CHAPTER 1

Indeterminacy, context, economy and well-formedness in specialist communication

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In this article I make a contrast between the concepts of indeterminacy and well-formedness on the one hand, and the concepts of vagueness and exactness on the other hand. In the further distinction between determination (degree of vagueness) and specification (degree of generality) I exemplify with the genitive deverbal noun construction in Norwegian. Various approaches to the concept of context are discussed and I apply Kubrišsky’s vagueness model to demonstrate that there are some areas of grammar, such as the categorial status of the parts of speech, where the question of membership very seldom arises, although gradience is present.

Key words: indeterminacy, context, well-formedness, categoriality

1. Indeterminacy in various disciplines

Any scientific research in any field of study strives to establish a maximum of certainty and control in the field of categorization. This guiding principle dates back to the classical, Aristotelian, scholastic tradition. Aristotle’s definition of categories is often referred to as the law of the excluded middle: tertium non datur, that is, there is no third possibility (Frege 1903/70:33). An element is either a member of a given class or not a member of that class. In other words, categories are discrete and there is no room for compromise (cf. Aristotle 1984). This principle has dominated classical logic for a very long time (cf. Frege op.cit., Russel 1923). In classical terminology this tradition is to some extent represented by Wüster (1974, 1985).

The more recent influence of cognitive science in terminology and LSP has questioned the validity of the classical approach and focused on the nature of such concepts as indeterminacy (Beaugrande 1987, 1988) and chaos theory (Toft 2001, 2002). In linguistics the discussion has often taken place in terms of antonymic
The concept of indeterminacy can be traced back to Wittgenstein's game theory and his concept of family resemblance (Wittgenstein 1953/58). The indeterminacy concept has motivated studies of vagueness and fuzziness in other fields, such as in cognitive psychology (Rosch 1978, 1981) and in terminology (Weissenhofer 1995).

The emerging discipline of cognitive science concentrates on the workings of the mind and offers a coherent framework based on evidence from philosophy, linguistics, anthropology and psychology. It has become evident that categorization involves every aspect of human existence and its complexity is almost overwhelming. Indeterminacy and vagueness cannot be ignored in this framework.

The basic studies of Lakoff (1987) show that the semantic structure of categories is much richer than the classical view could account for. One of his basic ideas is that human thought is organized as comprehensive idealized cognitive models (ICM) (Lakoff op.cit: 68). The conceptual systems in terminology, such as Nuopponen (1994), have much of the same structure.

But there are linguistic studies which have focused on indeterminacy long before Lakoff. Labov's 1973 study focused on borderline fuzziness in the categorization of concrete objects, and Rosch studied the gradience of category membership and came up with an influential theory of prototypes and basic level categorization (Rosch 1973, 1978, 1981, Rosch & Lloyd 1978).

In the description of the grammar of natural human languages, the principles of well-formedness and modularity were strictly adhered to by Chomskyan generative grammar. These axioms were bravely attacked by Langacker in his cognitive grammar (1987, 1991). Semantic structure, in Langacker's framework, is based on conventional imagery and must be characterized relative to knowledge structures. As opposed to Chomsky's autonomy principle of syntax and strict modularity of linguistic levels, Langacker views syntax, morphology and lexicon as forming an integrated continuum. Their basic function is to symbolize semantic structure. Thus, rigid dichotomies, based on the principles of well-formedness and modularity, such as competence vs performance, grammar vs lexicon, morphology vs syntax, semantics vs pragmatics, rule vs analogy and grammatical vs ungrammatical were rejected.

This was, broadly speaking, the general background when Beaugrande and Dressler (1981:xv) formulated the task of LSP research in the following way: "It is the task of science to systematize the fuzziness of its objects of inquiry, not to ignore it or argue it away."

Degrees of determinacy can be analyzed both at different levels of linguistic description and at different ranks (Beaugrande 2004: 6). The classical levels of description consist of phonology, morphology, syntax and semantics. The relevant ranks in our context are word, phrase and sentence. The degree of determinacy is always higher in a closed system than in an open system. Consequently, the phonological level has the highest degree of determinacy. Morphology, being a semi-open system, has lower determinacy; syntax, being an open system has even lower determinacy, but still higher than semantics, which, quite apart from being an open system, is not observable to the same extent as syntactic constructions. Consequently, the American structuralists applied a bottom up approach to linguistic description, that is, they started with the closed inventory of phonemes, tried to combine these in a mechanical way by using formal distribution analysis to establish a well-defined (highly determined) area of morphophoneme (cf. Hockett 1958). It was important to avoid semantics, because it was too indeterminate and had to be left to "future generations" (cf. Bloomfield 1933).

Chomskyan generative grammar introduced the principle of the centrality of syntax and postulated its autonomy, but the paranoid fear of semantics persisted. Later there was a reaction to this fear and the generative semanticists focused on a semantic interpretation of deep structure. This resulted in much higher indeterminacy. Still, the obligatory principle of well-formedness leads to a much higher degree of complexity of formal notation. This again necessitated a very high degree of abstraction with a concomitant loss of empirical basis. In terms of rank, the degree of indeterminacy increases semantically in the opposite direction. It is lowest at sentence level, higher at phrase level and highest at word level. This is an interesting phenomenon in terminology and LSP, and I will give some examples from Norwegian to illustrate it.

But first it is necessary to distinguish between determination and specification. A term with high determination is said to be precise or accurate as opposed to a term with low determination, which is said to be vague (or fuzzy). A term with high specification is specific as opposed to a term with low specification, which is said to be general.

Further, we have to draw a distinction between vagueness (or indeterminacy) and ambiguity. The extension of a vague term is characterized by the fact that in some cases it is impossible to decide whether a referent or entity is a member of its extensional class or not. Ambiguous terms have two or more extensions which exclude each other. (For further elaborations cf. Andersen 2002). These extensions may or may not be indeterminate.
Applying ranks (exemplified by deverbal nouns) we see that the low degree of determinacy in a sentence (1) decreases in the corresponding phrase (2) and continues to decrease when packed down into a word:

1. **Firma- et bestil-te var-er.**
   - firm-DEF order-PST good-PL
   - "The firm ordered goods."

2. **Firma- et-s bestil- ling av var- er**
   - firm-DEF-GEN order-NMLZ of good-PL
   - "the firm's ordering of goods"

3. **Vare-bestil- ing**
   - goods order-NMLZ
   - "goods-ordering"

Let us simplify by assuming that (1) is unambiguous and relatively highly determined. In (2) the verb *bestille* "to order" has been nominalized and the associated subject and direct object are realized as a genitive pre modifier (firmaets "the firm's") and as a post modifying prepositional phrase (av varer "of goods"). This process is called *packing* (Vendler 1967). The packed nominalization (2) contains process-result ambiguity which is not present in the unpacked (1): bestilling "ordering" may refer either to the process of ordering or to the product (i.e. the actual entity, (e.g. a document) resulting from the process). Both these interpretations are in principle distinct and context will in many cases disambiguate the intended meaning.

But if we have a closer look at the relation between the pre modifying genitive firmaets) and the result reading of the deverbal head (bestilling) we soon see that he relation is vague. Many interpretations are possible. Rather than forming distinct alternatives they seem to form a continuum without clear borders: The firm may own the order, they may have borrowed it for a specific task, or they may have referred to it on several occasions, or they may have written it. They are in some sense associated with it. Contextual information may disambiguate, but we have to guarantee that we will reach a more specific interpretation. The relation is simply underdetermined.

In the process reading of (2) this underdetermination is not present, however, since the genitive in that case will be interpreted as a derived agentive, i.e. the performer of the action denoted by the deverbal noun.

If you continue packing down to word rank (3) the ambiguity and the underdetermination described in (2) persist. But in (3) the derived direct object av varer of goods'is realized as a premodifying first root of a compound. We still tend to read this as a derived direct object, because the first element varer- is inanimate.

3. **Context and economy**

Examples (1)-(3) also illustrate the general fact that the more you pack expressions, the less determinacy you get. This means that there is a correlation between degree of determinacy on the one hand, and the amount of phonological or graphical material you are willing to spend on a linguistic expression on the other hand. This also includes the formation of terms in specialist communication. Special concepts pertaining to a specific knowledge area may be quite short, and this is often recommended in term formation. In other words, large amounts of knowledge may be packed into small amounts of linguistic material. This linguistic economy implies that the sender and the receiver both share a considerable amount of common background knowledge. This knowledge cannot entirely be a part of the context. In order to investigate the relationship between context and domain specific knowledge we have to identify what context is.

The term *context* has been defined from different perspectives. Traditionally, the modular approach posits a well-defined pragmatic/textual module or level. Context is said to belong to the level of pragmatics or of text level. This level is traditionally seen as a sort of appendix to the language system or the grammar, consisting of the phonological, the morphological, the syntactic and the semantic level. In other words, the context is the connecting bridge between the system and the interpretation of utterances in conversation or text production and comprehension. Basically, there is a distinction between the context as *given* and the context as *chosen* by the sender. These views are also tied to the view of the context as being a part of a central decoding process or of a central inferential process. The former view is associated with (amongst others) Petöfi (1971), the latter view with Sperber and Wilson (1986). Petöfi's concept has been quite influential both in linguistics and in LSP text linguistics.

In Sebeok (1986) the terms context and co-text are treated as complementary terms, and the terms are seen as two "stages":

The two terms, co-text and context refer, respectively, to verbal environment and situational environment. Adoption of the term co-text (by Petöfi 1971) stresses the distinction between those elements which are intrinsically textual (or intratextual) and extratextual elements: the latter being proper to extensional seman-
structure grammars? Once you introduce context-sensitive aspects into grammar
be a last resort. The general attitude is: How far do we get using context-free phrase
...text in language. Describing a linguistic phenomenon as contextual is considered to
...with which it is possible to express the relation between x, y, z.
As primitive terms of his system, Kubinsky introduces a functor £ which has an
intuitive content “is undoubtedly” (e.g. £xxy reads as “x is undoubtedly y”) and the
functor £ with which it is possible to express the relation between x, y, z, of the type
“x is rather y than z”. There are defined functors V in the same system describing
nouns are stol (hair), sand (sand), spark (kick), sparking (kicking) and the verbs are å regne (to rain), å sove (to sleep), å løpe (to run) and å sparke (to kick).

A is a noun and B is a verb in the model. See Table 3.

A lexical item A can be classified in three different ways in the model:

a. A is undoubtedly a noun (functor e, centre of y)

b. A is not undoubtedly a noun, but it is nearer to an evaluation as a noun than as a verb (functor rj, periphery of y).

c. A is on the boundary between a noun and a verb (functor o, boundary).

Likewise, a lexical item B can be classified in three different ways in the model:

d. B is undoubtedly a verb (functor e, centre of z)

e. B is not undoubtedly a verb, but it is nearer to an evaluation as a verb than as a noun (functor r, periphery of z)

f. B is on the boundary between a verb and a noun (functor o, boundary).

As Neustupny (op.cit.-3A7) points out, an important cause of vagueness is the fact that not all elements of a class can be characterized by all the characteristic features of a class. Some features may be characterized by the features of other classes. Neustupny refers to these features as asymmetry features. Elements which are less characterized or are characterized by features of the opposite class, but still belong to the given class, are elements which are in the periphery area of Kubirisky's model. Boundary elements are characterized as elements which are so negligibly characterized that it is not clear whether they belong to the given or the opposite class.

An application of Neustupny’s asymmetry matrix may illustrate this.

If the a-features are taken as typical noun properties, and the b-features are typical verb features we come up with a picture such as Table 2.

Table 2. Typical noun and verb properties

<table>
<thead>
<tr>
<th>Feature</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>a₁ = entity reference</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>a₂ = countability</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>a₃ = specific reference</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>a₄ = static denotation</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>a₅ = no participant structure</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>a₆ = non-agentivity</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>a₇ = instantiation</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>b₈ = event denotation</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>b₉ = no countability</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>b₁₀ = no description</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>b₁₁ = agentivity</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

In Table 2, a-elements are normally categorized as noun-properties, and b-elements are normally categorized as verb-properties. To illustrate gradience, I choose 4 Norwegian nouns and 4 verbs all showing different degrees of membership. The
4. Conclusion

This article shows that the re-evaluation of the rigid well-formedness hypothesis has given new directions in linguistic and LSP research. The study of fuzziness, seen as an interesting and revealing phenomenon, has opened up new and alternative approaches to the study of language and grammar. The indeterminacy inherent in grammatical and terminological metatext has been recognized to a much larger extent than previously.

Nevertheless, in grammar there seems to be a core area where the question of membership itself never arises, even though gradience is present. The parts of speech seem to be an example of this.

References


CHAPTER 2

Lexical chains in technical translation

A case study in indeterminacy

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This contribution examines the role of terms in establishing cohesive ties in a German technical text—a safety-critical text (instructions for use) in the medical field—and its translations into English and French. It expands the notion of terms as multifunctional elements contributing to the "texture" of written communication on the one hand, and performing a referential function with respect to a highly-constrained specialist domain on the other hand. Both intralingual and interlingual aspects of variation are explored, revealing tensions and complex interrelations which suggest a degree of indeterminacy in lexical relations, understood here as lexical choice exercised by the translator but against a background of considerable stability.

Keywords: technical translation, indeterminacy, lexical chain, equivalence

1. Indeterminacy and terms

The translation of terms in specialist texts may seem to some an odd choice as the basis for a discussion of indeterminacy (or what Quine calls the "difficulty or indeterminacy of correlation", 1966: 172), as terms are said to be distinguished from words by their relative precision and semantic circumscription, even if no longer by their complete context-independence. There is now a general acceptance that the goal of achieving a one-to-one term-concept and concept-term relationship (Eineindeutigkeit) within a subject field is unattainable—we can recall that Wüst er himself had practical doubts about the viability of this ultimate goal on a comprehensive scale, describing it as "ein frommer Wunsch" (a pious wish) (Wüster 1985: 79). However, a set of conditions under which terminological variation is maximally constrained—not necessarily entailing the attempted forced determinacy of controlled language—could be envisaged. So, for instance, if the objects which form...