Storage as a way to grammaticalization

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Abstract

This paper explores the possible contribution of various types of storage to grammaticalization processes, and the description of such processes by means of Construction Grammar(s) (CxG). The grammaticalization processes of French *pas* and certain complex adpositions in German and Finnish serve to illustrate that storage can background the literal meaning of elements like *pas*, thus enabling the constructions containing them to grammaticalize. A further form of storage, the emergence of a productive template on the basis of high type frequency, may in turn stand behind their grammaticalization. Two further assumptions about language use are also exploited in the explanation of grammaticalization: the possibility of processing complex units holistically and a human urge to interpret recurring forms as signs.

Since CxG is based on stored units, it can serve to explicate the role of storage in grammaticalization, while a grammaticalization perspective can help in uncovering the origin of different types of constructions assumed within CxG. The CxG analysis of the grammaticalization processes examined suggests that in terms of CxG, grammaticalization amounts to the emergence of partially schematic, complex constructions, while further grammaticalization deletes semantic constraints on their schematic parts.[1]

1. Introduction and overview

This paper has two goals. First, it explores the possible contribution of storage to grammaticalization processes. Second, it proposes ways of capturing grammaticalization processes by means of Construction Grammar(s) (CxG). Apart from demonstrating that CxG

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1 This article bears some resemblance to my paper "Lexicalization as a Way to Grammaticalization" that appeared in Karlsson, Fred (ed.). *Proceedings of the 20th Scandinavian Conference of Linguistics, Helsinki, January 7-9, 2004* (University of Helsinki, Department of General Linguistics, Publications No. 36), http://www.ling.helsinki.fi/kielitiede/20scl/proceedings.shtml. I thank Fred Karlsson for the kind permission to submit its revised version to Constructions; this has evolved into the present, substantially different paper. I also thank Ian Gurney (Tampere) for having meticulously checked the language of all the versions of this paper. All remaining errors, both factual and grammatical, are of course mine.

can describe grammaticalization processes enlighteningly – an aspect that has not received much attention within CxG due to its hitherto mainly synchronic orientation – the inclusion of a CxG perspective can also serve to clarify which form of storage is involved. This is due to the fact that CxG is an approach that works on the basis of different kinds of stored units.

I am going to proceed from the following assumptions about language use:

A. complex units can be associated with meanings without recourse to their internal structure;

B. high token frequency of a string can result in its storage as such;

C. high type frequency of a string can cause its storage as a productive template;

D. humans have a tendency to assign functions to recurring (linguistic) forms.

Assumption A surfaces e.g. in Langacker (1987: 58); it amounts to a holistic processing mode, as opposed to analytic, or compositional, processing (cf. Lehmann 2002: 3). If there is something controversial about this assumption, it is its applicability to complex structures traditionally thought to be the product of syntactic rules. Assumptions B and C have been around since at least Bybee (1985) (cf. also Bybee & Hopper 2001; Smith 2001; Langacker 1987: 59f.). They are also at the core of the so-called usage-based model (Croft & Cruse 2004) that forms the basis of the CxG approach of Radical Construction Grammar (Croft 2001: 28). Assumption D is implicit in Croft's form-function reanalyses, processes that according to Croft (2000: 140) play a major role in language change. It is also at the core of exaptation (cf. Lass 1997: 316f.), one type of Croft's form-function reanalyses. These processes can be argued to arise from different ways of analyzing sequences of speech into potential signs, i.e. forms that are to be assigned functions. However, without an urge like that encapsulated by assumption D, language users could not seek to assign functions to the syntactic units in a construction and thus cause form-function reanalyses, exaptation among them. First, the forms that are to be assigned functions – potential signs –

have to be located/identified. Basically, assumption D says that language users are constantly searching for potential signs. Such an urge is also presupposed by the "blame assignment" procedure of child language acquisition (Tomasello 2003: 297), a striving to define the functional roles of the various components of an expression.

Assumptions A-C capture different aspects of storage. It is my contention that storage can contribute in the following ways to grammaticalization processes: first, and fairly obviously, it can serve to conventionalize the pragmatic inferences involved in grammaticalization processes by offering them a form to be anchored on. This is an instance of assumption B: the high frequency of an inference with a certain linguistic form conventionalizes their association. Second, in keeping with assumption A, storage can help fade the lexical meanings of items that form part of a stored string and thus pave the way for their becoming grammatical items.[2] Third, and perhaps the most controversially, the productivity that is characteristic of a grammatical item may result from its high type frequency (assumption C), i.e. a tendency towards a further form of storage. Hence, I am going to argue that neither semantic bleaching nor a hearer reanalysis like that proposed in Detges & Waltereit (2002; see below) was sufficient to enable e.g. the spread of *pas*, the intensifier of negation in older stages of French, to the context of all verbs. Instead, a high type frequency of *pas* – its occurrence with different verbs of motion – was needed to turn it into a general intensifier of negation.

2 As I was finishing this paper, it came to my attention that Mikone (2000) puts forward a proposal very similar to mine. (The same goes for some observations in Bybee 2003, cf. section 5.) It involves the fading of the literal meaning of a word as part of a larger unit displaying a unitary function (ibid.: 24), the spread of such larger units into new contexts due to conditions that seem interpretable as their high type frequency (ibid.: 25), and even an analysis of the emerging productive units as something that very much resembles a partially schematic, complex construction (ibid.: 25; 28; cf. section 6 below). Mikone illustrates her proposal on the basis of the grammaticalization of a postposition in Estonian that has its origin in a noun meaning 'head'.

A significant side issue in the analyses to follow is the constructional view of grammaticalization they advocate. Contrary to the formulations of the preceding paragraph that place the focus on lexical items like *pas* and their fate in the course of grammaticalization, I am going to argue that grammaticalization mostly involves larger constructions like *ne ... pas.*

Different types of frequency and their possible consequence, the entrenchment of different kinds of constructions in the mind of a language user, are a factor that could be thought to steer the behavior of language users deterministically, i.e. independently of their goals for their behavior. This is potentially controversial in the framework of grammaticalization, which has often stressed the role of problem solving by language users in grammaticalization processes (cf. Heine et al. 1991: 29ff.; Itkonen 2002: 420). However, the entrenchment of constructions and its visible result, speakers' preference for frequent expressions over infrequent ones, and their novel expressions formed on the basis of templates that have their origin in morphemes displaying a high type frequency, do not necessarily have to be seen as solely mechanistic processes. It is conceivable that entrenchment is at least in part a result of the goal-directed activity of the language user, who may strive to register the expressions that are used frequently (token frequency), and draw generalizations across classes of items (type frequency), because such activities provide useful tools for communication. This presupposes, however, the notion of unconscious rationality argued for by Itkonen (1983: 185ff.; 2002: 421),[3] since language users hardly engage in these activities consciously most of the time.

The paper only deals with lexicalization to the limited extent that the form of storage involved in the analyzed grammaticalization processes is lexicalization. Therefore, a

3 Cf. also Haspelmath (2000: 794) for the relativity of intentionality and consciousness.

contribution to the debate of the differences and similarities between lexicalization and grammaticalization is not among the main goals of the paper (cf. Wischer 1997; 2000; Lehmann 2002; Brinton & Traugott 2005). Nevertheless, the CxG perspective of the paper provides one possible explanation for why the two processes are sometimes hard to tell apart (cf. section 7).

The paper is structured as follows: Section 2 discusses the role of storage in the grammaticalization of adpositions out of nouns in cases where the development involves an intermediate stage of a complex adposition. Section 3 provides a partly novel approach to the grammaticalization of *pas* into an emphasis element of negation in French. The account stresses the contribution of an intermediate stage of storage to this development and the role of type frequency in the spread of *ne ... pas* into the context of all verbs. Section 4 presents two parallel cases from the literature where storage seems to fade lexical meanings and type frequency appears to trigger a grammaticalizing reanalysis. Section 5 deals with some problems of the present account. Section 6 opens with a very brief introduction to Construction Grammar(s) and offers largely informal CxG accounts of the grammaticalization processes discussed. Finally, section 7 recapitulates the main findings and provides some further perspectives.

2. Complex adpositions

A first example of the contribution of storage to grammaticalization can be seen in the development of **complex prepositions** (cf. e.g. Vincent 1999: 1113; Rauh 1993: 126; Lehmann 2002) such as *because of*, *in light of*, *in view of*, *on top of*/*atop*, *aufgrund*, *anhand* (*von*) (see Fries 1991: 76 for further cases in German), (*in*) *Richtung* (cf. Rostila 2001: 149f.), *på grund av*, *till följd av* (Swedish). I will illustrate the contribution on the basis of a hypothesis as to how the German noun *Richtung* has been reanalyzed as a preposition in

certain contexts. The process is only outlined here; a more detailed account is given as part of the CxG analysis of section 6.2.

At first, *Richtung* occurs as an ordinary N that projects into a referential NP in contexts such as

(1a) Ich bin in die Richtung von
I am in the direction of
Koblenz gefahren.[4]
Koblenz driven
'I drove in the direction of Koblenz.'

(1b) In der Richtung von Frankfurt gibt
in the direction of Frankfurt gives
es oft Staus.
it often traffic jams
'There are often traffic jams in the direction of Frankfurt.'

Directional expressions like in (1) are useful and therefore probably also frequent. Presumably due to the high token frequency of *in die/der Richtung*, a complex P *in Richtung* develops. This term is actually somewhat misleading. In my view, the whole PP has been lexicalized as such and only seems complex, but in reality constitutes a simple P.[5] The omission of *von*, the P that would be required by *Richtung* if it still were an independent noun, is an indicator of this, cf. (2a,b). The loss of the article in Ps like this points in the same direction, cf. (2a-d). The most overt manifestation of a simple P status can be seen in the fusion of complex Ps into single words in both speech and writing, cf. (2e-h):

4 All the German examples have been checked by native speakers. The German web data stems from Google searches of German pages in German; a native speaker has confirmed that none of it deviates from what is current in colloquial present-day German. Ilse Wischer (p.c.) points out that *in der Richtung nach Frankfurt* is more natural than *in der Richtung von Frankfurt*. Several other native speakers have accepted *von*, though. In any case, nothing hinges on the choice between the two prepositions.

5 However, the term 'complex P' seems justified if it is taken to indicate that the former PP, now lexicalized as a single P, is occasionally analyzed by speakers into its component parts as long as these parts are recognizable (cf. assumption D).

(2a) Ich bin in Richtung Koblenz gefahren. (=1a)
I am in direction Koblenz driven

(2b) In Richtung Frankfurt gibt es oft (=1b)
in direction Frankfurt gives it often
Staus.
traffic jams

(2c) [$_P$ in light of]

(2d) [$_P$ på grund av]
on basis of
'on the basis of'

(2e) aufgrund dies-er Daten
onbasis these-GEN data
'on the basis of these data'

(2f) infolge dicht-en Nebel-s
inconsequence thick-GEN fog-GEN
'because of a thick fog'

(2g) [$_P$ because of]

(2h) [$_P$ anhand von][6]
athand of
'on the basis of'

As a consequence of being stored as part of another sign, *Richtung* loses its independent meaning and referential capacity in the context in question. In other words, the semantic unit is now [$_P$ *in Richtung*].[7] It is this complex-seeming P as a whole that speakers

6 In contrast to *in Richtung*, the Ns in the complex Ps in (2c,d) and (2g,h) are accompanied by a P of the type *of*. This could be taken to indicate that the structures in question do involve a noun. After all, at least according to Chomskyan generative theories, Ps of the type *of* are only there to give categories such as N the ability to take NP complements (e.g. Stowell 1981: 239ff.; Rauh 1993: 122; cf. Chomsky 1995: 113f. for a slightly modified view). However, the loss of N properties manifested by the loss of the article in (2c,d) or by the fusion with another category in (2e-h) suggests that the P status of the whole sequence including *of/av/von*, not just that of *of/av/von*, is a plausible analysis. To be sure, language users may occasionally analyze *of/av/von* as a separate P, since it is recognizable as such, but my contention is that they **also** analyze sequences like *in light of*, *because of* as single Ps. Lehmann's (2002: 9f.) analysis of complex Ps in Spanish supports this analysis.

7 This P is probably always [+directional], but neutral with respect to [location]. This would explain its compatibility with both (2a) (= [+dir, -loc]) and (2b) (= [+dir, +loc]).

pick up from the lexicon. *Richtung* is not targeted in this process, and therefore its presence within the P as well as its semantic contribution to the P start to fade.

In the next stage, *Richtung* acquires a new, solely relational meaning from the semantic unit it has constituted a part of and develops into a P. As a sign of this, *in* becomes optional and may subsequently be dropped altogether, cf. (3).[8] A striking manifestation of the P status of *Richtung* in the mental grammars of some speakers of German is the fact that *Richtung* can already be seen to govern the genitive in the manner of other formerly complex Ps like *aufgrund*, cf. (3c-e).[9]

(3a) Ich bin (in) Richtung Koblenz gefahren. (= 1a)

(3b) (In) Richtung Frankfurt gibt es oft Staus. (= 1b)

(3c) Meine Gruppe ging Richtung der Kathedrale,
My group went direction the:GEN cathedral,
wo […]
where
'My group went in the direction of the cathedral, where ...'
(lok-thar.de/forum/viewthread. php?forum_id=24&thread_id=317; 5.1.06)

(3d) Langsam erhob er sich von seiner Bank
Slowly raised he himself from his bench
und ging Richtung des Hafenviertels.
and went direction the:GEN harbour block
'He slowly stood up from his bench and went in the direction of the harbour block.'

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8 A question that poses itself is why the original P is omitted straight away in the case of *Richtung*, while it seems to be reduced gradually in e.g. *aufgrund* and atop (fusion is probably a precursor of phonological reduction here). Perhaps omittance and fusion are alternative, and largely randomly governed, forms of reduction. Another question is why it is the P and not the N that is reduced. See section 6.2 for some answers.

9 One of the editors points out that cases like (3c), in which *Richtung* clearly occurs independently as a P, i.e. without *in* preceding it and with a following determiner, are ungrammatical to her. Nevertheless, the search string *ging Richtung der* scored 155 hits, while *ging Richtung des* found 333 pages (Google, Jan 5, 2006, German pages in German). It is also to be noted that the language of many of these hits was otherwise completely grammatical; thus it does not seem likely that a majority of cases like (3c) can be attributed to non-native speakers of German. This suggests that something interesting is going on in this part of German grammar. Many speakers of German actually seem to have reanalyzed *Richtung* as a P. (cf. also fn. 4).

(forum.jowood.de/showthread.php?t=74568&page=1; 5.1.06)

(3e) Ich [...] ging Richtung der Treppen.
I went direction the:GEN stairs
'I went in the direction of the stairs.'
(kurzgeschichten.e-stories.de/ geschichtedrucken.phtml?3122; 5.1.06)

What is crucial is that *Richtung* probably could not have grammaticalized into a P without the intermediate stage of lexicalization that freed *Richtung* in contexts like (3a, b) from its lexical semantics, the source of its referential capacity. Of course, the semantic change required in this case was not particularly drastic, since the noun *Richtung* was relational to begin with. What is more, provided that one accepts Lehmann's (2002: 8f.) view that the development of relational nouns into Ps does not count as a case of grammaticalization since it produces **lexical** Ps, the development [$_{N}$ *Richtung*] → [$_{P}$ *richtung*] is not necessarily to be seen as grammaticalization. However, this development does involve a decrease in the referential capacity of *Richtung* – the category N lends itself more readily to referential functions than P (cf. Leiss 1992: 127f.) – and therefore exhibits at least one central feature of grammaticalization.

Finally, it is worth noting that Finnish postpositions in statu nascendi such as *pää-* ('head'), *rinna-* (a form of the word meaning 'breast', 'chest'; cf. *abreast* in English), *suu-* ('mouth') constitute a similar case. They only occur in the function of a postposition in combination with local cases, cf.

(4a) kiivetä mäe-n pää-lle
climb hill-GEN head-ALLATIVE
'to climb on(to) the hill'

(4b) seistä mäe-n pää-llä
stand hill-GEN head-ADESSIVE
'to stand on (top of) the hill'

It can be argued that there exist units such as *pää* + local case whose use does not regularly involve the activation of the lexical meaning of the noun. As a consequence, the presence of the noun in such units becomes less and less apparent. This paves the way for

the reanalysis of the noun as a postposition. In rapid colloquial speech it is already acceptable to say e.g. *Me seistii sit* (*siä*) *mäen* ***pääl*** ('We then stood (there) on the hill'), *Me mentiin sit* (*sinne*) *mäen* ***pääl*** ('We then went (there) on(to) the hill'), i.e. to reduce the local cases used with the noun.[10] This could indicate that an invariant form like *pääl* is developing. Such a form would constitute a pure postposition no longer analyzable in terms of the original noun. A prerequisite for this process is, however, the obscuring of the lexical meaning of the noun which is accomplished by its storage as part of a larger unit.[11]

3. The grammaticalization of French *pas* into a marker of emphatic negation

3.1 An outline of the historical development

As is well known, the negation element *pas* of present-day French originated as a Vulgar Latin intensifier of negation whose use was restricted to verbs of motion. At the same time, Vulgar Latin also displayed several other intensifiers of negation that were similarly restricted to certain classes of verbs (cf. Detges & Waltereit 2002: 173; Price 1997; Geurts 2000: 781f.):

(5) *non* ***passum*** *vadere*
'not to walk a step'
non ***micam*** *manducare*
'not to eat a crumb'
non ***guttam*** *bibere*

10 Such reductions might be restricted to some dialects, though. The few cases I managed to find with the aid of a Google search of web pages in Finnish were clearly dialectal: *Kiipesinhä mie sen suuren sokerpalan muotosen kiven* ***pääl****, joho Hyypiön Väinö ol* ... (www.kiiskila.net/senja.htm; 31.12.04) ('I did climb **onto** that big sugarcube-like rock where H.V. had ...'); *Yäl ko kaik o hiljast ja vaa jokku kone möristävä karul ... makka mää yksi sänkym* ***pääl*** *ja kirjota* (personal.inet.fi/yhdistys/peilikuva/rahman.htm; 31.12.04) ('At night when everything is quiet and only some machine roars in the street ... I lie alone **on** the bed and write').

11 Another prerequisite for the process is the redundancy of the local cases in (4). They express the features [+dir, +on the surface] (= 4a) and [-dir, +on the surface] (= 4b), but the contrast [±dir] is conveyed by the choice of the verb as well, while *pää-* expresses [+on the surface]. One may ask to what extent the grammaticalization of *pää* is actually motivated by economy.

'not to drink a drop'
etc.

The nouns in these emphatic negation expressions were probably still used referentially (although in a generic sense) at this stage, and thus their lexical meaning was activated each time they were employed in this way. In Old French, however, *pas* began to appear with verbs other than those of motion, e.g. with the French counterpart of *be* that was incompatible with the literal meaning of *pas*, 'step', cf.

(6) Qo'st Climborins ki **pas** ne fut prozdome
This-be:3SG C. who **emph**/*step NEG be:SG:PAST brave:man
(Detges & Waltereit 2002: 173)

By this stage, then, *pas* seems to have acquired the status of a grammaticalized marker of emphatic negation. Its subsequent degradation to a marker of ordinary negation is largely irrelevant for the present purposes.

Since the main point of this paper is to present the storage hypothesis and its CxG implementation, an empirical analysis of the grammaticalization of *pas* and an in-depth survey of the literature on the emergence of double negations is out of the question here. Instead, I will take the recent account by Detges & Waltereit (2002) as my starting point, particularly because my account suggests a different basis for the reanalysis that took place in the grammaticalization of *pas*. This is not to say that I am calling into question their overall approach, which I really cannot do justice to here.

3.2 Explanations for the spread of pas *into the context of all verbs*

Detges & Waltereit (2002) argue that the use of emphatic negations such as *not to walk a step*, *not to eat a crumb* is based on a more general discourse technique that is favoured because of its expressivity. They ascribe a crucial role to the hearer in the process of turning *pas*, *step*, etc. into grammatical elements that can occur with any verb. In their account, the hearer observes in a communicative situation that emphasis is meant instead of the literal

meaning of *pas* and reanalyzes *pas* as an expression of emphatic negation ('(not) at all'). Consequently, such expressions can spread into the context of all verbs regardless of their semantics (cf. Detges & Waltereit 2002: 180f.). The routinization and high frequency of expressions like *ne … pas* favours this reanalysis by obscuring the literal meaning of their component parts, but is not crucial to it (ibid.: 181).

It indeed seems plausible that language users might favour expressions like *ne … pas*, *not ... a step* for the sake of their expressivity.[12,13] Consequently, it appears equally plausible that expressions like these might be used frequently. It seems, however, less likely to me that the cause of the grammaticalization of *pas* was the hearers' reanalyzing it as a marker of emphatic negation when they first encountered it – a scenario that Detges & Waltereit's account appears to amount to (see below for discussion). Since the discourse technique in question must have been known to most language users, it seems rather more

12 Detges & Waltereit (2002: 179) restrict the term 'expressivity' to an urge to speak maximally informatively. I would be willing to accept a striving to improve one's social status as part of expressivity as well; 'impressiveness' would then be a more adequate label for the tendency (cf. Haspelmath 1999a: 1057; 1066). Geurts (2000: 787) largely denies that this urge has any significant role to play in grammaticalization developments, pointing out e.g. that emphatic negations like (5) hardly could count as "a particularly daring innovation." In my view, innovations in social conventions do not have to be daring in order to have a social effect. It is more crucial that they are employed at the right time. This amounts to knowing when innovations are called for in a conversation, as well as to a knowledge of "fashionable" expressions. Those using the latest (however unremarkable) expressions – like those wearing the latest fashion – perhaps even manage to give the impression that they are able to keep up with the latest developments in other respects, too. This ability, at any rate, seems to be valued in human populations.

13 Croft (2005), however, challenged both 'expressivity' and 'impressiveness' as motivations for innovations leading to grammaticalization, maintaining instead that innovations such as periphrastic forms are part and parcel of the natural variation occurring in conversation. Sociolinguistic factors like the prestige of the innovator, on the other hand, account for the spread of such innovations.

likely that they were able to employ it for a time without reanalyzing *pas*,[14] relying on the literal meaning of *pas* and a pragmatic inference instead.[15]

However, as more and more language users found *ne ... pas* a useful way of expressing an emphatic negation, thus making it increasingly frequent, it seems likely that they eventually took a short cut and interpreted *ne ... pas* directly as a symbol of emphatic negation. This was, after all, the most probable reading of *pas* in the relevant contexts anyway – its literal reading can hardly have been relevant in many such cases. The direct interpretation of *ne ... pas* as an emphatic negation amounts to its storage as a unit that incorporates what was formerly the pragmatic inference 'emphasis' and the restriction that this unit only be used with verbs of motion. At this stage, therefore, neither the meaning component 'emphasis' nor the restriction to verbs of motion called for a recourse to the literal meaning of *pas*, but were associated with the higher order unit *ne ... pas*. This is why the literal meaning started to fade, eventually making the spread of *ne ... pas* into the context of all verbs possible.

The preceding analysis accords with assumption B, that is, a positive correlation between a high token frequency and the storage of a string as such. It appears plausible that such storage also involves the most common meaning of the string in question, as well as any significant contextual restrictions that have pertained to the use of the string.

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14 Notably, Traugott (2003: 634f.) assumes a similar period of use on the basis of inferences in the grammaticalization of *be going to*.

15 That is, an expression such as *not to walk a step* is a violation of the maxim of quantity (Grice 1975) – it means saying too much – and invites the inference that emphasis is meant. One of the referees raises the question of whether metaphor could have played a role alongside the metonymic inference based on the literal meaning of *pas*. Given that there is no concensus within the field of grammaticalization studies concerning the division of labor between metonymy and metaphor (cf. Hopper & Traugott 2003: 75; Brinton & Traugott 2005: 105f.), I deem it outside of the scope of this paper to investigate this question. It is also to be noted that Detges & Waltereit argue explicitly against the involvement of metaphor here (2002: 168).

So far grammaticalization had only produced an emphatic negation for verbs of motion. In my view, a further factor was needed to turn *ne ... pas* into an emphatic negation applicable to all verbs: the **type frequency** of *ne ... pas*, which, according to assumption C, is apt to promote the storage of an element as a productive template. The fact that *ne ... pas* occurred with a large (and probably also frequently used) verb class such as verbs of motion may have invoked the impression that *ne ... pas* had a high type frequency compared to its contenders like *ne ... mie*, *ne ... gote*, etc. In practice, this would have given the appearance that *ne ... pas*, in contrast to its contenders, could go with any verb. If the development of *aller* 'go' into a future auxiliary took place at the same time, it may also have contributed to this impression:[16] during its grammaticalization process, *aller* is likely to have formed its emphatic negation with the aid of *ne ... pas* just like its non-grammaticalized counterpart. The result may have been the impression that even an auxiliary could be accompanied by *pas*, and not just lexical verbs. In the absence of historical data, these observations relating to the role of *aller* are, however, highly speculative.

Nevertheless, if assumption C is correct, the type frequency of *ne ... pas* is a good candidate for the cause of its spread. The process is a Lightfoot-style reanalysis (1979) involving data that give a slightly distorted picture of the grammar underlying them and an institutionalization of this picture via the construction of a new underlying grammar. The data gave the impression that *ne ... pas* could go with any verb, and a subsequent reanalysis institutionalized this impression in the form of a corresponding rule – or, to be more accurate, a new construction. It should be noted that by 'underlying grammar' and 'rule' I mean constructions which speakers have in their mental grammars (see section 6) and which

16 I owe this hint to Jaakko Leino (p.c.).

have a certain generative capacity, not settings of universal grammar, as the reference to Lightfoot (1979) may seem to suggest.

The reanalysis based on type frequency would, however, not have been possible, if the preceding stage of the storage of *ne ... pas* had not obscured the literal meaning of *pas* within this unit. As mentioned, the meaning 'not at all' was primarily associated with the whole unit *ne ... pas*, and *pas*, being part of the sign *ne ... pas*, had no independent meaning at all in this structure.[17] Hence, its literal meaning could not back up, or motivate, the restriction of *ne ... pas* to verbs of motion. The impression that the type frequency data gave could therefore freely delete the contextual constraint that pertained to the higher order unit *ne ... pas*, and turn it into a general marker of emphatic negation.

Lightfoot-style reanalyses are usually associated with child language acquisition (cf. Haspelmath 1998: 317; 1999a: 1049; 1053). However, it is not my purpose to advocate the view that grammaticalization, in particular that of *ne ... pas*, is a process of child language acquisition. Quite the contrary: in light of recent research into language acquisition, generalization abilities of the kind that are required for the spread of *ne ... pas* develop fairly late (Tomasello 2003: 139ff.; Croft 2001: 58) and might even characterize adult competence

17 To be sure, language users probably often analyzed *ne ... pas* into its component parts at this stage, having the options of holistic and analytic processing at their disposal (cf. Lehmann 2002: 2), and ascribed *pas* the meaning 'emphasis'/'at all'. This was in part due to the fact that *ne* occurred as a negation even without *pas*, thus making a compositional semantic analysis of *ne ... pas* possible. The compositional analysis in turn presupposed a tendency to interpret recurring forms as signs (assumption D). Nevertheless, *pas* only had the meaning 'emphasis' in the context of *ne*; in practice, this amounted to the analysis that the whole of *ne ... pas* was the meaningful unit. This runs counter to the theory of idioms developed by Nunberg et al. (1994), which stresses that many idioms are compositional by virtue of displaying lexical items that only have a certain meaning within an idiom. This analysis could also be applied to *pas*. It seems to me, however, that Nunberg et al.'s view emphasizes the compositionality of many idioms at the cost of the opposite tendency to process them as a whole. I believe both these tendencies are present and applied differently by different speakers and on different occasions of language processing.

(cf. Tomasello 2003: 6; 172).[18] Therefore, I deem it a tenable option that the spread of *ne ... pas* did not take place as a process of child language acquisition, but emerged from language use in general.

It is perhaps useful to still contrast my account with that of Detges & Waltereit (2002) in order to highlight the differences between the two approaches. Detges & Waltereit also suggest that the routinization following from the high frequency of *ne ... pas* caused less attention to be paid to its constituent parts (2002: 181; cf. 157), and so facilitated the reanalysis that occurred. This more or less equals the contribution of storage based on my assumption A. The main difference between Detges & Waltereit's account and mine is the basis on which the reanalysis took place. In Detges & Waltereit's account, the spread of *ne ... pas* into the context of all verbs was made possible by the insight of the hearer that *pas* was used to mean 'emphasis'. According to my proposal,[19] the reanalysis was due to the type frequency of *ne ... pas* that could delete the restriction to verbs of motion because storage had backgrounded the literal meaning of *pas*.

Besides proposing a different motivation for the reanalysis in the case of *pas*, I would like to question an aspect of Detges & Waltereit's hearer reanalysis on the basis of

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18 I conceive of the grammaticalization of *ne ... pas* as the development of a (partially) **schematic**, or abstract, construction with the form *ne ... pas* that is compatible with any verb; see section 6 for details. A possible objection to my analysis of the spread of *ne ... pas* as an abstraction process accomplished by language users with adult-like competence would be that it could also be analyzed as an overgeneralization error typical of children's speech. However, the findings of CxG-based acquisition research rather point to the direction that the younger language users are, the more item-specific their categories are (cf. Tomasello 2003: 139ff.; 194). An implication of this is that children might first be willing to acquire e.g. a different emphasis element of negation for each verb, if the input they receive only supports this. Thus they would not rush to (over)generalize *ne ... pas* on the basis of scarce data, but would generalize it at a considerably later stage on the basis of type frequency data.

19 Rostila (2005) offers an earlier version of this approach, besides discussing further similar grammaticalization processes. For instance the grammaticalization process of prepositions in prepositional objects might be remarkably similar to the grammaticalization of *pas* (cf. also Rostila 2004).

assumption B. As far as I can see, Detges & Waltereit do not specify in what relation the high frequency of *ne ... pas* stood to the hearer reanalysis. Their account gives the impression that speakers used *ne ... pas* frequently, while hearers reanalyzed it on one particular occasion of hearing it. However, it rather seems likely to me that the hearer reanalysis required many occasions of hearing *pas* used in the sense 'emphasis (of negation with motion verbs)'. In other words, this hearer experience had a high token frequency. Now, according to assumption B, the only reanalysis that the high token frequency of a string can cause is its storage as such. The restriction to verbs of motion that speakers still observed was part of the frequent hearer experience, and hearers could have stored it along with *ne ... pas*. Thus, on the basis of assumption B, it seems doubtful whether the hearer reanalysis that Detges & Waltereit propose can actually have caused the spread of *ne ... pas*. It seems rather more likely that the hearer reanalysis institutionalized the restriction of *ne ... pas* to the context of motion verbs by storing the contextual constraint as part of *ne ... pas*.

I have relatively consistently been speaking of the grammaticalization of *ne ... pas*, manifested by its spread into the context of all verbs, and refrained from speaking of the grammaticalization of *pas*. This is because I have claimed that *pas* was stored as part of the larger unit *ne ... pas*. This gives rise to the question of whether one can speak of the grammaticalization of *pas* as such at all. Traditional criteria of grammaticalization suggest that *pas* was already grammaticalized to some extent once it was stored as part of *ne ... pas*, even before the spread of this unit to all verbs: it was associated with a more abstract meaning than before, and in this meaning it was restricted to the context of negation and to motion verbs (cf. the criteria of attrition, condensation and coalescence in Lehmann 1985: 309). However, it is storage as part of a larger unit that brings about these properties of *pas*. Therefore, one could speak of the grammaticalization of *pas* only on condition that one is willing to accept that grammaticalization in its initial stages equals such storage. This is in fact what I am going to argue in section 6.

However, only the first stage of grammaticalization pertains to *pas* alone in the sense that it stores *pas* as part of *ne ... pas*. All the subsequent stages involve larger constructional units like *ne ... pas*.[20] This is actually a further point where my proposal differs from that of Detges & Waltereit (2002). In their account, *pas* becomes a marker of emphatic negation after the hearer reanalysis they advocate (ibid.: 180); in mine, it is questionable whether it makes sense to speak of the status of *pas* as a grammatical element at all after it has been stored as part of *ne ... pas*. At this stage, properties like abstract meaning, etc. pertained to *pas* only to the extent that speakers analyzed *ne ... pas* compositionally – and it is precisely my contention that they did not need to do it, since *ne ... pas* could be manipulated as a whole. Hence *pas* was at this stage only in a limited sense a grammaticalized item: it was only marginally an independent unit at all.

Even the reanalysis caused by type frequency data pertained to *ne ... pas* and not to *pas* as such. It was *ne ... pas* that was grammaticalized by the reanalysis, not its component parts (see 6.1 for arguments for the unit status of *ne ... pas*). It is only after the degradation of *ne ... pas* to a standard negation (cf. Detges & Waltereit 2002: 182ff.) that a change again takes place which appears to involve the grammaticalization of *pas* alone: the omission of *ne* in present-day colloquial French and the concomitant advancement of *pas* to a simple negation element (cf. Picoche & Marchello-Nizia 2001: 292). However, in 6.1 I will argue that not even the case of *pas* taking over the function of a simple negation element is an instance of grammaticalization concerning *pas* alone.

The inclusion of an explicit Construction Grammar perspective in section 6.1 brings with it one alternative analysis for the grammaticalization of *ne ... pas*. Nevertheless, the essence of the proposal will be left intact: the grammaticalization of *ne ... pas* required an

20 Cf. also Lehmann (2002: 7) and Bybee (2003: 602f.) for similar observations on grammaticalization in general.

intermediate stage where the literal meaning of *pas* did not need to be accessed when forming an emphatic negation, and type frequency data giving the impression that *ne ... pas* could be used with all verbs. I leave it for later work, if possible based on historical corpus data, to verify whether this was indeed the case. However, the verification of the type frequency hypothesis on the basis of corpus evidence will not be an easy task. First, a stage where *pas* occurs with more verbs than any of its contenders (*mie*, *gote*, etc.), but is still restricted to verbs of motion, will have to be found. Such a stage should be followed by one where *pas* spreads into the context of verbs other than those of motion. Such corpus studies will face at least three problems: first, the representativeness of the corpus with respect to verbs of different semantic classes. Second, the fact that token frequency might also contribute to the emergence of productive forms, contrary to assumption B (cf. sections 4 and 5). Third, the fact that in different regional variants, different intensifiers prevailed over their contenders (cf. Price 1997).[21] Hence, any of the contenders of *pas* could be studied instead of *pas* to verify the hypothesis, but the corpus to be studied would have to be regionally homogeneous, since the competition between the different intensifiers seems to have been a local matter, so to speak. The question is whether such corpora are large enough to allow for the extraction of reliable frequency data, and whether they actually are regionally homogeneous (cf. Price 1997: 176).

4. Parallel cases

To judge from the account given by Smith (2001), the grammaticalization of the auxiliary of the English anterior may display significant similarities with the grammaticalization process that I have proposed for *ne ... pas*. First there were two alternative auxiliaries, *have* and *be*, whose choice was presumably motivated by the semantics of the main verb (ibid.: 373).

21 I thank Andreas Dufter (p.c.) for pointing this out.

Even at this stage, more verbs chose *have* as their auxiliary, i.e. *have* had the higher type frequency (ibid.: 365; 374). Next, verbs were stored in the construction in which they frequently occurred – i.e. with either *have* or *be* (ibid.: 362; 374f.). Finally, the higher type frequency of *have* led to its spread to verbs that had formerly taken *be* as their anterior auxiliary (ibid.: 374), and thus to its grammaticalization as the sole anterior auxiliary.

Just like the choice of *pas*, the choice between *have* and *be* was first semantically motivated. I assume this was not only to do with the semantics of the main verbs that *have* and *be* combined with, but with the semantics of *have* and *be* as well, which had to be compatible with that of the main verbs. Frequent use led in both cases to storage – *have* and *be* were stored with verbs they frequently occurred with (cf. assumption B), while *pas* was stored with *ne* and the restriction that the stored unit be used with verbs of motion. Next, because both auxiliary + verb combinations and *ne ... pas* could now be retrieved without recourse to the semantics of the components of these stored units, the semantic motivation behind the choice of the auxiliary and *pas* faded (assumption A). (This is in fact the only component of my proposal that Smith does not mention). Therefore, type frequency could play its role (assumption C) and spread *have* and *ne ... pas* to all verbs.

Mithun (2002) proposes a grammaticalization process for causative morphemes in several North American native languages that exhibits striking parallels to my proposal.[22] She suggests that e.g. nouns meaning 'hand' were first compounded with verbs to narrow down the meanings of the verbs; such compound verbs were then lexicalized and "learned and accessed by speakers as units, often with little consciousness of their component parts" (ibid.: 248). Next, speakers inferred the meanings of these affixes from the common features of the verbs containing the affixes, and used the affixes to derive new verbs. At this stage,

22 I thank Ilse Wischer for this hint.

grammaticalized means and manner affixes had come into being. In addition, further grammaticalization of such affixes appears to take place. The basis for this is provided by the fact that verbs containing means and manner affixes invite the inference that causation is involved. Such inferences can be integrated into the meaning of the verbs in question (ibid.: 250). When speakers next analyze the verbs into their component parts, they may ascribe the feature of causation to the prefix (cf. ibid.: 251).

Mithun's account involves all the core components of my proposal. Modifying noun and verb roots are stored together with verbs as lexical items because of their frequent co-occurrence (assumption B); the degree differences that Mithun states in the fusion of different prefixes with different verbs (ibid.: 247f.) suggest that a frequency-based univerbation is a plausible conjecture (i.e. the more frequent a combination is, the tighter is their integration). As a result of storage as part of a larger item that can be manipulated as a whole, the prefixes lose their individual semantics and syntactic categorial properties (assumption A). However, since their forms can still be discerned, the tendency to assign functions to recurring forms (assumption D) can have its say and provide them with a new, more abstract meaning based on the use of the verbs as a whole. Such reactivation seems to take place in the same way as in the case of *pas*, i.e. on the basis of the type frequency of the affixes. After all, Mithun's statement that the meanings of the affixes are inferred from the common semantics of the compound verbs containing such affixes implies that the affixes are found with many different verbs. As a result, the prefixes turn into productive templates that can be used to derive new complex verbs (ibid.: 248; cf. also 255) – quite like in the case of *ne ... pas*, where the same reasons led language users to "derive" new emphatically negated verbs with *ne ... pas*.

The further grammaticalization of the affixes also appears to be driven by their type frequency. Affixes with the original meaning 'hand' occur with more verbs than other means and manner affixes, and therefore it is the affixes originally meaning 'hand' that are

reanalyzed as causative morphemes capable of occurring with verbs other than those they originally attached to, and even of converting nouns into causative verbs (cf. Mithun 2002: 250ff.).

Taken together, Smith's (2001) and Mithun's (2002) accounts involve all the key features of my proposal. The form of storage in the processes that Mithun describes is lexicalization, while the storage of verbs in syntactic constructions that Smith advocates could only at a stretch be considered an instance of lexicalization. This, then, corroborates my view, captured by assumption A, that it is storage in general, i.e. holistic access to strings of various grades of complexity, that is involved. Mithun mentions the semantic fading effect that storage may have on the components of the stored unit, Smith does not. On the other hand, Smith explicitly refers to the role of type frequency in the spread of an item to new contexts, while Mithun describes her data in a way that suggests type frequency was the key factor in the spread of means and manner affixes and causative morphemes as well.

5. Potentially problematic points

In this section, a number of points raised by the referees, as well as some problems of my account that I discovered during the revision process, are discussed.

I have been claiming that the storage of items such as *pas*, *Richtung* and Finnish *pää* as part of a larger unit served to obscure their literal meanings, so that the larger units they appear in could be grammaticalized. As becomes clear in the CxG analysis of section 6, I assume that the decategorialization of such items went hand in hand with their storage and the ensuing loss of their independent semantics. One of the referees remarks that *pas*, *pää* and *Richtung* were decategorialized before they were stored, and identifies this process with grammaticalization. In addition, the referee points out that determiners or plurality do not occur in the fixed expressions *in Richtung*, *ne ... pas*, and takes this as a sign of the

decategorialization of their parts. This is precisely my point. Determiners or number inflections do not occur, because the nouns in question have been stored as part of fixed expressions, so that language users have no need to analyze these expressions with the aid of the category N (or a corresponding construction), and therefore do not apply to them the inflections etc. characteristic of N either. Thus, I wish to suggest that it is indeed the storage of an item as part of a larger unit that serves to wipe out its categorial properties, not something else that takes place before storage, and is supposed to equal grammaticalization. On the other hand, these views may not be so incompatible, after all: the CxG analysis of section 6 suggests that the storage of an item as part of a partially schematic, complex unit **is** grammaticalization. Hence, it is indeed grammaticalization that fades categorial properties, but grammaticalization in turn amounts to a certain form of storage.

I am at least not alone to claim that storage is the force behind decategorialization. Also Detges & Waltereit propose that "idiomaticization" brings about the loss of the categorial properties of the nouns involved in it (2002: 178f.); Mithun states that "[t]he components of the lexicalized compounds lost not only their individual semantic identity but also their syntactic categoriality" (2002: 248). If there is something novel in my claim, it is the extension to forms of storage other than lexicalization (which includes idiomaticization, cf. Lehmann 2002: 14; Brinton & Traugott 2005: 56), i.e. to partially schematic, complex constructions (see section 6). In my view, *ne ... pas* represented such a construction from the point onwards that the meaning 'emphatic negation' and the restriction to verbs of motion became properties of the sequence as a whole. Such constructions can be processed as a whole as well, at least according to assumption A.

The aforementioned referee also inquires how storage manifests itself. I propose a simple answer: storage manifests itself as an increase in variants that testify to an absence of internal syntactic analysis, in the case of complex Ps as variants like *in light of*, *in Richtung*. The absence of the article here is an indication that the noun in sequences like this is not

processed as such, and may indicate that the whole string is stored and retrieved as a whole. Symptoms of an advanced stage of storage are to be seen in fusions, reductions and omissions, cf. *on top of* → *atop*. A perhaps more interesting question to ask is how ongoing storage manifests itself. Since I propose the cause of storage was the high frequency of an item like *pas*, *pää* or *Richtung* in a particular context, the storage of these items along with such contexts is a gradual phenomenon. Frequency is, after all, a gradual phenomenon too. Ongoing storage might manifest itself as an increasing proportion of variants like *in light of*, *in Richtung* instead of *in the light of*, *in die Richtung von*, i.e. as an increase in forms that are processed holistically. Gathering evidence that testifies to such a tendency would require a longitudinal corpus study and is therefore out of the question here. However, it is conceivable that an emerging tendency to store a sequence can also be discerned on the basis of variation in the output of individual language users, the idea being that language users may opt to process a phrase analytically even after storing it, as long as the stored form is not highly entrenched. Potential examples of this can actually be found quite easily. A Google search of UK pages in English containing both the strings *in the light of* and *in light of* scored 216 000 hits; two such cases are given in (7):

(7a) The fall of the Soviet Union did leave some pretty significant plot holes for the movie to fill **in light of** the book. [...]Overall I thought this movie the most satisfying of the year and one of the very few to live up to the billing **in the light of** the other so-called blockbuster let-downs of the summer. (http://www.imdb.com/title/tt0164184/; 27.10.05)

(7b) The presupposition of my argument is that this development implies a nuancing of the notion of retribution, indeed, of the relationship between justice and mercy, **in the light of** theological anthropology, which we will explore presently. [...] **In light of** the foregoing, we are now able to see more clearly what Pope John Paul II is doing with respect to the death penalty in Evangelium Vitae. (http://pewforum.org/deathpenalty/resources/reader/18.php3; 27.10.05)

It is clear that not all of the pages found are relevant to the question investigated here, but their high number makes it seem likely that variation like this does exist in

significant numbers. The same goes for similar cases of *in (die) Richtung*, compiled on the basis of a Google search of German pages in German (119 000 hits):

(8a) Neu kann der Anschluss von Schwedt (Oder) aus und **in die Richtung** Stralsund realisiert werden. Weiterhin können die Züge in Pinnow (Uckermark) stündlich halten. Die Fahrzeiten **in Richtung** Stralsund verkürzen sich, da die Standzeit in Pasewalk entfallen kann.[23]
(http://www.vbbonline.de/index.php?cat=3&sCat=30&id_language=1; 28.10.05)

(8b) Linie b weist **in die Richtung** des Sonnengegenpunktes der gespiegelten Sonne. Es sei angenommen, daß der Beobachter mit dem Rücken zur Sonne steht und **in Richtung** des Regenbogens schaut.[24]
(http://www.meteoros.de/spiegel/spiegel.htm; 28.10.05)

(8c) Zwar sind mit der Beistandsklausel im Falle eines Angriffs auf einen EU Mitgliedstaat, sowie die Verpflichtung zur Konsultation bei außenpolitischen Handlungen, wichtige Schritte **in die Richtung** einer sicherheits- und außenpolitischen Zusammenführung der EU Mitgliedstaaten getan. [...] Schafft die Union, auf die Erfahrungen von Concordia aufzubauen, könnte in der Tat ein wichtiger Schritt **in Richtung** einer kohärenten und international erfolgreichen europäischen Sicherheitspolitik getan werden.[25]
(http://www.weltpolitik.net/print/1386.html; 28.10.05)

Perhaps the most striking property of variation like this is that the switch from a syntactically processed form to a stored form can take place from one sentence to the next,

23 Translation: 'As a new feature, the connection is available from Schwedt (Oder) and in the direction of Stralsund [lit. **in the direction** Stralsund]. Also, trains can now stop in Pinnow (Uckermark) every hour. The travel duration in the direction of Stralsund [lit. **in direction** Stralsund] is shortened, since the standing time in Pasewalk is no longer necessary.'

24 Translation: 'Line b goes **in the direction of** the antisolar point of the reflected sun. Let us assume that the observer stands with his back to the sun and looks in the direction of the rainbow [lit. **in direction of** the rainbow].'

25 Translation: 'The mutual assistance clause in the case of a EU member state coming under attack, and the requirement that consultations be conducted in connection with acts that are relevant to foreign policy, undoubtedly represent important steps **in the direction of** the integration of EU member states in matters concerning security and foreign affairs. [...] If the Union manages to build on the experiences of Concordia, an important step in the direction of a coherent and successful European security policy [lit. **in direction of** a ...] could indeed be taken.'

cf. (8a,b).[26] What is more, there does not seem to be any semantically conditioned distribution between the forms; the contexts of the variants in both (7) and (8) are semantically fairly alike (cf. especially (8a,c)). However, it is of course far from certain that the only explanation for cases like (7) and (8) is ongoing storage.

One of the referees questions frequency as a force behind storage on grounds that also the high frequency of an item in a context would have to be explained. There is, in my view, a simple explanation for a high frequency of use: communicative usefulness. Detges & Waltereit (2002) propose it for innovations like *not ... a step*; Haspelmath (1999b: 191) sees usefulness as a motivation for the spread of a linguistic feature, and recently, Haspelmath (2004: cf. esp. 36) has attempted to explain the ditransitive person-role constraint as the grammaticalization of those combinations that are most useful and therefore frequent. I do not, however, wish to suggest that the decategorialized forms of *pas*, *pää* or *Richtung* are first frequent and therefore get stored in contexts that later grammaticalize. Quite the contrary: the categorially and semantically full forms are frequent because of their usefulness in innovative structures like *not ... a step*, and therefore get stored. Since stored units can be processed holistically, the categorial properties and individual semantics of their component parts fade. The stored structure, in turn, may also be useful and therefore frequent, and this may lead to its spread into contexts where it could not have occurred to begin with.

Apart from the question of frequency as a factor that can bring about the rise of linguistic conventions, there is another facet of frequency that I would like to address, and a

26 The presence of the article is, however, no absolute guarantee of syntactic processing. The article could also be part of a stored unit *in die Richtung*. This is in fact what I am going to argue in 6.1. If this holds true, cases like (8) may testify to an incertainty as to which form is the stored one and therefore speak for ongoing storage, too.

potential problem in my account that is connected with it. Tomasello (2003: 173) points out that at the present stage of research, it is not at all clear that type frequency is required for the emergence of generalizations, or productive templates, as I have called them. He goes on to refer to cases where even single exemplars have formed the basis of a generalization in child language acquisition. It is interesting to note in this connection that the means and manner affixes whose grammaticalization Mithun discusses may in some cases have turned productive not on the basis of their type frequency, but out of highly restricted contexts: if the affixes "took on connotations from the lexical contexts in which they occurred" (2002: 248), the source of their productivity must have been the context of one single verb, not the type frequency of the affix with different verbs. This does not necessarily mean, however, that productivity has arisen from a single exemplar; the high token frequency of a certain combination of an affix and a verb seems to me to be a more likely option. Similarly, I hinted above with respect to *ne ... pas* that the high token frequency of the individual verbs of motion occurring with it may also have contributed to its turning into an emphatic negation of all verbs. Nevertheless, the role of different kinds of frequency in the formation of productive patterns such as grammaticalized *ne ... pas* capable of occurring with all verbs is far from clear. The claims I have made in this respect are further relativized by Bybee's (2003) account of the grammaticalization of *can* in English, which does not support the scenario of a Lightfoot-style, type-frequency-based "leap" to new contexts. Instead, it suggests that the type frequency of a grammaticalizing item increases gradually, as it spreads into new contexts that are semantically contiguous with the old ones. This in turn results in the bleaching of the grammaticalizing item and its further spread. In other words, type frequency as such might have no effect on the grammaticalization process. As regards the role of token frequency, Bybee proposes that the frequent occurrence of a grammaticalizing item in certain phrases bleaches such items and thus paves the way for their productivity (ibid.: 604; 614). Applied to the case of *ne ... pas*, this means that the high

token frequency of *ne* + individual verb + *pas* does not promote the productivity of *ne ... pas* directly, but only makes the semantics of all the components of such a phrase fade. In fact, Bybee's suggestions practically fall together with my proposal for the backgrounding effect of storage.

My account of the grammaticalization of items like (*in*) *Richtung*, *pää* and (*ne ...*) *pas* could be criticized on grounds that the cases it is supposed to capture are too dissimilar. Even if storage could be accepted to background the literal meanings of such items, it is unclear whether a reanalysis of the same type takes place in all these cases. More specifically, it is hard to see what kind of role type frequency could play in the grammaticalization of complex prepositions. At first sight, it seems the only reanalysis that takes place in their case is univerbation, a form of lexicalization, i.e. the storage of strings like *in* (*die*) *Richtung*, *pää-lle* as such. As mentioned, Lehmann (2002: 9f.) in fact argues that the rise of secondary prepositions should not be considered a case of grammaticalization at all, but is an instance of lexicalization. What is more, at least according to assumption B, it is the token frequency of the string in question rather than any kind of type frequency that plays a crucial role in this change. To be sure, there is also another reanalysis that complex Ps may go through: the assignment of the meaning of the whole P to one of the still discernible component parts, cf. [$_P$ *in Richtung*] → [$_P$ *richtung*]. It is, however, hardly the type frequency of items like *Richtung* that makes them outlive the other component parts of the secondary P in such form-function reanalyses, since all the component parts occur together and therefore have the same type frequency with respect to any context. Instead, it seems that the greater phonetic weight of an item like *Richtung* compared to *in* serves to rescue it (see 6.2 for discussion).

So, the common denominators of the investigated cases are the storage of a string that backgrounds the literal meanings of the component parts, and a reanalysis that can take

place for different reasons but which exploits the contribution of the preceding stage of storage. In the case of *ne ... pas*, storage backgrounds literal meaning and type frequency causes a reanalysis; in the case of complex Ps, the reanalysis may be motivated by the phonetic weight of a component part, but can nevertheless only take place because storage has let the literal meaning and categorial properties of e.g. *Richtung* and *pää*(*l*) fade in the relevant contexts. A further similarity in the processes is that the different types of reanalyses are all at least in part motivated by the urge captured by assumption D: both the high type frequency of *ne ... pas* and the phonetic weight of *Richtung* and *pää* give them the **appearance of a sign**, which is then actualized by the reanalysis.

The role of type frequency in the spread of *ne ... pas* also seems open to criticism from a perspective other than that of Bybee (2003) mentioned above. It can be pointed out that the occurrence of *ne ... pas* with verbs of motion does not amount to genuine high type frequency of *ne ... pas* with different verbs, but to an impression or illusion of this. However, this illusion can only work and cause the spread of *ne ... pas* if type frequency actually can have the effect envisaged by assumption C.

6. A Construction Grammar (CxG) perspective

In this section, I will provide tentative, largely informal Construction Grammar analyses of the grammaticalization processes discussed above. The analyses are not committed to any particular Construction Grammar approach (cf. Croft & Cruse 2004 for an overview), but only subscribe to the basic tenets of Construction Grammar(s) (CxG) as presented e.g. in Goldberg (1995). I follow Croft (2001) in assuming that the grammar of a language (in a

broad sense, including the lexicon) consists of the kinds of listemes presented in Table 1, which I have taken over from Croft (2001: 17) and modified to some extent:[27]

Construction type	Traditional name	Examples
Complex and (mostly) schematic	syntax	[SBJ *be*-TNS VERB-*en by* OBL] (the passive construction)
	syntax	[SBJ VERB-TNS IOBJ DOBJ] (the ditransitive construction; cf. Goldberg 1995)
Complex and (mostly) specific	idiom	[*pull*-TNS NP*'s leg*]
Complex, (partially) schematic	morphology	[NOUN-*s*], [VERB-*en*] [VERB-TNS]
Atomic and schematic	syntactic category	[DEM], [ADJ]
Atomic and specific	word/lexicon	[*green*], [*this*]

Table 1: Types of constructions. The italicized parts represent the overt manifestations of the constructions.

All of these are called constructions within CxG; their main definitory feature is that all of them are assumed to constitute form-meaning pairs. The schematic parts of the constructions, which contain grammatical category labels like NP and SBJ in Table 1, account for the generative capacity of CxG. Thus, analytic processing, or the application of syntactic rules, amounts to the choice of a suitable construction to fill the schematic part, henceforth to be called a **slot**, of another construction. As a rule, semantic compatibility is the criterion for whether a given construction can be inserted into a slot in another

27 That is, I have added the ditransitive construction (IObj = indirect object, DObj = direct object) for the sake of exemplifying a completely schematic construction, and omitted the description of constructions capturing morphology as bound (because of my later claim that all to some extent schematic constructions resemble bound morphemes). Notably, in contradistinction to his similar construction typology, Croft (2001) argues that syntactic categories like N, V, A, P, and hence also contructions corresponding to them, e.g. [ADJ], do not exist. Whether schematic constructions such as [VERB], [NOUN], etc. are to be posited is not crucial to my analysis. Nevertheless, such constructions seem like plausible generalizations to me, assuming that each of them is associated with a prototypical semantics and can therefore accommodate peripheral instances found with different constructions that are used to define N, V, etc.

construction. In other words, partially or completely schematic constructions impose semantic (in some cases also pragmatic) constraints on the fillers of their slots. Notably, all other constructions besides lexical items contain slots that have to be filled adequately if the construction is to be used at all. This makes them seem like traditional bound morphemes, which cannot be used in isolation either. On the other hand, bound morphemes constitute products of grammaticalization.[28] Now, if partially or completely schematic constructions and bound morphemes are alike in that neither can be used in isolation, it seems plausible that such constructions, like bound morphemes, are also products of grammaticalization. Notably, the CxG analyses of grammaticalization presented below corroborates this conclusion by suggesting that grammaticalization amounts to the development of partially or completely schematic constructions.

6.1 A CxG approach to the grammaticalization of pas

At the initial stage when the use of *pas* as an intensifier of negation was still based on a pragmatic inference, the negation construction symbolized by *ne* was combined with the lexical item *pas* 'step'. The negation construction was partially schematic and can be formalized as follows, with the slot ('_') indicating the schematic part that requires the insertion of another item:

(9) *ne* 'negation': *ne* _; insert verb

28 Admittedly, derivational morphology is sometimes argued not to form a product of grammaticalization (cf. Brinton & Traugott 2005: 63f.). However, the difference between derivational and inflectional morphemes can also be viewed as one of productivity, and hence as a difference of degree, not of category (cf. ibid.:16f.; 86f.). Thus it is not in principle ruled out that both types of bound morphemes represent outcomes of grammaticalization processes.

The status of *ne* as a partially schematic, complex construction[29] is in keeping with the proposal of Michaelis (2005: 51) that grammatical formatives represent "partially lexically filled constructions."

The atomic and specific construction *pas* 'step', on the other hand, involved no slots; its sole condition of use was its meaning. The restriction of the sequence '*ne* verb *pas*' to verbs of motion was due to this literal meaning that speakers and hearers used to calculate the pragmatic inference 'emphasis'.

The high token frequency of *ne ... pas* with the (inferred) meaning 'emphasis of negation with verbs of motion' next caused its storage as a partially schematic construction that incorporated the former pragmatic inference as its meaning and the originally pragmatically calculated restriction to verbs of motion as its condition of use:

(10) *ne ... pas* 'emphatic negation': *ne* _ *pas*; insert verb of motion

In light of this, the first stages of grammaticalization from a CxG perspective would seem to consist in the incorporation of pragmatic inferences in the meaning of a partially schematic, complex construction,[30] i.e. pragmatics becoming semantics. This might seem problematic, since CxG assumes no strict division between semantics and pragmatics (cf. Goldberg 1995: 7). However, in order to reconcile this CxG tenet with the above proposal, one only needs to assume that semantics for CxG is meaning that is conventionalized as part of constructions, while (perhaps all of) pragmatics is potential semantics in that it can be integrated in constructions via grammaticalization or lexicalization.

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29 (9) consists of more than one component and is therefore complex. In other words, slots, too, count as parts of a construction.

30 Incorporation of pragmatics in an atomic and specific construction, on the other hand, would mean enrichment of lexical meaning.

From a strict CxG perspective, there is also an alternative analysis that suggests itself for the conventionalization of the pragmatic inference. Since *ne* formed a construction of its own (cf. (9)) (it occurred both without an emphatic element and with emphatic elements other than *pas*, i.e. displayed an independent form and meaning), it would seem a viable analysis to posit that the sequence *ne ... pas* was split up constructionally. This would mean that the conventionalization of *pas* produced (11) instead of (10), i.e. *pas*, too, occurred as an independent construction:

(11) *pas* 'emphasis': 1. _ 2. _ *pas*; insert 1. (verb) negation, 2. verb of motion

There are two reasons for not adopting this analysis in its full force: first, if the only item that could be inserted into slot 1 in (11) was *ne* (as was probably the case), the postulation of a construction such as (11) in practice amounts to assuming a construction like (10) (cf. also fn. 17). Second, the analysis of *ne ... pas* into the two constructions (9) and (11) in fact rather characterizes the later development stage at which *pas* was reactivated as a sign in keeping with assumption D (cf. (13)). In other words, adopting (11) would not capture the preparatory stage at which the literal meaning of *pas* was backgrounded. This calls for (10). It is conceivable, however, that there was variation between (or even within) individual speakers with respect to whether they used (10) or (11); this is in keeping with the CxG view that grammar is continually under construction (Croft 2001: 57).[31]

Another respect in which (10) may have allowed for variation is the order of its elements. A referee points out that early cases of *ne ... pas* did not necessarily display this order of elements, as (6) above also shows. Within a CxG framework, there are basically two ways to tackle this. Either two contructions like (10) must be posited, one of them specifying the order *pas ... ne*, or it must be assumed that (10) did not define the order of its

31 But cf. Goldberg (1999: 200) for a CxG view assuming a fairly stable grammar after child language acquisition.

elements, but left this for other constructions it interacted with. The first option is implausible in that it presupposes that both orders were frequent enough to be stored as separate constructions. The second option, on the other hand, is in line with the common CxG assumption that constructions may leave the order of their elements unspecified (cf. Goldberg 1995: 229, n. 4; Croft 2001: 197; Leino & Kuningas 2005; Kuningas & Leino 2006). This option seems, then, to be the one to be preferred. However, it gives rise to the question of whether the component parts of (10), more specifically their individual semantics, can be backgrounded, if they can be reshuffled by other constructions. Such operations entail individual attention to *ne* and *pas*, and hence possibly also the activation of their meanings. In other words, the contribution of storage to grammaticalization based on assumption A is called into question.

It is not possible to counter this objection conclusively, but the following observations at least make it seem less likely to be fatal to the storage hypothesis. First, it is conceivable that regardless of being analyzed by constructions that specify the order of *ne* and *pas*, (10) is nevertheless **retrieved** from the "constructicon" as a whole with a unitary meaning, and that this is enough to bring about the backgrounding effect. Second, the attention to the components of (10) resulting from the application of a construction ordering them does not differ substantially from the effects of the occasional analysis of (10) into its component parts, which is captured by (11). Such an analysis operates on the meaning of (10), i.e. ascribes 'negation' to *ne* and 'emphasis' to *pas*. It seems plausible that the reshuffling of *ne* and *pas*, by necessitating individual attention to these components, also associates them with parts of the meaning of (10), i.e. 'emphatic negation', and does not involve the literal meaning of *pas*. In other words, once *ne ... pas* has been retrieved from the constructicon on the basis of the meaning 'emphatic negation', all operations involving

the internal structure of (10) rely on this meaning, and hence do not interfere with the backgrounding effect.

With the above in mind, it seems safe to judge that the variation in linear order does not discredit the hypothesis that the storage of *ne ... pas* enabled its grammaticalization by backgrounding the literal meaning of *pas*. To recapitulate this hypothesis on the basis of the construction analysis: when *pas* was part of (10), it constituted a unit distinct from the lexical item/atomic and specific construction *pas* 'step'. In accordance with assumption A, both the meaning and the restriction to verbs of motion were now directly – or automatically, cf. Langacker (1987: 58) – connected with the construction (10) and had nothing to do with the literal meaning of *pas*. This allowed the connection with the literal meaning to fade and thus prepared the ground for the grammaticalization of *ne ... pas*.

In fact, the emergence of (10) can already be seen as grammaticalization. If grammaticalization amounts to "a stricter codification of the lexicalized item" (Wischer 2000: 359), the emergence of (10) qualifies as a product of this process. While the lexical item *pas* is only constrained in its use by its meaning, the instance of *pas* in (10) is constrained by both its meaning and additional conditions of use. It is the slots in (10) that correspond to the stricter codification characteristic of grammaticalization; they can also be interpreted as manifestations of Lehmann·s (1985) criteria such as condensation and coalescence. The same goes for the presence of further concrete material (*ne*) in (10): the requirement that another item be present can also be thought to further constrain *pas*. The fact that *pas* in (10) is not associated with a meaning of its own can in turn be seen as a reflex of (semantic) attrition. As pointed out in 3.2, this is in fact the only stage of grammaticalization that pertains to *pas* alone in that it stores *pas* along with *ne* and additional conditions of use. However, because of the further items involved, and because *pas* is no longer an independent unit once it has been stored, it is to some extent a matter of interpretation whether one can speak of the grammaticalization of *pas* alone here.

In keeping with the analysis of section 3.2, the grammaticalization of *ne ... pas*, manifested by its spread into the context of all verbs, may have been due to the type frequency of (10). The process – or the reanalysis accomplished by individual speakers[32] – deleted the constraint of (10) that can be labelled as [+motion]. This can be viewed as a deletion of a semantic constraint pertaining to the filler of the slot in (10). More generally, it seems plausible that while the grammaticalization of a lexical item from a CxG perspective amounts to the development of a slot or slots to accompany it, i.e. the emergence of partially schematic constructions,[33] further grammaticalization can be characterized as a deletion of semantic constraints on the fillers of the slots in such constructions. In the case of *pas*, the result was a construction like (12):

(12) *ne ... pas* 'emphatic negation': *ne* _ *pas*; insert verb

Now, the same CxG-based objection applies to (12) as to (10): *ne* was still a simple negation and hence a construction in its own right, and therefore its inclusion in (12) seems less motivated. The same counterarguments apply here as well: *pas* still has the meaning

32 I assume it was individual speakers who accomplished the reanalysis of *ne ... pas* as a general marker of emphatic negation on the basis of the impression given by type frequency data. This innovation may then have spread for social reasons (cf. Croft 2000: Ch. 7).

33 This is in fact not quite to the point. With respect to (10), it was stated that also the presence of further concrete material in a construction can count as the "stricter codification" of a former lexical item included in this construction. Now, in terms of CxG, both slots and further concrete material in a construction make a construction complex (cf. Croft 2001: 16). Thus if both slots and further concrete material can provide stricter codification, it might seem that the **complexity** of a construction is sufficient to indicate that grammaticalization has formed it. However, idioms are complex constructions virtually without slots, and clearly not products of grammaticalization. Therefore, it seems that the presence of at least one slot (or schematicity in terms of Croft 2001: 17) is a necessary prerequisite for the status of a construction as a product of grammaticalization. On the basis of this, a tentative, certainly incomplete CxG grammaticalization cline can be proposed: lexical items (atomic and specific constructions) → constructions with at least one slot and concrete material (partially schematic, complex constructions) → deletion of semantic constraints on slot fillers, concrete material replaced by slots. If grammaticalization indeed can replace concrete material with slots, the implication is that the highest possible grade of grammaticalization introduces completely schematic constructions merely consisting of a number of slots such as the English transitive construction proposed in Goldberg (1995: 117). See also Rostila (2006) for discussion.

'emphasis' only in the presence of *ne*, and positing a construction *pas* 'emphasis' that can only be used with *ne* amounts to assuming (12). Further still, speakers probably occasionally split up (12) constructionally, too, but it was only later that this factor came into play in full force. It is only in present-day colloquial French, subsequent to the degradation of (12) to an ordinary negation, that *pas* has been freed from its "storage jail" in constructions such as (10) and (12). In such variants, *pas* can alone serve as a negation element, cf. Picoche & Marchello-Nizia (2001: 292) and data like *J' suis pas parisien*, *Dis-le pas*, etc.[34] According to my proposal, this development is due to the tendency to interpret forms as signs (assumption D), reinforced by the fact that *ne* in (10) and (12) has all the time been analyzable as an independent sign, thus causing a need to ascribe a meaning to *pas*, too. My contention is, however, that the rehabilitation of *pas* as a sign would not have been possible if the storage of *pas* as part of (10) and (12) had not backgrounded its literal meaning for a sufficiently long period in this context and so severed its connection with the lexical item *pas* still alive today (cf. also Bybee 2003: 618). What is more, my account suggests that the present-day tendency to omit *ne* also follows from the storage of units such as (10) and (12), at least in part: such omissions are also a reflex of the possibility of manipulating constructions without targeting their component parts. As regards the regularities governing such omissions, see section 6.2 for some proposals. My basic claim is that the omission of *ne* is on a par with the omission of *in* in *in Richtung*.

Yet, even in contemporary colloquial French, the independence of *pas* is illusory, at least from a CxG viewpoint: *pas* actually constitutes a partially schematic construction like (13) whose only visible part is *pas*:

(13) *pas* 'negation': _ *pas*; insert verb

34 I thank Prof. Jukka Havu for the French data, as well as discussion on the paper.

A radical, and perhaps premature, conclusion to be drawn from (13) as well as (10) and (12) is that once grammaticalization has set in, the level of simple lexical items has been permanently left behind, and the process of further grammaticalization always involves to some extent schematic, more or less complex constructions. This provides an interesting contrast with Traugott's view that grammaticalization studies should pay more attention to constructions in which lexical items grammaticalize, but nevertheless concentrate on lexical items (2003: 645).

This is not the right context to delve into a discussion of whether grammaticalization needs reanalysis (cf. Haspelmath 1998). Nevertheless, it should be noted that the emergence of a partially schematic, complex construction like (10), which is here considered the CxG pendant to grammaticalization, is a kind of reanalysis. In fact, any emergence of a new construction is a reanalysis. Thus, the rise of new lexemes via univerbation (cf. Lehmann's (2002: n. 13) counterarguments to Haspelmath 1998) and the emergence of (12) also count as reanalyses. However, there may be room for Haspelmath's view of grammaticalization as a gradual phenomenon in a CxG account of grammaticalization: if the emergence of a construction is a gradient phenomenon in that constructions can be entrenched to different degrees in the minds of language users and in the speech community, the reanalyses producing e.g. (10) and (12) are not necessarily abrupt.

6.2 The development of Richtung *into a preposition*

At the initial stage when *Richtung* still projected to a full NP, the atomic and specific construction *Richtung* was combined with the atomic and specific construction *in* and a PP complement along the lines that more general constructions specify (cf. e.g. Kay & Fillmore 1999). A high token frequency of the sequence *in die*/*der Richtung von* then probably turned it into a stored unit, a partially schematic construction like

(14) *in die/der Richtung von* 'in the direction of': *in die/der Richtung von* _; insert a noun that can denote a place

(14) is in fact problematic in two respects. First, there is the question in which form the article, which is still variable between the accusative and the dative, was stored. Second, it is not clear that the status of a partially schematic construction is the right CxG analysis. According to Lehmann (2002: 9f.), complex Ps as in (14) form lexical items. If one adopts this view, 'atomic and specific construction' would be the correct CxG label for (14).

Tackling the question of article variability first, cases like (15) suggest that at least the accusative variant *die* may have been stored as part of a unit such as (14) (cf. also (8a) above):

(15a) Sie fahren [...] **in die** **Richtung** **Berlin**.
You drive in the: ACC direction Berlin
'You drive in the direction of Berlin.'
(http://www.hotel-dbh.de/dbh-13.htm; 28.10.05)

(15b) ... der Verkehr auf der Ostrampe wird etwa in Höhe der Holtkampstraße **in die Richtung Bahnhof** Sterkrade und in Richtung Holten/Buschhausen aufgeteilt.[35]
(www.oberhausen.de/7380.html; 24.11.05)

(15c) Dafür öffnet sich das Gebäude nach außen sowie durch die südliche Glasfassade, als auch durch das Glasdach **in die Richtung Wald und Gebirge.**[36]
(www.rilsky.com/de/diplbg.html; 24.11.05)

That is, if *die* were a live article, one would expect *Richtung* to be a live N too, and to take a PP or a genitive complement instead of an articleless NP, as in (15), especially (15b,c). Since there is no mediating element like this in (15), it seems likely that neither *Richtung* nor *die* display their full categorial properties, but have lost them by being stored

35 Translation: 'At around Holtkamp Street, the traffic on the eastern ramp is led towards Sterkrade station [lit. **in the direction station** Sterkrade] and towards [lit. in direction] Holten/Buschhausen.'

36 Translation of relevant parts: 'The building looks out both through the south-facing glass facade and through the glass roof towards the forest and mountains [lit. **in the direction forest and mountains**].'

as part of a unit *in die Richtung*, which is employed like a P by at least some language users. This also reveals a further shortcoming in (14): *von* is not necessarily part of the stored unit. This observation does not have any profound repercussions on the analysis, however. It is to be expected that language users do not necessarily include a P like *von* into (14) (but cf. Spanish *de* in Lehmann 2002: 9), since *von* occurs in numerous contexts besides that of *in die Richtung*, and is therefore apt to be prevented from being stored along with *in die Richtung*. In other words, the principle behind assumption B can be counteracted by the type frequency of *von*.

It is conceivable that at least some speakers have also stored the dative article as part of a larger unit, i.e. of *in der Richtung*, which is separate from *in die Richtung*.[37] This is, however, less likely than with *die*, since the directional accusative case probably occurs more often with *Richtung* than the locational dative, and hence should also get stored with *Richtung* more easily.

A further factor to contribute to the storage of the article as part of *in die Richtung* is to be seen in the circumstance that the definite article cannot be commuted with the indefinite. The direction to a place, be the place known or new information, is always definite (cf. *You drive in the/*a direction of Berlin/a high hill*). Hence, there is no meaningful choice with respect to the article element, and consequently also no need to analyze *in die Richtung* in terms of the different article constructions. This means less analytic access to *in die Richtung* and more occasion for holistic processing, or assumption A, to have its say.

37 Cases like *Die Nachtbusse verkehren in der Richtung Paris-Vororte und Vororte-Paris ab der Place du Châtelet* (lit.: 'The night buses commute in the direction Paris-suburbs and suburbs-Paris from Place du Châtelet'; http://de.parisinfo.com/paris_verkehr_fahrplane/rub6652.html&id_article=7338; 24.11.05) may testify to this, since they too lack a P mediating between *Richtung* and the following NP, which would be indicative of the independent N status of *Richtung*.

To sum up the proposals regarding the status of *die*/*der*, one fairly plausible option is that *in die Richtung* has been stored as such, while *in der Richtung* is mostly still put together out of the constructions symbolized by *in*, *der* and *Richtung*. However, it is remarkable how different variants like *in die Richtung* and *in Richtung* occur side by side (cf. (8), (15b)). The conditions pertaining to *in die*/*der Richtung* seem to be extremely messy, which makes it risky to posit any clear categories.[38] At the same time, such synchronic variation may hint at grammaticalization in progress (cf. Lehmann 1985).

Turning now to the question of positioning *in die Richtung* in the typology of constructions (cf. Table 1), it is first of all to be noted that the general CxG characterization of grammaticalization proposed above – grammaticalization as the emergence of schematicity/slots, and further grammaticalization as a relaxation on semantic constraints on slot fillers – turns out to be problematic. Alternatively, the CxG concept of lexical items may require some clarification. I assume that Lehmann (2002) is right to claim that complex Ps are stored as lexical items. Nevertheless, as argued in section 2, their emergence can be seen as grammaticalization, since it produces a unit which has less capacity for reference than the N which the complex P is based on. Now, if *in die Richtung* is stored as a lexical item, but constitutes nevertheless a product of grammaticalization, either the proposed CxG characterization of grammaticalization, or the CxG assumption that lexical items are not

38 For instance, a case like *[...] fährt sie herum, in die* ***Richtung*** *Wald, in* ***der*** *der mutmaßliche Dämon vorhin verschwunden ist* (lit.: 'she turns around, in the direction forest, in which the probable demon shortly before disappeared'; http://www.steinmetze.org/download/playlogs/20050329_eMail-Log.htm; 24.11.05) suggests that yet another analysis should be considered. The relative pronoun *der* (dative, feminine) refers back to *Richtung*, which therefore seems to form a full NP here, and *Wald* 'forest' appears to function as a kind of appositive attribute to *Richtung*. The same analysis could be applied to all cases where *in (die/der) Richtung* is followed by an articleless nominal, i.e. (2a,b), (3a,b), (15), for example (cf. also further "complex" Ps like *in Sachen* (lit. 'in things'), *in puncto* (lit. 'in point') 'regarding', which do not seem to govern a certain case: *Deutschland hat Nachholbedarf* ***in puncto*** *Kinderrechte* (www.liga-kind.de/pages/204kinderrechte.htm; 16.01.06); *Die AVRKeV informiert Sie konsequent* ***in Sachen*** *Kinder-Rechte!* (www.avrk.de/; 16.01.06)). It should be investigated whether conditions like this are a necessary intermediate stage before the emergence of the genitive government of *(in) Richtung* (cf. e.g. (3c-e), (8b,c)).

schematic, is on the wrong track. *In die Richtung* displays no slot, contrary to what one would expect if it is a product of grammaticalization and the proposed general CxG characterization of grammaticalization is valid.

The question that now arises is whether from a CxG perspective lexical items really do not display any slots. One may ask e.g. whether the argument structure positions of a verb like *delete* do not count as slots. The verb can, after all, be thought to constrain the fillers of its argument structure positions semantically, just like constructions of different grades of schematicity constrain their slot fillers. However, at least if one adopts the approach of Goldberg (1995), individual verbs do not display argument structures in the usual sense, but only exhibit participant roles that are unified with the argument positions of argument structure constructions,[39] a type of partially or even completely schematic constructions. The slots of individual verbs form hence special kinds of slots that are matched against the slots of more schematic constructions before they are filled. I assume the same goes for all the predicative lexical categories, Ps and of course also complex Ps among them. Thus *in die Richtung*, as a lexical item, would not display any real slots making it schematic, and either my CxG characterization of grammaticalization or the assumption that *in die Richtung* was a product of grammaticalization would be misguided.

However, a further angle on this can be provided by asking what schematicity, or having slots, really amounts to. At the beginning of section 6 I suggested that slots make

39 Cf. also Goldberg & Jackendoff (2004: fn. 7), where the views of Goldberg and Jackendoff on this point clash. Goldberg would have all semantically suitable verbs unifying with the resultative construction (one type of argument structure construction), including those that realize the semantics of the resultative construction transparently. Jackendoff, on the other hand, would permit verbs like these their own argument structures. The view at least implicit in Rostila (2005) says that both are right to a certain degree. Argument structure constructions are generalizations over the argument structures of individual verbs. Thus argument structures of individual verbs also exist (contra Goldberg; cf. Tomasello's (2003) verb island constructions), but language users can opt to redundantly unify verbs like *make* and *render*, whose argument structure was generalized to the resultative construction, with the resultative construction (contra Jackendoff).

schematic constructions resemble bound morphemes in that constructions displaying schematicity cannot be used at all, unless their slots are adequately filled. In keeping with this, it seems that schematicity is the measure of the lack of independent meaning. For instance, the partially schematic construction *ne ... pas* does not have a meaning if uttered in isolation. By contrast, an individual verb like *delete* does have a meaning when uttered as such,[40] even though such an utterance is rarely pragmatically appropriate. It therefore seems plausible to say that *delete* exhibits less schematicity than *ne ... pas* or an argument structure construction to the extent that it displays a more independent semantics than these more schematic constructions.[41] This means, however, that schematicity becomes a matter of degree. If this is a valid conclusion, then it seems plausible that *in die Richtung*, being less acceptable in isolation than *delete*, is more schematic than *delete*. It can therefore count as a product of grammaticalization without disproving my general CxG characterization of grammaticalization.

The above discussion calls for a modification of construction typologies like that in Table 1 by suggesting that they should express the continuum character of schematicity. As regards the main argument, the bottom line of this discussion is that *in die Richtung* forms a lexical item and, at the same time, a partially schematic construction. The slot notation I have employed here does not allow for expressing this. As an ad hoc solution, I use '_ _ ' to indicate a "less clear" slot than in the case of more obviously schematic constructions. Further still, if the argument structure of individual lexical heads is to be represented as less clear slots like this, the representation of *in die Richtung* requires another slot, since like any

40 That is, even without support from constructions like the imperative construction and contextual ellipses. The relative semantic independence of lexical items can be thought to be due to the rich frame semantic meanings that they are assumed to be associated with within CxG (cf. Goldberg 1995: 25).

41 Taken to its logical conclusion, this line of reasoning implies that only completely non-relational signs like [$_{N}$ stone] are entirely without schematicity.

transitive P, *in die Richtung* displays two arguments/participants. A provisional proposal would be something like (16):

(16) *in die Richtung* 'in the (dynamic) direction of': 1._ _ *in die Richtung* 2._ _; 1. first participant 2. second participant: insert a noun that can denote a place

I leave the first argument of *in die Richtung* without a semantic characterization, since it is largely irrelevant for the present purposes.

The further development of *in die Richtung* leads to omissions in its internal structure. The article seems to be the first to go, as is suggested by cases like (8) above and the following ones:

(17a) "Meldung" zischt der Alte in Richtung
Situation report hissed the old in direction
Horchraum. (Buchheim, 350)
hydrophone room
'"Situation report," the captain hissed in the direction of the hydrophone room.'

(17b) [...] den Bug in Richtung Brest drehen. (Buchheim, 357)
the bow in direction Brest turn
'to turn the bow in the direction of Brest'

(17c) George schubste Lennie in Richtung Beifahrertür. (Biedermann,118)
George pushed Lennie in direction passenger door
'G. pushed L. in the direction of the passenger door.'

It is conceivable that the omission of the article follows from the circumstance that (16) is a stored unit that can be employed without analyzing its internal structure by means of other constructions such as the article construction. The same goes for the omission of *in*, which might be a relatively current development, to judge from variation between *in Richtung* and *Richtung*, as in the following cases:

(18a) Von dieser biegt ihr links [...] **in Richtung** Langenfeld ab. Nachdem ihr die Bahn überquert habt, fahrt ihr an der nächsten Ampel links ab auf die B 8 **in Richtung** Zentrum / Düsseldorf. An der zweiten Ampel fahrt ihr rechts ab **Richtung**

Zentrum.[42]
(http://www.steinmaus.de/hochzeit/tripod/termine.html; 28.10.05)

(18b) George verließ die Halle, bog nach links ab, **in Richtung** zweiten Eingang. Er rannte beinahe. Am zweiten Eingang lief er die Treppe zur Straßenunterführung **Richtung** Innenstadt hinunter [...][43] (Biedermann, 135)

The present-day development stage[44] may therefore be approximately captured by a construction like (19), whose form displays variation:

(19) (*in*) *Richtung* 'in the direction of': 1._ _ (*in*) *Richtung* 2._ _; 1. first participant 2. second participant: insert a noun that can denote a place

Nevertheless, also forms like *in die Richtung von*/gen. are in circulation, since language users still have the option of forming this phrase analytically (cf. *Lennie* [...] *nickte in die Richtung der Schrebergartenhäuser links von ihnen.* (Biedermann, 144); 'Lennie nodded **in the direction of** the allotment garden cottages to the left of them').

The question that now poses itself is why the absence of analysis in terms of *in* leads to the omission of *in*, while *Richtung* is preserved despite the similar absence of an analysis of (19) in terms of the lexical item *Richtung*. Croft's (2000: 121ff.) concept of hyperanalysis

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42 Translation: 'From this [street], you turn left [...] in the direction of Langenfeld [lit.: **in direction** Langenfeld]. After you have crossed the railway, you go left at the next traffic lights onto the B8 in the direction of the centre of Düsseldorf [lit.: **in direction** centre/Düsseldorf]. At the second traffic lights, you turn right towards the city centre [lit.: **direction** centre].'

43 Translation: 'George left the hall, turned left, in the direction of the second entrance [lit.: **in direction** second entrance]. He almost ran. At the second entrance, he ran down the stairs to the subway passage leading towards the city centre [lit.: **direction** city centre].'

44 An interesting question relating to this stage is why *in die Richtung* and *(in) Richtung* often do not govern any case, cf. *Der LI macht einen halben Schritt* ***in Richtung Dieselraum*** (lit.: 'The leading engineer takes half a step **in direction diesel room**'; Buchheim, 373). It is just as if language users did not know which case to use with the new P that is at their disposal. They might therefore resort to the strategy mentioned in fn. 38 of adjoining an N(P?) like *Dieselraum* appositionally to *Richtung*. When the semantic contribution of the article in the complement of (*in*) (*die*) *Richtung* is necessary (cf. *Du gehst dann in Richtung* ***eines*** *großen Baumes*, lit. 'You then go in direction **of a** big tree'), this strategy cannot be employed, but language users probably exploit older complex Ps like *aufgrund* (+ gen.) and the original phrase *in die Richtung von*/gen. as a model in order to decide which case to use on this article. Cf., however, the occurrence of *in Richtung* with the accusative in (18b) (*in Richtung zweit****en*** *Eingang*).

might provide an answer. This process ascribes the meaning of a semantically obscure element to its context, with which it overlaps semantically anyway. Subsequently, the obscure element is left out. In (19), *in* and *Richtung* can be argued to overlap semantically, since both can be analyzed as displaying [+dir] (cf. Rostila 2001: 149f.). The meaning contribution of *in* could be obscure because of its forming part of another sign (*in Richtung*) – this at least makes the calculation of its meaning contribution unnecessary.[45] A further factor to obscure its meaning may be seen in the fact that *in* in (19) does not behave syntactically like the lexical item *in*: despite being apparently followed by a common noun, it does not govern a morphological case. This may obscure the connection with the ordinary local P *in* and raise doubts about the meaning of *in* in (19). Thus, the conditions for the occurrence of a hyperanalysis would seem to be given in (19). Now, according to Croft (2000: 126), a hyperanalysis ascribes the meaning of an item like *in* in (19) to a semantically more weighty element in its context. Of the component parts of (19), *Richtung* forms the semantically more weighty element and acquires the meaning of *in* – or rather, is reanalyzed as the sole locus of the overlapping meaning. As a result, it is *Richtung* that is preserved, and [$_{N}$ *Richtung*] has turned into an item with less referential capacity, [$_{P}$ *richtung*].

The hyperanalysis explanation of the preservation of *Richtung* presupposes that language users switch back and forth between an analysis of (19) into its component parts and its analysis as a whole. After all, the comparison of the semantic weight of *in* and *Richtung* presuppose a componential analysis, while forming a prerequisite for the hyperanalysis of *Richtung*. On the other hand, without an analysis as a whole, doubts about the meaning contribution of *in* might not appear, and the literal meaning of *Richtung* would

45 This factor is not envisioned by Croft (2000), though.

not be backgrounded. The latter is a precondition for the reanalysis of *Richtung* as a P – hence also for the omission of *in*.

A referee suggests that *Richtung* is preserved because of its greater phonetic, not semantic, weight compared to *in*. I find this a plausible proposal that might not, however, rule out the possibility that hyperanalysis in the sense of Croft (2000) is also at work here. Still, this proposal might in fact be more in accordance with my assumptions A and D than Croft's hyperanalysis. If (19) is associated with a meaning as a whole (assumption A), this means that comparisons of the semantic weights of *in* and *Richtung* are rarely made, because neither is needed to calculate the meaning of *in Richtung*. In other words, analytic processing in the sense that (19) is analyzed with the constructions *in* and *Richtung* rarely takes place. Instead, it seems plausible that language users apply another mode of analysis to the component parts of (19), that based on assumption D. That is to say, they seek forms that are to be assigned functions, and *Richtung* is, thanks to displaying more phonetic substance, more easily recognized as such a form than *in*. This means in effect that language users approach the component parts of (19) as if they are forms whose functions they do not know (while analytic processing on the basis of the constructions *in* and *Richtung* would involve the meanings of these items). This is also in keeping with the idea that *Richtung* can take over the whole meaning of (19) because its lexical semantics has been obscured.

A similar analysis probably applies to the case of *pas* taking over the function of a simple negation in contemporary French. Here, too, an explanation on the basis of phonetic weight and assumption D is more compatible with my contention – that storage helps fade lexical meanings and thus paves the way for grammaticalization – than a pure hyperanalysis explanation.

The grammaticalization process of the possible future postposition *pääl* in Finnish can be analyzed in largely the same way as that of *Richtung*. However, one essential difference can be seen in the circumstance that the grammaticalization of *pääl* – like that of

pas – involves pragmatic inferences. Expressions like *mäen päällä* (cf. (4)), literally 'on the head of the hill', were probably first based on the literal meaning of *pää*, 'head', which was used to invite the pragmatic inference that the top surface of the hill was meant. (By contrast, *Richtung* provided a basis for the development of an adposition in its literal meaning). Similarly, in connection with an elongated, horizontal object like a lake or a path, *pää* could be used to invite the inference that one of the ends of this object was referred to. A high token frequency of *pää* in such functions then conceivably led to the conventionalization of a generalization over such pragmatic inferences, i.e. *pää* came to signify a location at the end of an object with a certain height or length when combined with a local case. This development stage can be captured by positing a construction like (20) incorporating the former pragmatic inference as one of its conditions of use:[46]

(20) *pää* 'location at the end of an elongated object'[47]: 1. _ _ *pää* 2. _ ; insert 1. name of an elongated object in genitive, 2. local case

Another difference worth noting is that (20) exhibits clearer schematicity than (19). *Pää* has to be unified with a local case in order to be used as a postposition, and this operation requires a slot (slot 2) for another partially schematic construction, i.e. a local case. By contrast, slot 1 is the normal slot of a lexical item for its participant, and therefore a "less clear" slot.

46 Notably, the meaning of a construction is as much a condition of its use as the constraints pertaining to the elements that must be inserted into the construction. – The conditions of use in (20) are a first approximation and would therefore probably require refinement.

47 This description of the meaning of *pää* is in fact not quite accurate. *Pää* cannot be used to signify a location at the foot of an object with a certain height, so that e.g. (i) *lipputangon päässä* (lit. 'in the head of a flagpole') can never mean 'at the lower end of the flagpole'. I would not incorporate this restriction in (20), i.e. treat it as conventionalized meaning, though. The lower end of objects conceived of as possessing a certain height is simply not salient enough to be often referred to, and therefore (i) is felt to be unnatural with the corresponding meaning. By contrast, *pää* can be used when the lower end of vertical objects is salient, cf. *köyden päässä*, 'at the end of the rope', where precisely the lower end is the more natural reference point.

Above I have proposed that the schematicity of a construction is an indicator of its degree of grammaticalization. Does the higher schematicity of (20) compared to (19) now mean that (20) is grammaticalized to a higher degree than (19)? I do not think it is possible to give a definite answer. In any case, (19) would also require a "clear slot" like slot 2 in (20) if *in* could be commuted with other local Ps. However, language users have apparently not felt the need to vary the local P in the analytically formed source expression of (19) (cf. *in die/auf die/von der/aus der Richtung von*), at least not frequently enough to incorporate this variation in (19) as a corresponding slot. The only sense in which (20) can be considered more grammaticalized than (19) is that (20), by virtue of its slot 2, applies to a wider range of locational relations than (19). (20) can therefore be thought to form a more general solution to communicative problems than (19). On such an understanding of grammaticalization (cf. Rostila 2005) – grammaticalization providing to at least some extent general solutions to communicative problems, while lexicalization only solves a specific naming problem – (20) can indeed be considered more grammaticalized than (19).

What is more, it is by no means clear that all language users have precisely (20) at their disposal. (20) characterizes the mental grammars of those individuals who have internalized the knowledge that *pää* can be used as a postposition when combined with local cases. This seems to me to be the most plausible option in present-day Finnish, but it cannot be excluded that some language users do not include a generalization in (20) like that captured by slot 2, but have stored *pää* with individual local cases (e.g. *pää* + adessive: *pää-llä*; *pää* + ablative: *pää-ltä*). Such language users would in fact be in possession of constructions similar to (19). This is, however, unlikely, since *pää* combines in its postposition function with six (external and internal) local cases in Finnish (cf. Nikanne (2005: 237) for an overview of the Finnish case system), and competent language users are therefore bound to have encountered case variation with *pää* that gives rise to a generalization like that captured by slot 2.

The following prediction can be made with respect to the further grammaticalization of (20): just like the predecessors of [$_P$ *richtung*], (20) can be employed as a whole. Thus, an analysis of its internal structure can become less and less frequent. This prepares *pää* semantically for the function of an adposition by fading its literal meaning 'head' and may lead to the omission of the local case ending. The omission of the local case could also be in part due to an economy tendency that eliminates the overlap between the meanings of *pää* and the local cases combined with it (cf. fn. 11), as well as a form-function reanalysis driven by the greater phonetic weight of *pää* compared to the case endings. If the result of the process is an invariable form *pääl* corresponding to the reduced case forms now occurring in colloquial speech, the process will even have created a formal opposition between the literal meaning of *pää* and its adpositional use, much in the same way as e.g. (*be*) *going* to is developing into *gonna* (Traugott 2003: 635).

7. Summary and Outlook

Different types of storage may contribute in various ways to grammaticalization processes. First, storage functions as a way of conventionalizing the pragmatic inferences that form the basis for grammatical meanings. Thus in the cases of French *pas* and the Finnish postposition-to-be *pää* 'head', the conventionalization of the required inferences (*ne ... pas* = 'emphatic negation (of verbs of motion)'; *pää* = 'location at the end of an elongated object') amounts to the creation of stored units whose meanings incorporate these inferences.

Second, storage can background the literal meanings of parts of constructions and thus pave the way for the grammaticalization of such constructions. After e.g. *ne ... pas* was stored with the meaning 'emphatic negation (of verbs of motion)' as a whole, the presence of the lexical item *pas* 'step' in this construction could fade, and the construction could be spread to the context of all verbs by a reanalysis. This presupposes, however, that complex,

and even discontinuous, units can be associated with meanings without recourse to their internal structure, i.e. can be processed holistically. A similar backgrounding effect of storage was argued to have been involved in the advancement of *have* to the sole English anterior auxiliary (cf. Smith 2001), and in the grammaticalization of certain means, manner, and causative affixes in several North American native languages (cf. Mithun 2002). It was also argued to play a role in the development of the German noun *Richtung* and Finnish *pää* into adpositions.

Once storage has backgrounded the internal structure of complex units and the lexical meanings embedded in it, reanalyses can take place for different reasons. In the case of *ne ... pas*, *have*, and the means, manner and causative affixes discussed by Mithun, the high type frequency of these items may have lead to their reanalysis, or storage, as productive templates. Such processes create general solutions for communicative problems (e.g. emphatic negations and anterior auxiliaries fitting any verb) and therefore, provided that such a wide understanding of grammaticalization is accepted (cf. Rostila 2005), should count as grammaticalization. Thus, another type of storage, that resulting from the type frequency of a unit, could also play a major part in grammaticalization processes.

There also appears to be another type of reanalysis that can exploit the backgrounding effect of storage. When the internal structure of stored complex units like *ne ... pas*, *in Richtung*, and *pää* + local case is accessed more and more seldom, not only fusion and coalescence may take place, but the meaning of the whole construction may also be ascribed to the phonetically most weighty part of the construction (*pas*, *Richtung*, *pää*). In such cases, the possibility to process complex units as a whole and a human tendency to interpret recurring forms as signs interact. Holistic access makes it possible to ignore the component parts and their former lexical meanings, and the urge to interpret forms as signs makes it possible to rediscover some of them as bearers of grammatical meanings.

It is conceivable that the type frequency based reanalysis of e.g. *ne ... pas* also involves the urge to interpret forms as signs. Both the phonetic weight and the type frequency of an item might make it look like a sign and so cause a meaning to be assigned to it.

The synchronic conditions pertaining to the grammaticalization of (*in*) *Richtung* in German were found to be extremely messy. Bearing in mind that synchronic variation is often indicative of grammaticalization in progress, (*in*) *Richtung* might form a particularly fruitful object for more thorough studies. The verification of the role of type frequency in the grammaticalization of *ne ... pas*, in turn, would require historical corpus study. It remains to be seen whether corpora that are representative enough for the purpose are available.

A second major contribution of the paper was to take initial steps towards the description of grammaticalization by means of Construction Grammar(s) (CxG), alongside using this storage-based approach to illustrate the contribution of storage to grammaticalization. When an item like French *pas* 'step' grammaticalizes, from a CxG perspective it is stored as part of a partially schematic construction whose form is *ne ... pas* and whose conditions of use incorporate the pragmatic inference and restrictions of use formerly based on the lexical meaning of *pas*. Further grammaticalization involves this construction as a whole, no longer *pas* as such. It amounts to the deletion of conditions constraining the use of the construction, thus allowing the construction to combine more freely with other constructions (i.e., host class expansion).

The proposed CxG characterization of grammaticalization – lexical items/atomic and specific constructions turning into partially schematic, complex constructions – calls for a slight revision of the usual CxG construction typology. If lexical items like [$_{P}$ *richtung*] constitute products of grammaticalization by virtue of having less capacity for reference than their nominal origins, they too have to be schematic to some extent. This collides with their

CxG status of atomic and specific constructions that involves no schematicity. It was suggested that schematicity actually forms a continuum (and a measure of semantic dependence), so that lexical items may exhibit schematicity, too, albeit in a less clear form than more grammatical constructions.

According to the proposed CxG view of grammaticalization, all constructions involving schematicity are products of grammaticalization. Furthermore, an implication of this view is that the more schematic a construction is, the more grammaticalized it is. Thus, completely schematic constructions like the ditransitive and transitive constructions in English (cf. Goldberg 1995) should represent the most grammaticalized of all constructions. It will have to be left for future discussion to determine whether such a wide notion of grammaticalization is tenable. It is in any case compatible with a view of grammaticalization as a process that provides relatively general solutions to communicative problems. After all, semantically general constructions come in handy for a broad range of communicative purposes.

Finally, the CxG perspective of the paper provides one explanation for why both lexicalization and grammaticalization are connected with fusion and coalescence, a fact that has caused considerable difficulty in telling the two processes apart (cf. Brinton & Traugott 2005: 62ff.). According to the CxG analysis, the products of both lexicalization and grammaticalization are stored units, lexicalization giving rise to essentially "slotless" (atomic and specific) constructions, grammaticalization resulting in constructions exhibiting clear slots, or schematicity. If both types of stored units can indeed be processed holistically, as was assumed in the paper, their internal structure can be ignored, and therefore it can also be expected to fuse and coalesce. This opens up the question of whether further parallels between lexicalization and grammaticalization fall out naturally if one adopts a CxG view of language, the storage of units displaying different degrees of schematicity and complexity.

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