Framing instrumental roles in titles of medical abstracts:
a combined conceptual and modelling UML approach

Topic – This paper provides a detailed description of the instrumental role in conceptualized events which cause states to transform or inchoative events to occur as in FrameNet (Ruppenhofer et al. 2006). In line with action chains in cognitive grammar (Langacker 2008) and causality in Talmy (2000), instrumentals are part of a causal process. In this respect, we integrate cognitive linguistics and medical terminology/LSP (Nuopponen 2008) into FrameNet's considerations on using frames designed for LGP.

Theme –Medical journal titles are discursive subgenres in which medical doctors retrieve treatment methods for diseases. These titles reflect causal cues (italics in the example) and instrumentals (in bold) by linking treatments and their effect(s) on patient states, as in

> Ischemia *Induced by* Transesophageal Atrial Pacing Stress **Echocardiography** *Predicts* Long-Term Mortality.

We analyze instrumentals in titles concerning three medical subdisciplines: microsurgery, cardiology and dermatology. Medical subdisciplines partly determine instrumental subtyping. (Author forthcoming).

Corpus – Previously, we analyzed cross-linguistic French-German analogies and differences in syntactic and part-of-speech subtyping of instrumental relations. In this paper, we extend our analysis to 150 specialized English titles taking into consideration the subdiscipline variation in authentic expert language mentioned before.

Results – We provide detailed patterns for instrumentality in causality, which raise three issues.

1. Instrumentality is distributed over different entity classes (Schalley 2007) beyond prepositional syntagms or noun syntagms assumed by traditional literature.
2. Instrumental subtypes are linked to particular medical subdisciplines, with their respective treatment typologies: not only medical substances, devices or techniques, but also research actions like report types, sampling techniques and the like.
3. Instrumental subtypes with causal cues for causing and caused events can be represented as UML dynamic conceptual maps used in object-oriented analysis.

This analysis offers a threefold advantage.

1. On the theoretical level, instrumental relations can be related to conceptual templates for temporal relations between types of diagnoses and one or multiple correlated simultaneous, subsequent or alternative medical treatments.
2. On the corpus side, FrameNet is shown to be relevant to medical ontology (Aaberge 2008), where corpus-based FrameNets have been largely left unexplored.
3. From a more applied perspective, conceptual UML templates can be used in databases for automatic retrieval in a formal language accessible to the not linguistically skilled medical or IT expert.

References

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