Talking about Motion in Danish, French, and Russian: Some Implications for LSP in Theory and Practice

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1. Introduction

This article addresses certain fundamental typological differences in the way that space and motion are lexicalized in the verb lexicons of Danish, French, and Russian, with a special focus on the impact of such differences on LSP communication and translation. Readers who are eager to get on with these specifics should feel free to skip the next few pages and proceed directly to section 1.2. However, the place of typological data of the present kind in LSP research in general seems to call for some comments in its own right, and these will be given in 1.1.

1.1 Theoretical background: getting beyond the hen-and-egg problem

In LSP research, most cross-linguistic studies of lexicalization principles and patterns – i.e. of what Wüster labels "Das Worten der Welt" (1959/60); see also Weisgerber (1959, 1960) – quite naturally concentrate on the specialized lexicon (terminology); and on nouns. An important insight gained in this field is that cross-linguistic lexical differences cannot be explained by focussing on language structure alone: they must be seen against the background of the varying extra-linguistic factors that influence the world pictures of the members of the respective language-communities and various subgroups within them, such as professional environments. These factors may both bridge and enhance "purely" linguistic barriers. For example, two specialists who speak different languages may still use quite compatible terminologies when dealing with similar aspects of reality – say, beet sugar production – in similar ways and for similar reasons. On the other hand, two specialists who speak the same language may still use quite incompatible terminologies when dealing with, say, human behaviour from the viewpoint of Freudian psychoanalysis and behaviourism, respectively. An effective tool for identifying such interdependencies is the concept oriented (onomasiological) methodology basic to terminology research since the pioneering work of Wüster (1966 [1931],

1959, 1959/60, 1974); see Wright & Budin, eds. (1997), Arntz & Picht (1989), and Feber/Budin (1989) for more recent overviews.

All this is opposite to the view traditionally held by many LGP linguists, especially those influenced by classic structuralism (Saussure 1974 [1916], Hjelmslev 1953 [1943], Whorf 1956; Baldinger 1980: 93ff). In this tradition, each language is understood as a unique and self-contained system of elements and interdependencies that together impose a certain form on the infinite variety of reality as immediately perceived by man, the substance, "cutting the pie" in its very own way. As a consequence, the focus has been on how our native language may influence our way of seeing the world, never vice versa.

These two views may seem incompatible and have been presented as such by representatives of both camps, sometimes being rather deceptively linked to a differentiation between "terms" and "ordinary words" (for some relevant discussions, see e.g. Felber 1984: 167-68; 1986: 112; Renz 1971; Reformatskij 1961; Baldinger 1980: 120ff; 1998; Harley 1994: 338ff; Gumprez & Levinson, eds. 1996). However, if we introduce a bit more light and shade into our analyses, things seem to fall into place after all. There are thus definitely some levels of language description where cross-linguistic differences appear to be better explained in terms of structural and typological features of the languages in question than the direct influence of some language-external factors. But this does not exclude the opposite from being true of other levels. To avoid a fruitless hen-and-egg discussion we must therefore further specify the "hens" and "eggs" at issue. This will be done shortly, but first another point must be made clear: no cross-linguistic differences can prevent us from saying whatever we like to say if it is sufficiently important to us.

In his enlightening discussion on this subject, Roman Jacobson states it this way: "Languages differ essentially in what they *must* convey and not in what they *may* convey" (1959: 236). That is, he postulates that any piece of potential semantic information can be encoded into any one of the word's languages in one way or the other due to the extreme versatility of human language in general. But he also notes that language structure quite routinely forces us to highlight some semantic parameters when speaking some languages and quite different parameters when speaking other languages, before we ever get to say whatever we want to say. For example, a Danish utterance like

(1) Laura *læste* "Krig og Fred"   [≈ Laura *read* or *was reading* "War and Peace"]

does not in itself tell us whether Laura finished the book or not. However, if we were to translate that utterance into, say, English or Russian we would be obliged to get more specific on this point due to the verbal category of aspect, which is essential in both English and Russian, but completely absent in Danish. On the other hand, a Russian utterance like

(2) Олег купил машину ⟨Olég kupíl mašínu⟩ [≈ Oleg bought *a car* or *the car*]

does not in itself tell us whether Oleg bought just some car or a particular car that we may have seen or heard about before. But if we were to translate that utterance into, say, English or Danish we would, again, need to get more specific due to the nominal category of determination, which is essential in both English and Danish, but completely absent in Russian.

Of course, those who utter (1) or (2) may well know the right answers to the respective questions anyway, and they may also become clear to the receiver from the co(n)text in which the utterances occur. Indeed, our speakers could clarify things quite unambiguously by inserting, say, *på kun to dage* [≈ in just two days] in (1) or *о которой я вам рассказывал* ⟨o kotoroj ja vam rasskazyval⟩ [≈ that I've been telling you about] in (2). But two things should be kept in mind. First, the decision is not forced upon the original speakers by language structure, while this may become the case for translators. Second, no matter how important a particular semantic distinction may become to the members of a given language-community, or a subset of them, for language-external reasons, these speakers will hardly create a whole new grammatical category for conveying it from one day (or decade) to the other. Such influences take generations to have an effect, if they have one at all.

However, this is where the **lexicon** differs fundamentally from the **grammatico-syntactic** structures that have been considered up till now. In all languages at issue here, the lexicon seems to provide a convenient short-cut that comes into play whenever mere paraphrasing become too tiresome. In contrast to the rules of grammar and syntax, lexicons are constantly modified and updated, not only by the language-community as a collective body, but also by various subgroups of speakers within it (linguists, IT consultants, rock musicians, young parents, etc.) in accordance with their specific cognitive and communicative needs. This is noted by Jakobson as well: "All cognitive experience and its classification is conveyable in any existing language. Whenever there is deficiency, *terminology* may be qualified and amplified by loanwords or loan-translations, neologisms or semantic shifts, and finally, by circumlocutions. Thus in the new-born literary language of the Northeast Siberian Chukchees, "screw" is rendered as "rotating nail", "steel" as "hard iron", "tin" as "thin iron", "chalk" as "writing soap", "watch" as "hammering heart" [my italics, VS]" (1959: 234-35). Correspondingly, to keep pace with society the English language has lately been enhanced with such words as *Tatcherism*, *dinkie*, *spindoctor*, and thousands of others.

In these cases language-external (social, cultural, political, economic, legal, technical, etc) factors not only influence what we say, i.e. our language-behaviour, but also make us create new means (lexemes) for saying it, thereby altering the underlying language-system. It is therefore pointless to exclude such factors from the analysis of cross-linguistic differences and similarities on the lexical level –

whereas their impact is less obvious and less direct on the higher levels of grammar and syntax: here, language-internal structural and typological factors seem to be of greater importance.

But yet again, none of this means that structural and typological factors have no bearing on the lexicon; they just come into play in a somewhat different setting. To explain this, we need to distinguish between what might be labelled the **what-aspect** and the **how-aspect** of lexicalization (Smith 2000: 20ff). Even if what is lexicalized is to a large extent determined by language-external influences, the formal structure and typological preferences of the language in question may still have an influence on how it is lexicalized. Here a further distinction is needed between (a) **primary lexicalization(s)** [1], i.e. the "ideal" case where a unique piece of semantic information is conveyed by an equally unique combination of phonemes (i.e. a single morpheme) serving exclusively for that purpose (e.g. Eng: *water*, *cat*, etc.), and (b) **secondary lexicalization(s)**, i.e. the less "ideal" but far more widespread case where existing units of lexical expression (morphemes and/or words) are reused for lexicalizing novel pieces of semantic information by either **adding** new meanings to well-known expression-units (e.g. Eng: *mouse* (for a PC), *wing* (of an aeroplane), etc.), or **combining** well-known expression-units (morphemes, stems, whole words) in new ways through either affixation, compounding, or the formation of phrasal lexemes (e.g. Eng: *under|state|ment, water|fall, black currant*, etc.). One major difference between primary and secondary lexicalizations is that the latter are always accompanied by **non-arbitrariness (motivation)**, i.e. that the resultant lexical items have a "literal meaning" which gives us a hint (but nothing more) about the full lexical meaning conveyed by them; this aspect is further explored in Smith (1999/2000 and 2001).

If we take the how-aspect into consideration, we may reveal a number of additional cross-linguistic differences as regards (a) the distribution of primary and secondary lexicalizations across semantic domains (b) the particular models of secondary lexicalization available in each language and the frequency of their application in different subsets of the lexicon, and (c) the expression-units actually reused for coining new lexical expressions (i.e. for secondary lexicalizations) in particular instances. At least (a) and (b) depend strongly on inherent properties of the language in questions whereas (c) is open to language-external influences as well (along with pure chance). Even in those cases where a comparable piece of semantic information (in terms of extension as well as intension) seems to have been unambiguously lexicalized in several languages, and the what-aspect is therefore not at issue for them, the resultant lexical expressions may still differ profoundly with regard to the how-aspect, as the following examples might demonstrate:

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[1] This distinction is closely related to that between primary and secondary nomination developed in the Russian tradition of nomination research, see e.g. Ufimceva et al. (1977).

(3) Eng: *butterfly*, Dan: *sommerfugl* [lit. summer|bird]; Rus: *бабочка* ⟨babočka⟩ [lit. (elderly) woman_{dim}]; Fre: *papillon* [lit. ?]; Ita: *farfalla* [lit. ?]; Ger: *Schmetterling* [lit. cream(=Schmetten)|ling_{dim}]

(4) Eng: *aeroplane*; Dan: *flyvemaskine* [lit. fly(ing)|machine]; Rus: *samolët* [lit. self|fly(er)]; Fre: *avion* [bird_{latin} + ?]; Ita: *aereo (aeroplano)* [lit. air|(plane)]; Ger: *Flugzeug* [lit. fly(ing)|tool]

It thus appears that both language-external and languages-internal factors are essential to lexicalization, the former being a major stimulus when language-communities decide what to lexicalize, and the latter providing the formal means and prototypical patterns naturally drawn upon when implementing these decisions. Therefore, both the concept oriented approach to lexicalization so far mainly practised in LSP research (though also supported by theorizing in such fields as cognitive psychology or AI knowledge engineering, see e.g. Barsalou 1992a: 153ff; 1992b, Russell & Norvig 1995: 218ff; Pratt 1994: 150ff), and the orientation towards language-internal principles and patterns of lexicalization characterizing the work of many LGP linguists contribute essential inputs to a fuller understanding of the overall subject.

This article, then, presents and develops certain results originally gained on "the other side of the fence", namely by LGP researchers mainly concerned with the structural and typological dimensions of lexicalization rather than the terminological, and, moreover, with verbs rather than nouns. What is at issue are cross-linguistic differences in the lexicalization of **space and motion** by means of what will be referred to as **relocation verbs** in the following (while others speak of "directed motion verbs" or the lexicalization of "motion events"). Most of the verbs in question cannot be classified as terms in any traditional sense in that their semantics and fields of application are not restricted to LSP communication – but they nevertheless play a pivot role in many types of LSP texts, such as descriptions of technological processes. Apart from the practical relevance, these data are however also interesting from a theoretical viewpoint. Thus, language-internal factors seem to play a more dominant role it this part of the lexicon than in the (nominal) lexicon traditionally considered by terminologists – and in all examples given above – in that they not only determine how things are lexicalized, but also exert a certain influence on what can potentially be lexicalized at all. A viable path of explanation seems to be that verbs – as opposed to nouns – do not lexicalize concepts of single objects, but abstract models of **situations** (see section 2. below) which need to be specified by a whole **sentence** in order for the verb to apply to a real-world situation in the course of communication. It is therefore up to the individual language, in co-operation with the speakers using it, to decide where in the sentence structure potentially relevant semantic information should be encoded, if considerede sufficiently important to encode at all.

1.2 Scope and aims

By **relocation verbs** we here understand verbs referring to "moving (or being moved) from one place to another" as further specified in section 2. below. Beginning with an influential study of Talmy (1985), several authors (e.g. Gennari et al. 2002; Gutiérrez

2001; Papafragou et al. 2001, 2002; Herslund 1998, 2000; Korzen 1998; Slobin 1996a, 1996b: 83ff) have supported a sharp typological distinction between what might be called (a) MANNER languages (e.g. Danish, Swedish, English, German, Chinese, and (perhaps) Russian) where the semantic parameter MANNER of motion is obligatorily lexicalized in the verb **root** (primary lexicalization) while the direction or PATH of motion is explicated when required through the addition of a **satellite** or **prefix**, i.e. the formation of a **phrasal lexeme** (secondary lexicalization), e.g. *run + down, away*, etc, and (b) PATH languages (e.g. French, Italian, Spanish, Japanese, Turkish, and (perhaps) Modern Greek) where the verb roots lexicalize *either* MANNER *or* PATH, e.g. *courir* vs. *entrer*, but only the PATH verbs convey the core meaning of relocation, i.e. not just moving, but moving from one place to another, leaving MANNER to be explicated elsewhere in the sentence structure, if at all. The two principles are illustrated in (5) and (6) in section 3. below.

This difference complicates the transfer of information between the two (proto)types of languages in various ways, most obviously in the course of translation. However, not all languages seem to fit equally well into the typology just outlined and many languages have not been sufficiently examined in this respect. Russian is one of the tricky cases. In his classic account, Talmy (1985) collectively places the Indo-European languages (including Russian) in the MANNER category, presenting the modern Romance languages as a marked exception that has swept over to the PATH category. Others argue that the same is true of Modern Greek (Papafragou et al. 2001, 2002). As for Russian, the archetypical lexicalization pattern of the MANNER languages is definitely present and highly productive, but it seems to have been "overlaid" by a different pattern closely resembling the PATH oriented one known in the Romance languages – so that Russian speakers may (and must) make certain choices that are not at issue, for instance, in Danish or French. In the following, these pretheoretical observations will be tested against more systematic evidence taken from the field of LSP communication.

The objectives of this study thus are (a) to contribute to the positioning of Russian in the above-mentioned typology by contrasting it with the less equivocal cases of French and Danish while at the same time (b) further developing the underlying theoretical framework by introducing the notion of relocation verbs and (c) sketching a new method for providing relevant empirical evidence so far tested in a small-scale pilot study. The impact of the cross-linguistic differences identified on LSP communication and, in particular, translation are also briefly considered.

2. The semantics of relocation

First we must be more specific as to what is meant by "relocation verbs" – more often labelled "directed motion verbs" or verbs lexicalizing "motion events" in the English-language literature[2] – as opposed to "motion verbs" in a broader sense.

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[2] By contrast, the term *глаголы перемещения* ⟨*glagóly peremeščénija*⟩ has been used for several years in the Russian-language literature for denoting more or less the same thing, though not defined in the exact terms used below, see e.g. Plungjan (2002:58ff). What the term says literally is no more

Such a distinction obviously underlies much of the existing work on the subject, though it is not always too clearly defined, or indeed: lexicalized (see Gutiérrez 2001 for a recent review of some approaches). The following is an attempt to further specify the distinction in question while at the same time suggesting an alternative term which, I think, follows rather naturally from the theoretical considerations presented below.

We will adopt the cross-linguistic principles of verb classification suggested by Durst-Andersen (1992, 2000; see also Durst-Andersen & Herslund 1996). The framework was originally developed as a basis for analyzing the category of **aspect** in Russian, English, and other languages, but it also contributes to verb semantics in general by integrating certain cognitive insights into humans' perception and conceptualization of **situations** – which are considered the standard referents of **verbs**, just as nouns refer to "things" in a broad, but still readily recognizable sense. The focus is on **visual** perception, but the cognitive principles described below seem to have been generalized so that they now underlie verb semantics in general. What follows is a highly selective summary of certain basic assumptions; for a fuller account, see Durst Andersen (e.g. 1992: 51ff).

Regardless of what language they speak, humans routinely distinguish between two kinds of real-world phenomena (situations) that can potentially be referred to by means of verbs, the mental counterparts of which can be described in terms of figure-ground relationships (ground situations) with corresponding propositional interpretations (ground propositions), namely:

(a) **activities** which are perceived as either an unstable figure on a stable ground or a stable figure on an unstable ground thus constituting an **unstable picture**. In their own right, such situations are referred to by means of **activity verbs**, e.g. Eng: *dance, shiver, carry* etc.

(b) **states** which are perceived as a stable figure on a stable ground thus constituting a **stable picture**. In their own right, such situations are referred to by means of **state verbs**, e.g. Eng: *lie, stand, resemble*, etc.

Only these two kinds of situation can be identified through direct observation. However, our world knowledge tells us that some activities, if sufficient, can bring about certain states, and that some states have been brought about by certain activities. This allows us to also identify

(c) **actions** which are mental constructs linking together a certain activity and a certain state. When perceived and referred to as elements of an action, activities are further classified as **processes** and states are further classified as **events**. The corresponding propositions are denoted *p* and *q*, respectively. Actions (as

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no less than "verbs of relocation" or in short "relocation verbs" – thus differentiating these verbs from *глаголы движения ⟨glagóly dviženija⟩*, i.e. "motion verbs", in a broader sense.

represented by processes and/or events) are referred to by means of action verbs, e.g. *put, arrive, kill, show*, etc. The principle is shown in fig.1.
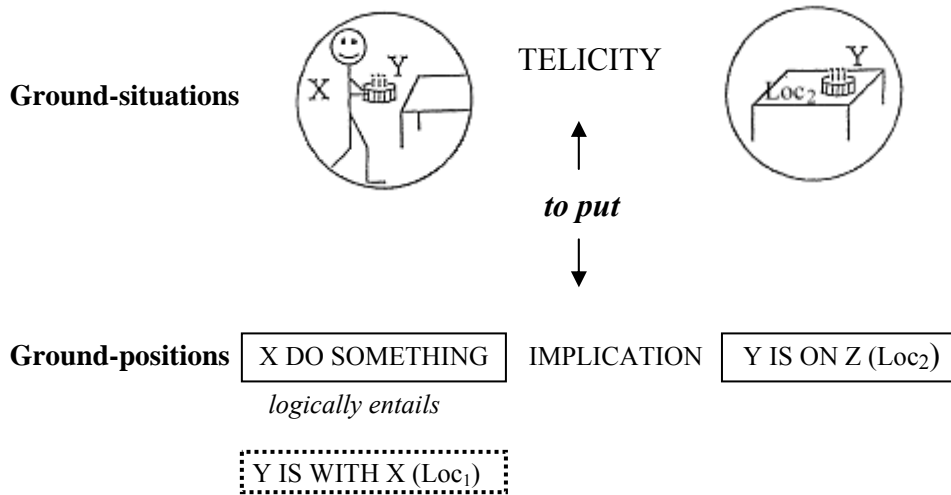
Ground-situations

TELICITY

to put

Ground-positions | X DO SOMETHING | IMPLICATION | Y IS ON Z (Loc$_2$) |

logically entails

Y IS WITH X (Loc$_1$)

Fig. 1.

Thus, in an utterance like "she is just putting the cake on the table" *put* refers to a process where p is asserted and q is treated as a standard implicature; and in an utterance like "who put that cake on my table?" *put* refers to an event where q is asserted and p is presupposed. The directed relationship between the two situations themselves is referred to as telicity.

Verbs like *put, remove, arrive, return*, etc. can be further classified as **location-based action verbs** (alternative categories are possession-based, experience-based, and qualification-based action-verbs which will not be further considered here) because the change of state in question is definable in terms of spatial relationships alone: First the cake **was not** on the table but now it **is** on the table; or vice versa for a verb like *remove*. Either assertion strictly implies an alternative state description where the figure is located on a different ground (say, in he hands of x). That description is part of the **entailment structure** of the verb and may be further specified by the **co(n)text** in which the verb is uttered – where the verb is often "followed up" by other verbs together describing a **trajectory** (to use Slobin's term, cf. 1996a: 210ff), e.g. "at long last, she put the cake on the table – but then rapidly removed it again and carried it back into the kitchen".

What we are up against here is thus not just motion but **relocation**, i.e. moving from one location (Loc$_1$) to another (Loc$_2$). We will therefore also refer to such verbs as **relocation verbs**, presupposing all the theorizing underlying their full name: **location-based action verbs**.
Furthermore, the distinction between activities (including processes) and states (including events) allows us to specify the essence of the PATH/MANNER distinction.

Verbs that lexicalize the MANNER of motion are **p-oriented** in that they further characterize an **activity** (which may or may not be seen as part of an action, i.e. as a **process**) by specifying certain properties of either the figure, the ground and/or the interrelations between them. Take a verb like *bounce*: a ball can *bounce* on a floor, but water cannot really *bounce* on a piece of wadding; though it may well *soak* through it. For transitive verbs like *throw*, an agent's interaction with the figure and/or ground given these properties may also be part of the semantics: one may *throw* a ball, but not really a handful of air. Verbs that lexicalize PATH are **q-oriented** – which makes them action verbs by nature – in that they further characterize a (change of) **state**, i.e. an **event**, by specifying certain properties of either Loc_1, Loc_2 and/or the interrelations between them. For example, a verb like *arrive* presents Loc_1 as distant and Loc_2 as close.

3. Danish and French versus Russian

Let us now consider in more detail what differentiates a typical PATH language like French from a typical MANNER language like Danish (following Herslund's exemplification in 1998: 8-9) and then contrast both these languages with the less clear-cut case of Russian.

In French, as illustrated in (5), we find one group of verbs that specify the PATH of motion without saying anything about the MANNER; the objects in question may be walking, crawling, flying, etc. It follows from the discussion in section 2. that these verbs are all q-oriented and hence **action verbs** by nature; more specifically, they may be classified as **location based** action verbs, i.e. as **relocation verbs**. The MANNER of motion is specified by a different group of verbs in French which however say nothing about the PATH. The standard function of these verbs seems to be to characterize a motion in its own capacity without relating it directly to the change of state (in terms of location) that may or may not result from it. In other words, these verbs are p-oriented and normally function as pure **activity verbs** which do not present the activity as part of an action, i.e. as a process. These verbs certainly lexicalize motion, but not relocation.

(5) *French:*	PATH	MANNER
	aller [≈ go]	*marcher* [≈ walk]
	entrer [≈ enter]	*courir* [≈ run]
	venir [≈ come]	*flâner* [≈ stroll]
	sortir [≈ exit]	*ramper* [≈ crawl]
	etc.	etc.

In Danish, we find a very large and diversified group of verbs that specify the MANNER of motion; a few of them are given in (6) and additional examples will follow in (8) below.

(6) ***Danish:***   MANNER   (+ PATH_{satellite})

$gå$ [≈ walk]
$løbe$ [≈ run]   *ind* [≈ in] / *ud* [≈ out],
spadsere [≈ stroll]   *op* [≈ up] / *ned* [≈ down], etc.
kravle [≈ crawl]
etc.

When considered in isolation, these verbs appear to be rather similar to the French MANNER verbs just mentioned (apart from being more diversified) in that they characterize a motion in its own capacity and may thus be classified as pure **activity verbs** which do not present the activity as part of an action, i.e. as a process. However, unlike their French counterparts, these verbs also play a pivot role in specifying the PATH of motion. The standard way of lexicalizing PATH in Danish is thus through secondary lexicalizations, namely by extending a MANNER verb with a PATH-specifying **satellite**, most commonly in the shape of an adverb/preposition, that merges with the initial verb into a **phrasal lexeme**. This transforms the initial activity verb (e.g. *løbe* [≈ run]) into an **action verb** (e.g. *løbe ud* [≈ run out]) where the main verb specifies certain properties of an activity, now understood a **process**, and the satellite specifies certain properties of a resultant (change of) state, now understood as an **event**. Even if Danish does have some verbs that lexicalize the PATH in its own right (like the French ones), the pattern just described is definitely the most widespread and productive one. This means that MANNER regularly **must** (and not just may) "go along" with PATH when Danes talk about relocation – whereas speakers of French may well omit the MANNER related information if they do not feel like specifying it. (And when they do, they are forced to insert an additional MANNER verb somewhere in the sentence structure, e.g. *en courant*, or rely on other lexical means such as *à pied*, *en avion*, etc.).

In Russian the picture is less unequivocal. As in Danish, we find a large number of verbs which specify the MANNER of motion (a small but frequent subgroup of which displays certain grammatical peculiarities, see e.g. Wade 1992: 339ff). These are all **activity verbs**, but they may be extended with a PATH-specifying **prefix** – functionally corresponding to the **satellite** in Danish – which turns them into **action verbs** conveying the additional meaning of **relocation**, e.g. *бежать* ⟨*bežat'*⟩ [run]➙ *убежать* ⟨*ubežat'*⟩ [run away]. More examples will follow in (9) in the next section. However, Russian also contains a number of verbs that lexicalize the PATH in its own right. Such verbs exist in Danish as well, but the Russian ones seem to play a far more dominant role, at least in some spheres of communication, so that the picture begins to resemble that known from French.

For instance, in step-by-step descriptions of technological processes we find an "exclusive" set of highly frequent relocation verbs specifying PATH only – and in a highly abstract sense where spatial features like [up], [down], [in], [out], etc. are

completely absent. The only PATH-related information left is the very fact of x going from (some) Loc_1 to (some) Loc_2, that is, relocation "par excellence". What further distinguishes these verbs seems to be the VIEWPOINT in that the directional movement, which is captured in its entirety by all these verbs, may be viewed from the point of departure or the point of arrival, respectively, or be unmarked in that respect. These verbs are given in (7):

(7) **Russian***:*   (in addition to other models:)

Non-specified PATH + VIEWPOINT
a.   point of departure (Loc_1):
направлять ⟨*napravliját'*⟩ [≈ direct, guide]
подавать ⟨*podavát'*⟩ [≈ direct, launch]
b.   point of arrival (Loc_2):
поступать ⟨*postupát'*⟩ [≈ arrive (at), reach]
c.   neutral viewpoint (Loc_1 & Loc_2)
перемещать(ся) ⟨*peremeščát'(sja)*⟩ [≈ relocate (oneself), proceed] [3]
идти ⟨*idtí*⟩ [≈ go, lit. walk]

In technical discourse, these verbs are applied to a wide variety of objects (rocks, vegetables, gasses, fluids, electric current, people) which move in very different ways (roll, flow, are pumped, driven, etc.) and directions (down chutes, into basins, etc.). Often they seem to be the default choice despite the fact that parameters like those mentioned could easily be specified by means of other verbs.

It is worth noting that while many of the French PATH verbs are simplex verbs (primary lexicalizations), all verbs in (7) except *идти* ⟨*idtí*⟩ are originally coined according to the stem + prefix/satellite model so typical of the MANNER languages, and that all these verbs also have more specific readings than those focussed on here. For example, *подавать* ⟨*podavát'*⟩ may also refer to serving food in a restaurant while *идти* ⟨*idti*⟩ may also refer to the activity of walking by foot, in which sense it is a full-fledged MANNER verb. Historically these readings seem to be the original ones, but semantics has obviously developed in a different direction later on (without excluding the more "literal" readings, however) which has led to strong polysemy. The present examples are not isolated exceptions[4] and there might therefore be provided

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[3] The intransitivized variant of the verb derived by means of the reflexive suffix *-ся* ⟨*-sja*⟩ is generally considered an independent lexical item in this particular case. Other transitive verbs in the present category can however also be intransitivized when applied in the passive voice, which is quite characteristic of LSP texts of the present category. The same goes for many of the Danish verbs given in (8). The category of transitivity is an important variable in the semantics of relocation verbs, but will not be further addressed in this article for matters of space.

[4] An additional example might be the Russian verbs *поднимать(ся)* ⟨*podnimat'(sja)*⟩ [≈ raise (oneself), put (or go) up] and *спускать(ся)* ⟨*spuskat'(sja)*⟩ [≈ lower (oneself), put (or go) down], where the translations given in brackets relate to the intransitive variant only; see also note 1 above. These verbs have originally been coined according to the prefix + stem model, but are presently (also) used in highly abstract senses which are comparable to those of the French MANNER verbs *monter*

some support for characterizing Russian as a MANNER language which is in the process of switching over to a PATH oriented approach – and which at the present stage is capable of "working both ways".

The fact that Russian differs from a more prototypical MANNER language like Danish – and sometimes behaves more like e.g. French – becomes obvious, for instance, in the course of translating technical process descriptions between the two former languages. While Russian source texts in this field make frequent use of verbs like those in (7), Danish source texts rely heavily on phrasal verb constructions of the MANNER + PATH$_{satellite}$ type. For translators this means the following: When translating from Russian into Danish, the translator will often have difficulty finding suitable equivalents to the highly abstract Russian PATH verbs and therefore need to make inferences about MANNER on his or her own risk in order to decide whether an object, rolls, floats, is being pumped, etc. In some cases this results in pure guesswork and can make the translation highly misleading. On the other hand, when translating from Danish into Russian, the translator may be "too" well informed about the MANNER component from the numerous MANNER + PATH$_{satellite}$ verb constructions used in the source text. A conscientious, but inexperienced, translator will naturally try to preserve as much of that information as possible in the Russian target text. And, as opposed to French, Russian does have the means for replicating Danish constructions of the above kind in a one-to-one fashion in quite many cases, while the rest may be achieved through paraphrasing. The resultant text may be formally correct, but strike the intended receivers as stylistically inadequate in containing too much self-evident (redundant) information compared to original Russian texts of this sort.

The general picture just outlined is supported by years of class-room experience in teaching technical translation between the two languages as well as exchanges of opinion with colleague translators. However, more systematic empirical evidence is definitely required, and a first step will be taken below.

4. Pilot Study: From Sugar Beet to Sugar Pot

When investigating cross-linguistic differences of the present kind empirically it seems relevant to ask the following two questions: (a) Which verbs should be part of the investigation? All the languages at issue here contain dozens of verb lexemes lexicalizing relocation in one way or the other, some of them representing quite diverse patterns of lexicalization. So how do we decide what is "most" typical of each language? (b) How do the differences that may be identified on the level of language-systems, i.e. the stocks of verb lexemes available, influence the actual language-behaviour of speakers in the respective language-communities? Or to continue Jakobson's line of reasoning (see 1.1), how do cross-linguistic differences as to what languages must and must not convey influences what speakers actually **make them** convey when communicating? The method described below addresses both these issues in combination.

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and *descendre* (the etymology of which might also be worth some further consideration).

The basic idea can be put as follows. Instead of starting with the verbs, one may start with a piece of discourse that involves a wide array of relocation events and processes and map how they are spontaneously verbalized by native speakers of the languages considered. In this case we will focus on concise step-by-step descriptions of the process of beet sugar production. The basic methods used in this technical field are rather similar throughout the industrialized world which minimizes noise on that account. Furthermore, the "things that move" in a sugar factory alter in shape throughout the process: First we have sugar **beets** which are then cut into **chips**, flushed with hot water and disposed of (to be converted into **animal feed**) while the resultant **crude juice** is evaporated until it forms a **syrup** (the surplus **steam** being re-circulated) in which sugar **crystals** form and are then separated from the **mother liquor** through centrifugation. This, in turn, means that the objects and substances in question must be conveyed in very different ways: by **tractors**, **conveyors**, through **gravity**, **pumping**, etc. In other words, the MANNER of motion changes all the time – and the same is true of the PATH in that the objects and substances in question move **down** chutes, **up** conveyors, **through** pipes, **in** and **out** of machinery, etc. following trajectories that involve many different instances of Loc_1 and Loc_2 interrelated in different ways. By "filtering out" the relocation verbs used in describing these standard procedures we get (a) a fixed set of verbs for each language that may serve as an obligatory basis for further classification, ruling out any theoretical bias on the part of the researcher (apart from his or her delimiting of the set as a whole), and (b) information about which verbs among the totality available in each language speakers actually select when talking about relocation in texts of the present sort.

The approach suggested here has several traits in common with that underlying the "Frog Story" project presented by Berman & Slobin (1994; see also Slobin 1996a/b; Jansen 2000) – which addresses the lexicalization of motion among several other issues – and the "Mr. Bean" project presented by Skytte (1999) and her colleagues. Both these projects are based on native speakers' spontaneous verbalizations of uniform extralinguistic scenarios. However, in the present case such verbalizations are not provoked by the researcher in the course of interviews, but have come about quite voluntarily by specialists and/or technical writer simply doing their job.

4.1 Materials and procedure

At present the method has been tested in a small-scale pilot study focussing on the difference between Danish (as a typical MANNER language) and Russian (as a less typical MANNER language) only. At a later stage, French is expected to be included as well. The initial material is a miniature text corpus consisting of 2 Danish and 2 Russians texts giving concise overviews of the basic stages of beet sugar production, i.e. telling more or less the same story. The Russian texts stem from an encyclopaedia and a textbook, respectively, whereas the Danish texts stem from two different booklets on sugar technology both issued by the Danish sugar monopoly

Danisco. In order to reduce the amount of irrelevant information (noise) the texts were adapted, so that all sentences containing no reference to relocation of the basic process media (beets, chips, syrup, etc.) in the shape of a simple or phrasal verb were omitted. These adapted versions are given in full in the Appendix together with further source data. The English translations (in italics) are intended for guidance only. In the next phase, the totality of verb lexemes (types) occurring in the Danish and Russian texts, respectively, were registered and subject to a tentative semantic classification to be further discussed below. By also registering the number of occurrences of each verb lexeme (i.e. tokens per type) type-token ratios could be calculated. On this basis, the general approach to the verbalization of relocation scenarios in the respective texts – and to the lexicalization of relocation in general by (some) verb lexemes in the respective language-systems – may be compared and discussed.

4.2 Results and discussion

The Danish texts contain a total of 39 verb forms (tokens) referring to relocation, representing 32 different verb lexemes (types), each main verb + satellite constructions counting as a separate lexeme.[5] The Russian texts contain a total of 24 verb forms (tokens) referring to relocation, representing 15 different verb lexemes (types). It is thus interesting to note that the Danish texts contain more verbs than the Russian ones, in terms of both tokens and types, which does not match a proportional difference in the lengths of the adapted texts. Further theorizing on that point must however wait until a more extensive collection of texts has been established.

The lexemes found in the Danish and Russian texts are listed and classified in (8) and (9), respectively:

(8) ***Danish relocation verbs found in SugarTextDan1/2:***

    I   MANNER + PATH$_{satellite}$

    high typicality:
    hælde + over, ud [≈ pour + over, out]; *koge + bort* [≈ boil + away]; *løbe + ud* [≈ run + out]; *løfte + ind* [≈ lift in]; *presse + fra* [≈ press + away]; *pumpe + til, over* [≈ pump + to, over]; *skubbe + hen* [≈ push + over]; *skylle + ud, af* [≈ rinse + out, off]; *slynge + fra, ud* [≈ fling + away, out]; *styrte + ned* [≈ topple + down]; *svømme + til* [≈ swim + to]; *tippe + ned* [≈ tip + down]; *trække + ud* and *udtrække* [≈ extract, lit. pull + out *and* out $_{prefix}$|pull]; *tømme + ud* [≈ empty + out]; *vaske +ud* [≈ wash + out]

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[5] Danish phrasal verbs of the main verb + satellite type are often connected with additional PATH-specifying adverbs/prepositions when occurring in actual clauses, but such "secondary satellites" are not included in the list in (8) since there is less ground for classifying the entire resultant construction as one independent phrasal lexeme (whereas the first satellite definitely creates a new type of lexeme belonging to a different semantic category: see section 2.). However, the question is open to further investigation and debate.

lower typicality:
blande + i [≈ mix + into]; *føre + ind, ud, til, hen* [≈ lead + in(to/side), out, to, over]; *lede + igennem, til, bort* [≈ guide + through, to, away]; *tage + bort* [≈ take + away]

II Path
forlade [≈ leave]; *transportere + igennem* [≈ transport + through]

III Purpose
fjerne [≈ remove]; *udvinde* [≈ win, extract, lit. out $_{\text{prefix}}$|win]

(9) ***Russian relocation verbs found in SugarTextRus1/2:***

I Manner + Path$_{\text{prefix}}$

high typicality:
вывозить ⟨*vyvozít'*⟩ [≈ drive out, lit. out$_{\text{prefix}}$|drive]; *выводить* ⟨*vyvodit'*⟩ [≈ lead out, lit. out$_{\text{prefix}}$|lead]; *выгружать* ⟨*vygružát'*⟩ [≈ load out, lit. out$_{\text{prefix}}$|load]; *отфильтровывать* ⟨*otfil'tróvyvat'*⟩ [≈ filter off, lit. off$_{\text{prefix}}$|filter]; *перекачивать* ⟨*perekáčivat'*⟩ [≈ pump over, lit. over$_{\text{prefix}}$|pump]

lower typicality:
переходить ⟨*perechodít'*⟩ [≈ go, lit. walk over, lit. over$_{\text{prefix}}$|go/-walk]

II. Path
возвращать ⟨*vozvračšat'*⟩ [≈ return]

+ *Viewpoint*

point of departure (Loc$_1$):
направлять ⟨*napravliját'*⟩ [≈ direct, guide]
подавать ⟨*podavát'*⟩ [≈ direct, launch]

point of arrival (Loc$_2$):
поступать ⟨*postupát'*⟩ [≈ arrive (at), reach]

neutral viewpoint (Loc$_1$ & Loc$_2$)
идти ⟨*idtí*⟩ [≈ go, lit. walk]

III Purpose
добавлять ⟨dobavliját'⟩ [≈ add]; *отделять* ⟨otdeliját'⟩ (also: *отделение* ⟨otdelenie⟩ $_{\text{V}\rightarrow\text{N}}$) [≈ separate]; *разделять* ⟨razdeliját'⟩ [≈ separate, divide]; *удалять* ⟨udaliját'⟩ [≈ remove]

Even if some aspects of the classification are open to discussion (see below), the overall difference in assortment of verb lexemes is striking and consistent with the characterization of the respective languages given in section 3. In the Danish texts we find a wide selection of Manner + Path$_{\text{satellite}}$ constructions vividly describing how things swim, run, are toppled, pushed, pumped, pressed, etc. from one location to another. In the Russian texts, only 6 lexemes are classifiable under the comparable Manner + Path$_{\text{prefix}}$ category. Many more such verbs are available in the Rus-

sian language (including approximate equivalents to many of the Danish ones in question), but still the Russian authors have confined themselves to that limited set. On the other hand, all but one member of the "exclusive" set of Russian PATH verbs discussed in section 3. (lexicalizing non-specified PATH + VIEWPOINT) are represented in the Russian texts, whereas only 2 Danish lexemes might be classi-fied as PATH verbs at all, at least one being rather untypical. Thus, *transportere + igennem* [≈ transport + through] is formed according to the main verb + PATH-specifying satellite model, but the main verb (of Latin origin) says nothing about the MANNER of motion, but rather suggests some non-specified PATH in itself which however needs to be further specified by satellites in order to be interpreted a relocation verb at all (though, historically, that verb too has obviously been coined according to a MANNER + PATH$_{prefix}$ pattern; the varying degree of transpar-ency between expression and content will be further addressed below). It is inter-esting, also, that the existence of such an underdetermined motion verb stem in Danish does not lead speakers to use it more than seems to be the case to avoid specifying MANNER all the time. In the present texts it is used only once and noth-ing indicates that the picture is much different elsewhere (though this remains to be verified, of course).

The general tendencies just outlined become even more pronounced if we consider the frequency of actual verb forms (tokens) belonging to the respective categories in the respective texts, see Table 1.

TABLE 1. *Frequency of verb tokens belonging to categories I-III*

	SugarTextDan1/2	SugarTextRus1/2
I MANNER + PATH$_{satellite/prefix}$	82%	33%
II PATH (±VIEWPOINT)	5%	46%
III PURPOSE	13%	21%

82% of the verb tokens found in the Danish texts are included under the MANNER + PATH$_{satellite/prefix}$ category which is only the case with 33% of the verb tokens found in the Russian texts. And while 46% of the verb tokens found in the Russian texts are included under the PATH (±VIEWPOINT) category, this is only the case with 5% of the verb tokens found in the Danish texts. The preferences of the respective au-thors are thus quite clear, both in terms of the lexemes selected and the frequency of their actual application. Another interesting indicator in this regard are the type-token ratios for each verb category which will be considered shortly.
First, however, a few words must be said about the classification itself. As already indicated, not all examples are equally unequivocal, which is however a natural

(and, indeed, desirable) consequence of the method applied. By catching all "fish in the sea" meeting certain criteria (i.e. being judged as referring to relocation in some sense) instead of going straight to the "typical" ones we get a more objective basis for drawing typological conclusions and, not least, fresh inputs for further refining the underlying verb classification. Of course, one might still hope that the basic assumptions made initially would find some immediate support in the empirical findings, and this appears to be the case: the prototypical tendencies presented in section 3. are illustrated by several clear-cut examples, even in this small sample. But there are also some less obvious cases, and some less obvious traits in the obvious ones, that give rise to additional theoretical considerations. These considerations must briefly be mentioned.

First, not all lexemes of the MANNER + PATH$_{satellite/prefix}$ type are applied in equally "literal" senses as regards MANNER as indicated by "high/lower typicality" in (8) and (9). For example, the Danish verb *føre* (+ *ind, ud*, etc.) originally refers to one living creature guiding another along, but here it is applied to chips, fluids, etc. which are guided by conveyors, pumps, etc. There is thus a tendency to sometimes "loosen" the extreme demands on specificity posed by many MANNER verbs, even in a classic MANNER language like Danish. But still, this does not make such verbs as broadly applicable as those highly abstract PATH verbs frequently used in Russian and French. Second, there is far from always an isomorphic (one-to-one) relationship between expression and content as might be expected from the ideal(ized) standard case of a complex MANNER + PATH$_{satellite/prefix}$ construction versus a simplex PATH verb. As mentioned earlier, all but one of the Russian PATH (+VIEWPOINT) verbs considered have also been coined according to a stem + prefix model and, indeed, have more "literal" readings that might justify different classifications. The same goes for other Russian and Danish verbs in the sample, including those to be mentioned next. Therefore, any serviceable semantic classification must also involve other criteria than the structure of the expression-unit as such. Third, two Danish and four Russian verb lexemes do not seem to fit into either category I or II and have been placed under a separate one: III PURPOSE. These verbs definitely lexicalize relocation, i.e. a change of location from Loc$_1$ to Loc$_2$ (where the state directly referred to includes either Loc$_1$ or Loc$_2$), but they have an additional meaning that involves desirability of the resultant state and hence PURPOSE. In short, *fjerne* [≈ remove] means "(do so that) x is no longer on Loc$_1$ regardless of where it might go… and this is good!", while *добавлять* ⟨*dobavlját'*⟩ [≈ add] means "(do so that) x is now on Loc$_2$ regardless of where it came from… and this is good!". The positioning of these verbs in the framework outlined in section 2. is still in progress and may involve qualification in addition to location. At present the role of these verbs in the opposition between MANNER orientation and PATH orientation is not clear (though they appear to be closer to the latter approach in being rather neutral with regard to MANNER) and we will therefore disregard them in the generalizations made below.

The overall picture thus remains the same: the Danish authors tend to be highly specific about the MANNER of motion throughout their texts, using a lot of different MANNER + PATH$_{satellite}$ combinations, whereas the Russian authors rely on a smaller

number of lexemes that are unspecified in that regard – turning to the MANNER + PATH$_{prefix}$ model only occasionally. What gives rise to such occasions is hard to judge on the present basis, but one possible hypothesis might be that Russian authors – having the choice – avoid specifying the MANNER of motion when it is clear from the co(n)text anyway (which it very often is), but are ready to do so if it serves a more specific purpose. For example, the verb *вывозить* ⟨*vyvozít'*⟩ [≈ drive out, lit. out$_{prefix}$|drive] may have been chosen in SugarTextRus2 to inform the reader that the desugarized chips are normally transported out of the factory building by means of tractors or other motor vehicles – since here alternative procedures (e.g. conveyers) are not entirely excluded. For Russian authors, both pragmatic considerations and perhaps also rhetorical norms may thus have a greater influence on the choice of relocation verbs than is the case for their Danish colleagues.

The inclination to rely on fewer abstract verbs in the Russian texts and to select a new verb for each MANNER of motion (of which there are numerous) in the Danish texts also transpires in the type-token ratios given in Table 2, despite the limited amount of data.

TABLE 2. *Type-token ratios expressed as average occurrence of verb tokens per type for categories I-III and for all relocation verbs found in the texts*

	SugarTextDan1/2	SugarTextRus1/2
I MANNER + PATH$_{satellite/prefix}$	1.14	1.33
II PATH (±VIEWPOINT)	1.00	2.20
III PURPOSE	2.50	1.25
All relocation verbs	1.22	1.60

There are different ways of expressing type-token ratios, but for the present purpose it seems most informative to express them as average occurrence of verb tokens per type. On average, a Danish verb lexeme is repeated 1.22 times whereas a Russian verb lexeme is repeated 1.60 times, i.e. a bit more. Perhaps more interestingly, the Danish MANNER + PATH$_{satellite}$ constructions, which account for 82% of all verb tokens in the Danish texts (as opposed to 33% for the corresponding Russian lexemes), are repeated only 1.14 times on average, whereas the Russian PATH (±VIEWPOINT) verbs, which account for 46% of all verb tokens in the Russian texts (as opposed to 5% for the corresponding Danish lexemes), are repeated 2.20 on average, i.e. nearly twice as much.

5. Concluding remarks

These preliminary findings contribute to the picture of Danish as a language that has decided for a strongly MANNER oriented approach, whereas Russian "works both ways", allowing more room for manoeuvring to its speakers who may then instead be guided by pragmatic and rhetorical considerations. That is, the Russian speakers may be more sensitive to what can or can not be inferred from the co(n)text and/or the receivers prior knowledge, and to communicative norms which may demand e.g. a high level of abstraction and language economy in LSP texts of the present sort.

The intended next steps are as follows: (a) The scale of the investigation must be enlarged significantly so that more definite typological conclusions can be drawn. This presupposes the establishment a larger sample of Danish and Russian SugarTexts (which is in progress) as well as an extension of the corpus with SugarTexts written in a typical MANNER language such as French and/or Spanish. (b) The communicative settings in which the texts have been produced must be considered in more detail in order to estimate the influence of sender/receiver relationships and other extralinguistic factors on authors' selection and use of verb lexemes when referring to relocation. (c) The principles of semantic classification must be further developed in order to account for less typical cases (some of which were discussed above) and further detail the analysis of the MANNER and PATH components in concrete examples. (d) On a subsequent stage, the impact of the cross-linguistic differences identified on the translation process may be made the subject a self-contained empirical investigation.

What has been achieved so far is some support for a separate positioning of Russian in the typology considered and, as one might hope, an illustration of the relevance and place of cross-linguistic typological observations of the present sort in LSP theory and practice. Thus, if nominal special terms constitute essential bricks in LSP texts, then verbs – many of which are not used in professional communication only – constitute the mortar that keeps the bricks together. Being aware of cross-linguistic differences in the quality of the mortar may therefore help LSP translators to develop more efficient strategies and techniques for avoiding pitfalls like those mentioned in section 3. This, in turn, not only presupposes a clear understanding of the general semantic mechanisms and typological preferences at issue, but also detailed knowledge of the specialized field to which the verbs are applied – such as knowing how a sugar factory actually works.

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Appendix

SugarTextDan1

Efter vejningen *styrtes* roelæssene <u>ned</u> i roedepotet. (…) I roedepotet spules sukkerroerne med en vandkanon, hvis kraftige vandstråle *skubber* roerne <u>hen</u> i en transportrende. I denne rende *svømmer* roerne <u>til</u> en stor pumpe, som *løfter* vand og roer <u>ind</u> i roevasken. (…) I Roevasken *skylles* den sidste jord <u>af</u> roerne. Svømmevand og vaskevand *pumpes* <u>til</u> bassiner, hvor den opslemmede jord aflejres. (…) Først skæres roerne i tynde snitter. Derpå *transporteres* de <u>igennem</u> diffusionsapparatet, hvor sukkeret *trækkes* <u>ud</u> af snitterne. (…) roesnitterne *føres* <u>ind</u> i den ene ende og ca. 65° C varmt vand i den anden. (…) Efter at være befriet for sukkerindholdet *føres* snitterne <u>ud</u> af fabrikken som roeaffald. (…). Saften indeholder ca. 15 procent sukker, når den *forlader* diffusionsapparatet, men også forskellige urenheder, som skal *fjernes* før videre behandling. (…) Saften *ledes* så <u>igennem</u> nogle specielle filtre, indeholdende poser af klæde, trukket ud over metalrammer. (…) Den nu klare lysegule saft *ledes* <u>til</u> fordampeapparatet, hvor ca. 75 procent af saftens vægt *tages* <u>bort</u> som vanddamp. For at kunne udkrystallisere sukkeret er det nødvendigt af *fjerne* endnu mere vand <u>fra</u> tyksaften. Dette sker i store kogeapparater ved undertryk (…). Efter kogningens ophør *slynges* siruppen <u>fra</u> sukkeret i centrifuger, hvorfra det endnu våde, hvide sukker *tømmes* <u>ud</u>.

*After the weighing, the load of beets is **DV type I** (≈ toppled down) into the beet yard. (...). In the beet yard, the beets are flushed by a water canon, the powerful jet of which **DV type I** (≈ pushes over) the beets into a conveying channel. In this channel, the beets **DV type I** (≈ swim to) a large pump which **DV type I** (≈ lifts [the water and beets] into) the beet washer. In the beet washer, the remaining earth is **DV type I** (≈ rinsed off). The swimming and rinse waters are **DV type I** (≈ pumped to) a basin where the suspended earth is settled. (...). First, the beets are sliced into fine chips. Then they are **DV type II** (≈ transported through) the diffuser where the sugar is **DV type I** (≈ extracted, lit. pulled out) from the chips. (...) the beet chips are **DV type I** (≈ led inside) at one end, and warm water with a temperature of approximately 65° C at the other. After having been freed from their content of sugar, the chips are **DV type I** (≈ led out) of the factory as beet refuse. (...) The juice contains approximately 15 percent of sugar when it **DV type II** (≈ leaves) the diffuser, but also various impurities that have to be **DV type III** (≈ removed) before further treatment. (...) The juice is then **DV type I** (≈ guided through) special filters containing bags of cloth stretched out on metal frames. (...) The juice which is now clear and has a light yellow colour is **DV type I** (≈ guided to) the evaporation apparatus where approximately 75 percent of the weight of the juice is **DV type I** (≈ taken away) in the form of water steam. In order to crystallize the sugar, it is necessary to **DV type III** (≈ remove) still more water from the thick juice. This takes place in large boiling pans under vacuum. After the boiling has ceased, the syrup is **DV type I** (≈ flung away) from the sugar in centrifuges from which the white sugar, still wet, is **DV type I** (≈ emptied out).*

Fra frø til sukker. De Danske Sukkerfabrikker (nu datterselskab til Danisco), ca. 1986. [*From Seed to Sugar.* Danish Sugar Factories (now a subsidiary of Danisco), c. 1986.]

SugarTextDan2

Efter indvejningen *tippes* roelæsset <u>ned</u> i roedepotet, hvor roerne spules med en vandkanon. På den måde bliver jord og sten *skyllet* <u>af</u>. Mudderet *løber* <u>ud</u> i nogle store slambas-

siner, hvor jord og sten bundfælder (…). Fra roedepotet *føres* sukkerroerne <u>ind</u> i roe-vasken, hvor de sidste rester af jord *skylles* <u>af</u>. For at *udvinde* sukkeret fra roerne, bliver de skåret i tynde snitter, og på et transportbånd *føres* snitterne <u>hen</u> til et såkaldt "diffusi-onsapparat". I apparatet overskylles roestykkerne med 70 grader varmt vand, der *udtræk-ker* sukkeret. I løbet af 70 til 90 minutter er alt sukkeret *vasket* <u>ud</u> af roesnitterne, som derefter *presses* <u>fra</u> til dyrefoder. (…) Urenhederne *fjernes* ved, at der *blandes* læsket kalk <u>i</u> sukkersaften. (…) Kalkpartiklerne og urenhederne *fjernes* fra saften i nogle store filtre (…). Den rene sukkersaft *løber* <u>ud</u> på den ene side af filtret, og på den anden side samles kager af kalkslam. Sukkersaften er nu en lysegul væske, som *føres* <u>til</u> de store fordampe-apparater. Her varmes sukkersaften op, og ved inddampning *koges* ca. 75% af vandet <u>bort</u>. (…) Tyksaften bliver (…) *hældt* <u>over</u> i nogle store kogeapparater, hvor saften koger ved atmosfærisk undertryk. (…) Efterhånden som vanddampen *ledes* <u>bort</u>, dannes der krystaller i saften. Sukkersaften er nu en tyk, brun grød, der *pumpes* <u>over</u> i store centrifu-ger. I centrifugerne *slynges* det brune stof – siruppen – <u>ud</u> af sukkergrøden. (…) til sidst kan man *hælde* ren, hvid melis <u>ud</u> af centrifugerne.

*After being weighed on arrival, the load of beets is **DV type I** (≈ tipped down) into the beet yard where the beets are flushed by a water canon. As a result, earth and stones are **DV type I** (≈ rinsed of). The mud **DV type I** (≈ runs out) into large sludge basins where earth and stones settle. (...) From the beet yard, the beets are **DV type I** (≈ led into) the beet washer where the last remnants of earth are **DV type I** (≈ rinsed of). In order to **DV type III** (≈ win, extract) the sugar from the beets they are sliced into fine chips, and the chips are **DV type I** (≈ led over) to a so-called "diffusion apparatus" by a conveyor. In the apparatus the chips are flushed with water with a temperature of 70 degrees which **DV type I** (≈ extracts, lit. pulls out) the sugar. In the course of 70 to 90 minutes all the sugar is **DV type I** (≈ washed out) of the beet chips, which are then **DV type I** (≈ pressed away) for animal feed. (...) The impurities are **DV type III** (≈ removed) by **DV type I** (≈ mixing) [lime milk] into) the sugar juice. (...) The lime particles and impurities are **DV type II** (≈ removed) from the juice in large filters (...). The pure sugar juice **DV type I** (≈ runs out) on one side of the filter and cakes of lime sludge are collected on the other. The sugar juice is now a light yellow fluid which is **DV type I** (≈ led to) the large evaporation apparatuses. Here the sugar juice is heated and about 75% of the water is **DV type I** (≈ boiled away) during the evaporation. (...). The thick juice (...) is **DV type I** (≈ poured over) into large boiling pans where the juice is boiled at a pressure below atmosphere. (...). While the water steam is **DV type I** (≈ guided away), crystals form in the juice. The sugar juice is now a thick, brown mash which is **DV type I** (≈ pumped over) into large centrifuges. In the centrifuges, the brown substance – the syrup – is **DV type I** (≈ flung out) of the sugar mash. (...) finally, pure sugar may be **DV type I** (≈ poured out) of the centrifuges.*

Fra Sukkerroe til Sukkerskål. De Danske Sukkerfabrikker. Danisco, ca. 1995. [*From Sugar Beet to Sugar Bowl.* Danish Sugar Factories. Danisco, c. 1995.]

SugarTextRus1

Свёклу ***подают*** в здание завода гидравлическими транспортёрами, имеющими устройства для ***отделения*** примесей из свекло-водяной смеси. (…) Далее в свеклорезках корни свёклы измельчаются в тонкую стружку, которая ***подаётся*** в диффузионные аппараты. В них почти весь сахар ***переходит*** в горячую воду. (…)

Диффузионный сок (… (затем)) подвергается очистке (…). Сначала к соку, нагретому до 88° С, *добавляется* известковое молоко. После подогрева до 90° С сока (…) осадок *отфильтровывают* (…) После подогрева до 126° С сок *поступает* в выпарную установку. Полученный сироп с содержанием 65% сухих веществ, в том числе 60% сахара, для уменьшения цветности сульфитируют и после фильтрования *направляют* на станцию уваривания (…). При центрифугировании утфеля *отделяются* первый оттёк (маточный раствор) и второй оттёк, получаемый в результате промывки водой кристаллов сахара. *Выгружаемый* из центрифуг кристаллический сахар является готовой продукцией. (…) 3-й утфель (…) (даёт) жёлтый сахар, *возвращаемый* в сироп после дополнительной его очистки (аффинации).

*The beets are **RV type II** (≈ directed) into the factory building by means of hydraulic conveyors that have mechanisms for **RV type III** (≈ separating) impurities from the beet-water mixture. (...) Subsequently, in the beet slicer the beet roots are divided into fine slices which are **RV type II** (≈ directed) to the diffusers. Here nearly all the sugar **RV type I** (≈ passes, lit. walks over) into the hot water. (...). The crude juice (...) is (then) subjected to purification (...). First, lime milk is **RV type III** (≈ added) to the juice after it has been heated to 88° C. After the juice has been heated to 90° C (...), the sediment is **RV type I** (≈ filtered off). After the juice has been heated to 126° C, it **RV type II** (≈ arrives at, reaches) the evaporation plant. The resultant syrup which contains 65% dry matter including 60% sugar is sulphitated in order to reduce chromaticity and after filtration it is **RV type II** (≈ directed) to the crystallization plant (...). By centrifuging the massecuite, centrifugal molasses (mother liquor) and run-off water resulting from the subsequent washing of the sugar crystals with water are **RV type III** (≈ separated). The grainy sugar which is **RV type I** (≈ loaded out) of the centrifuges constitutes the end product. (...) the third (III) massecuite (...) produces yellow sugar which is **RV type II** (≈ returned) into the syrup after additional purification (affination).*

Иванов П. Я. 'Сахар'. In: *Большая Советская Энциклопедия (БСЭ)*, Москва: «Советская Энциклопедия», 1971-1981. [Ivanov, P. Ja. 'Sugar'. In: *Great Soviet Encyclopaedia.* Moscow: «Soviet Encyclopaedia», 1971-1981.]

SugarTextRus2

Сахарную свёклу *подают* в завод по наклонному жёлобу гидравлического транспортёра водным потоком. В конце гидротранспортёра свекловодяная смесь центробежным насосом *перекачивается* в свекломоечную машину (…). Отмытые корнеплоды свеклы (…) изрезывают в мелкую стружку, которая *поступает* в диффузионный аппарат, где ее (….) обессахаривают горячей водой в противотоке. Свекловичный сок в результате экстракции (диффузии) *переходит* в воду, образуя так называемый диффузионный сок. Обессахаренную стружку (…) отжимают в прессе и *удаляют* с завода, а жомопрессовную воду после осветления *возвращают* в диффузионный аппарат. (…) После очистки и фильтрования взвешенные примеси *удаляются* из сока полностью, а растворимые – на 1/3. (…) Полученный сироп сульфитируют, фильтруют и *направляют* на кристаллизацию сахара. (…) Утфель *разделяют* в центрифугах на сахар-песок и первый оттёк. (…) первый и второй оттёки, содержащие большое количество сахара, *подают* на уваривание утфеля II кристаллизации. Первый и второй оттёки утфеля II *идут* на уваривание утфеля III кристаллизации (…). Обессахаренный (…) межкристальный раствор (…) *выводят*

из завода без разбавления. Фильтрационный осадок подсушивают и ***вывозят*** на поля для подщелачивания кислых почв.

*The sugar beets are **RV type II** (≈ directed) into the factory by a stream of water through the tilted chute of a hydraulic conveyor. At the end of the hydraulic conveyor the beet-water mixture is **RV type I** (≈ pumped over) to the beet washer by a centrifugal pump (...). The washed beet roots (...) are sliced into fine chips which **RV type II** (≈ arrive at, reach) the diffuser where they are (...) desugarized by means of hot water in countercurrent flow. As a result of the extraction (diffusion), the beet juice **RV type I** (≈ passes, lit. walks over) into the water forming the so-called crude juice. The desugarized chips (...) are squeezed in a press and **RV type III** (≈ removed) from the factory, while the pulp press water is **RV type II** (≈ returned) to the diffuser after clarification. (...) After purification and filtration, suspended impurities are **RV type III** (≈ removed) from the juice completely and dissolved impurities by 1/3. The resultant syrup is sulphitated, filtered, and **RV type II** (≈ directed) for crystallization. (...). In the centrifuges, the massecuite is **RV type III** (≈ divided) into sand sugar and centrifugal molasses. (...) the centrifugal molasses and run-off water which have a high sugar content are **RV type II** (≈ directed) for crystallization of the second (II) massecuite. The centrifugal molasses and run-off water of the second (II) massecuite **RV type II** (≈ go, lit. walk) for crystallization of the third (III) massecuite (...). The desugarized mother liquor is **RV type I** (≈ led out, lit. guided out) of the factory without dilution. The filter cake is dried and then **RV type I** (≈ driven out) into the fields for alkalization of acid soils.*

Сапронов А. Р.; Сапронова Л. А. *Технология сахара.* Москва: «Колос», 1993. [Sapronov, A. R.; Sapronova, L. A. (1993). *Sugar Technology.* Moscow: «Kolos», 1993.]

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Article by Viktor Smith (abstract)

ABSTRACT

Talking about Motion in Danish, French, and Russian: Some Implications for LSP in Theory and Practice

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The article addresses the lexicalization of motion and space in the verb lexicons of Danish, French, and Russian and the impact that cross-linguistic differences in this regard have for LSP communication and translation. Several authors have suggested a sharp typological distinction between so-called MANNER languages (e.g. Danish) and PATH languages (e.g. French). This article further develops the semantic classification underlying such a typology by introducing the notion of location-based action verbs, or in short, relocation verbs. Using this framework, it will be argued that Russian presents an interesting special case in being a MANNER language which is in the process of switching over to a PATH oriented approach, allowing more room for manoeuvring to its speakers than is the case for both Danish and French. This hypothesis is tested in a pilot study based on Danish and Russian step-by-step process descriptions relating to the sugar industry. In the introductory part of the article, the relevance and place of typological data of the present sort in a broader LSP context are discussed at some length.

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