Irene Rapp / Ekaterina Laptieva / Alexander Koplenig / Stefan Engelberg

Lexical-semantic fitting and argument-structural inertia: alternation between infinitives and "that" clauses

We investigate quantitative and qualitative aspects of the alternation between German *zu*+infinitive constructions ('to' + inf.) and finite *dass*-clauses ('that' + finite S) in object function. Numerous verbs allow both forms in their complement position. However, there are differences with regard to the markedness of an infinitival complement: for example, an infinitive is completely unmarked with *gestehen* 'admit' (1a), but very rare as a complement of *sagen* 'say' (1b):

(1a)   Sie gestand, das Brot gegessen zu haben / dass sie das Brot gegessen hatte.
        She admitted the bread eaten to have / that she the bread eaten had
        'She admitted to having eaten the bread / that she had eaten the bread'

(1b)   Paul sagte, ?den Mann zu kennen / dass er den Mann kannte.
        Paul said the man to know / that he the man knew
        'Paul admitted to knowing the man / that he knew the man'

We claim that the preferences of matrix verbs for the selection of one of the two complement types can be derived from their lexical-semantic properties. The first important factor is control. Embedded infinitives require their silent PRO subject to be controlled by an argument of the matrix verb. We make the assumption that the semantic counterpart of this syntactic control is a responsibility relation between this matrix argument and the embedded proposition. Our first hypothesis is that verbs that have a strong tendency to express such a responsibility relation (like *gestehen* 'admit') select more infinitives than verbs that are neutral with respect to control like *sagen* 'say' or *behaupten* 'assert' (control hypothesis).

The second factor is the morphological under-specification of infinitives: they are not marked for tense or mode (indicative or subjunctive). Under the assumption that semantically under-specified structures are avoided in language, we expect verbs that show a strong lexically grounded preference for a particular temporal interpretation (like *ankündigen* 'announce': future-oriented), or verbs that show a strong preference for a particular modal interpretation (like *bedauern* 'regret': factive), to select more infinitives than verbs that are rather variable for tense and mode, such as *sagen* 'say' or *behaupten* 'assert' (tense and mode hypothesis).

These two hypotheses are embedded into a specific theoretical understanding with regard to the choice of argument variants. In particular, we assume that the choice of a particular variant is highly influenced by a factor that we call "argument-structural inertia": based on the lexical-semantic properties described above, a verb forms a preference for one of the two complementation patterns; very often this pattern is chosen even when in the specific context the other complementation pattern would be more adequate. Speakers obviously get used to a specific variant and then tend to stick to it.

In order to test our claims, we conducted a corpus study for 20 randomly selected syntactically homogeneous communication verbs: *androhen* 'threaten', *angeben* 'state, specify', *ankündigen* 'announce', *bekanntgeben* 'announce, disclose', *berichten* 'report', *bestätigen* 'confirm', *darlegen* 'state, set out', *eingestehen* 'admit, concede', *enthüllen* 'reveal', *erklären* 'explain', *erzählen* 'tell', *gestehen* 'confess', *klarmachen* 'make clear', *mitteilen* 'inform', *schwören* 'swear, vow', *verraten* 'reveal, betray', *versichern* 'assure', *versprechen* 'promise', *zusagen* 'promise, pledge', *zusichern* 'ensure, assure'. All these verbs allow both alternatives, *dass*-clause and *zu*-infinitive; with an infinitival complement, they exert subject control. Furthermore, they all allow an additional dative complement.

The determination of the semantic properties of the verbs was based on samples of corpus sentences. We annotated 50 subordinate clauses per verb for temporality, modality and control. It has to be stressed that the basis for our annotation was the meaning of the clause, not its morphological or syntactic properties. For example, the value 'control' is attributed to a complement if the referent of the subject argument is considered to be responsible for the complement proposition; a complement is annotated as 'posterior' not only if posteriority is indicated by inflection, but also if it is only expressed by time adverbials or by other contextual factors. Subsequently, these semantic values were correlated with the distribution of *zu*-infinitives and *dass*-clauses for each verb. The number of the infinitives correlates positively with the control property of the matrix verbs (Spearman correlation $\rho = 0.900$). There is also a negative correlation between temporal and modal variability (temporal variability: $\rho = -0.650$, modal variability: $\rho = -0.687$). As can be expected with lexical-semantic properties, the three semantic attributes and their values are not distributed evenly and independently of each other over the domain of verbs. Particular bundles of semantic values occur more often than others; these bundles often characterise particular classes of verbs: commissive verbs show a strong tendency to temporal invariability as they are oriented towards the future, to modal invariability as they are non-factive, and to semantic control. Statement verbs are very variable with respect to modality and show only a weak tendency to semantic control. A cluster analysis confirms these observations.

Thus, we could confirm the assumption that the argument alternation under discussion is influenced by the lexical-semantic properties of the matrix verbs. The most important condition for the use of an infinitival complement is semantic control, followed by temporal invariability of the embedding verb. Our data reveal further that verbs have a tendency towards 'argument-structural inertia': semantically grounded complementation preferences seem to be stored in the verb's lexical entry; without completely determining the verb's complementation behaviour, they nevertheless push the verb towards the selection of a particular type of complement, often disregarding contextual factors that would have favoured the other complement type. From a theoretical point of view, the lexically grounded argument-structural inertia provides more evidence for lexicon-based projectionist theories than for construction-based grammar models.