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 (‘constructionicon’) 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 constructionicon 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
  - 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
  - Lack of a theoretical and computational framework addressing both ‘core’ grammar and linguistic ‘diosyncrasies’, 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):

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

- 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:

![Screen shot of annotation tool](image)

- **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