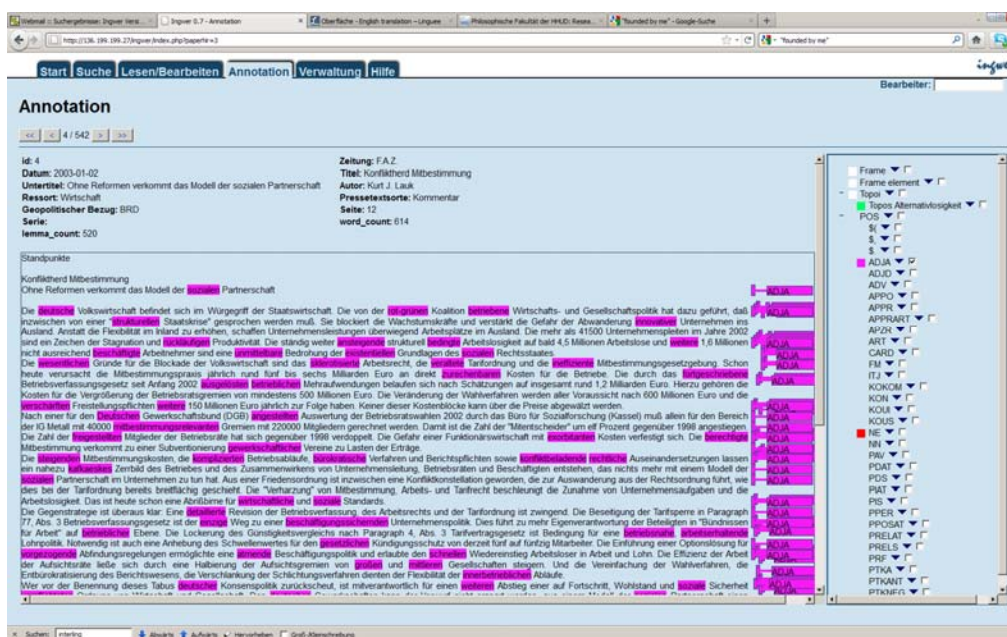

➔ Extending FrameGrapher to a 'ConstructionGrapher' for technical language use

❖ **Semantic annotations by means of INGWER**: Identifying new constructions of German

- INGWER = Web-based corpus-management and annotation tool designed and programmed as part of the DFG-research project "Linguistic construals" (principal investigators: Alexander Ziem/Martin Wengeler, Trier) in cooperation with IDS-Mannheim and semtrack® (cf. http://www.semtracks.com/web/index.php?id=1&id2=3&level=1)

- INGWER allows for (i) multilayered semantic annotations of POS-tagged corpora, (ii) quantitative analyses by means of the attached IMS Corpus Workbench

Screen shot of the annotation tool provided by INGWER:

- INGWER allows for data export/import to XML-, txt-format and to Lexico3

V. Added values of a 'constructicon' for technical language use

❖ Exemplary illustrations of (German) constructions facilitate item-based understanding

❖ Inheritance links between constructions serve as didactical tools in that they relate constructions to an entire family of constructions

❖ Possible extensions: web-based 'constructicon' allows for integrating…
- … comparisons of constructions between technical and ordinary language use
- …constructions specific to spoken language (e.g. topicalisation and cleft constructions, discourse marker) and linguistic variation

VI. Selected literature

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