

Heiko Narrog
Tohoku University

Exaptation, Grammaticalization, and Reanalysis

Abstract

The goal of this paper is to argue that exaptation, as introduced into the study of language change by Lass (1990, 1997), in specific functional domains, is a limited alternative to grammaticalization. Exaptation, similarly to grammaticalization, leads to the formation of grammatical elements. Like grammaticalization, exaptation is based on the mechanism of reanalysis. It decisively differs from grammaticalization, however, as it implies change in the opposite direction, namely from material absorbed in the lexicon back to grammatical material. Two sets of data are presented as evidence for the replicability of this process. One involves the occurrence of exaptation across languages in a specific semantic domain, namely, the evolution of morphological causatives out of lexical verb patterns. The other data pertain to recurrent processes of exaptation in one language, namely in Japanese, where exaptation figures in the development of various morphological categories. In all cases of exaptation, reanalysis is crucially involved. This serves to show that reanalysis may be more fundamental to grammatical change than both grammaticalization and exaptation. Furthermore, it allows for change both with the usual directionality of grammaticalization and against it.

1. Introduction

Even detractors of grammaticalization theory do not seriously challenge the fact that in the majority of cases the morphosyntactic and semantic development of grammatical material follows the paths outlined in the standard literature on grammaticalization. The two following

issues, however, potentially pose a critical challenge to the validity of the theory. First, there is the question of the theoretical status of grammaticalization as a coherent and unique concept. This question was intensively raised in a *Language Sciences* 2001 special issue on the topic (e.g. Campbell 2001, Joseph 2001, and Newmeyer 2001). If grammaticalization is a mere relabeling of concepts long available in historical linguistics, or if it is trivial in all of its aspects and the theory has neither descriptive nor explanatory value, then it would be meaningless to pursue this concept any further. Second, grammaticalization theory would be of little relevance if the changes described by it were random and undirected. As the concept currently stands, some notion of (uni)directionality is inbuilt. This leads to the question of the existence, frequency and status of exceptions and counter-examples to grammaticalization. While the canonical position is that grammaticalization is unidirectional and counter-examples are spurious at best (e.g. Lehmann 1995[1982]: 19, Traugott and Heine 1991: 4-7, Haspelmath 1999, Haspelmath 2004: 21-23), other researchers claim they are more numerous than expected (e.g. Newmeyer 2001: 205-216), and a growing body of literature is devoted to investigate various forms of “degrammaticalization” (e.g. Giacalone Ramat 1998, van der Auwera 2002, Norde 2002).

Nevertheless, even if the acceptance of counter-examples to grammaticalization appears to be growing, there still remains a consensus in grammaticalization theory that counter-examples are “‘idiosyncratic’ in the sense that they do not allow for cross-linguistic generalizations on the directionality in the rise and development of grammatical categories” (Heine 2003a: 582). That is, counter-examples may be counter-examples but what ultimately distinguishes them from changes within the boundaries of grammaticalization is that each of them is unique and they do not form patterns that are replicated across languages or even in one language.

In this paper, I wish to challenge this view by investigating a specific type of counter-

example to grammaticalization, namely “exaptation.” The concept of exaptation was introduced in the study of language change by Lass (1990, 1997) to refer to the reuse of former grammatical material that has become functionally opaque for new purposes. If grammaticalization is very broadly conceived as any type of formation of grammatical material, exaptation does not constitute an exception, since it also leads to the formation of grammatical items. If, however, specific paths of change are implied, exaptation is indeed different from grammaticalization as in many cases it runs counter to the generally accepted paths. Taking into account historical data from Japanese and a number of other languages, I will argue that a certain pattern and replicability can be found in exaptation, contrary to the claim that all counter-examples to grammaticalization are in principle idiosyncratic. If my findings are correct, it could be claimed that exaptation is a limited alternative to grammaticalization in the formation of grammatical material.

However, exaptation and grammaticalization ultimately have one thing in common, namely that they are cases of reanalysis.¹ Hopper and Traugott (2003: 59) already suggest to “regard grammaticalization as a subset of changes involved in reanalysis.” Thus, both processes, grammaticalization and exaptation can be regarded as the result of an even more powerful mechanism, namely reanalysis.

This paper is organized as follows. The following section will give an overview of the concept of exaptation, as initially conceived by Lass, and more recent views on it. Section 0 will show data from Japanese and a number of other languages which do suggest that exaptation is a recurrent process both in one language (Japanese) and across languages in one domain (voice). The relevance of the data in this section to the issue of grammaticalization, exaptation and reanalysis, are discussed in the concluding section (Section 1).

2. Exaptation

The notion of “exaptation” was adapted from biology where it was put forward relatively

recently (in 1982) to “...denote[s] the co-optation during evolution of structures originally developed for other purposes” (Lass 1997: 316).² Typical examples include the co-optation of feathers, which were originally thermoregulatory devices of reptiles, for flight in the evolution of birds. Exaptation thus is “...a kind of conceptual renovation, as it were, of material that is already there, but either serving some other purpose, or serving no purpose” (ibid.). When first introducing the concept, Lass attached particular importance to the last phrase, “serving no purpose.” In his article titled “How to do things with junk,” Lass states that “[languages] in their structure show a certain amount of bricolage; they are to some extent jury-rigged or cobbled together, and the remnants of old structures can be recobbled into new ones” (Lass 1990: 80f), and further, “languages may operate ‘wastefully’, dumping material that no longer does anything useful, or in a ‘conservationist’ mode, by recycling. This might in fact be a useful parameter for the typology of change” (p. 82).

Since Lass, a fair number of examples for possible cases of exaptation have been brought up, all of them from Indo-European languages. Lass’ own first example was the re-use of Indo-European ablaut indicating aspectual distinctions for the marking of number in Germanic.³ Indo-European, as reflected in the morphology of languages like Classical Greek and Latin, had a three-way aspectual contrast between present, perfect and aorist. This contrast was marked, among others, by vowel grades of the verb stem, *e* for present, *o* for perfect, and *e:* or zero for aorist (Lass 1990: 84). In Germanic, the perfect and the aorist merged in the new preterit, but the opposition of vowel grades was retained, now to mark number distinctions within the preterit, according to Lass. Thus, we obtain the following verb forms for Old English *bītan* ‘bite’, as an example:

- | | |
|-------------------|-----------------------------|
| (1) <i>bīt-an</i> | present |
| <i>bait</i> | preterit 1, 3 singular |
| <i>bit-um</i> | preterit 2 singular; plural |

The preterit has two grades depending on person and number, which presumably reflect

earlier vowel grades distinguishing perfect and aorist. It therefore appears that the vowel distinction, which had become useless through the demise of the old aspectual system, was put to re-use for marking number distinctions within the preterit in Germanic.

The validity of this example as an example for exaptation was challenged later by Giacalone Ramat, who claimed that the Indo-European original system already had ablaut marking number in the perfect (Giacalone Ramat 1998: 109f), and the existent pattern was only extended. Giacalone Ramat herself suggested as a better example the well-known inchoative suffix *-ēsc-/-īsc-* in its history in Latin and Romance.⁴ It goes back to Prot-Indo-European **-sk-*, which formed present stems of verbs and had no inchoative value. The acquisition of an inchoative meaning is presumably based on the example of a single verb, *crescō* ‘grow’, which was extended to other verbs. Moreover, the derivative morpheme *-ēsc-/-īsc-* of Latin later in Italian even became part of the inflectional system “to mark the singular persons and the third person plural in the present tense conjugation, in subjunctive and imperative” (Giacalone Ramat 1998: 110f). Following this account, we can even identify two exaptations here, the one from present tense stem formation to marking inchoative from Proto-Indo-European to Latin, and another one from inchoative marking to person marking in Italian.

Some of the examples of analogical extension in Slavic offered in Janda (1996) can be regarded as exaptations as well. More recently published examples, explicitly linked to degrammaticalization and exaptation, come from North Germanic and English. Norde (2002: 53f) among others cites the development of the Swedish masculine singular nominative suffix *-er* into a derivational suffix to form noun from adjectives. In the following example from Middle Swedish, *-er* still marks the marks gender, number, and case:

- (2) *mykilhughæpær* *maðpær* *oc* *girughær*
 proud-Masc.sg.nom man-masc.sg.nom and avaricious-masc.sg.nom
 ‘A proud and avaricious man’ (Norde 2002: 53)

In the Modern Swedish *klok-er* ‘a wise one’, derived from the adjective *klok* ‘wise’, the case marking function is lost, and instead *-er* functions as a nominalizer. Finally, Fanego went beyond the adaptation of the term “exaptation” for morphology when she suggested that *the* in Late Modern English *the ...ing* constructions and *by* in contemporary *by ...ing* constructions in subject position constitute cases of exaptation (Fanego 2004).⁵

Cases such as the above are known from the literature not only under the label “exaptation.” In “functional renewal,” a term introduced by Brinton and Stein, “an older form makes a resurgence with a meaning which is new, has been lost, or was on the decline” (Brinton and Stein 1995: 34).⁶ The authors see it as “the exaptation of (surface) syntactic forms and processes” (ibid.). In Greenberg’s “regrammaticalization,” a desemanticized item found only in fossilized form in a few lexical forms is reinterpreted in a new function, with grammatical meaning (Greenberg 1991: 301). Both these terms can easily be identified with “exaptation.” Croft (2000) has brought up the concept “hypoanalysis,” which is potentially broader than exaptation. In hypoanalysis, “the listener reanalyzes a contextual semantic/pragmatic property as an inherent property of the syntactic unit. In the reanalysis, the inherent property of the context [...] is then attributed to the syntactic unit, and so the syntactic unit in question gains a new meaning or function” (Croft 2000: 126f). Therefore, cases in which the function or meaning of a marker or construction simply shifts in a specific context can also be included. In some cases, “grammaticalization from below,” namely the evolution of grammatical patterns out of phonological patterns (e.g. Gaeta 2004: 48-53), can also be viewed as exaptation, namely if these phonological patterns previously had a grammatical function.

What, then, are the defining properties of this process? First, in contrast to Lass’ original 1990 concept, it is apparently not the case that the source item has to be “junk.” Subsequent authors (especially Vincent 1995) were critical of the notion of “junk” in language as such,

and Lass himself toned down the claim, emphasizing in 1997 that "...the most common kinds of exaptation ... are not based on co-optation of junk. 'Useful' (...) features can be adapted too..." (Lass 1997: 318). With respect to the result of the process, Lass had proposed that "[e]xaptation is 'conceptual invention', not extension or levelling or reformulation of paradigms... In exaptation, the 'model' itself is what's new" (Lass 1997: 319). However, this idea has also been received critically. Traugott (2004: 143) shows that the target of exaptation may well be, and usually is, an already extant category. Giacalone Ramat suggested that the conditions and the process are peculiar, as exaptation would involve discontinuous change, a jump, so to speak, in contrast to typical grammaticalization processes (Giacalone Ramat 1998: 112-116). This idea, as well, is debatable. It can be fundamentally questioned whether grammatical change ever takes place discontinuously in catastrophic jumps, or whether this view is not the result of the historical data that are incidentally transmitted, or of the way researchers interpret these data (cf. Traugott 2004: 148). Thus, if we follow Giacalone Ramat's idea, the distinction between grammaticalization and exaptation might well be reduced to a question of methodology rather than actually different types of change.

Positively speaking then, it would be unwise to limit the notion of exaptation to "junk." As has been argued before, it is rarely the case that linguistic structure is completely functionless or useless. In order to be faithful to the original idea, we should require, however, that the function of the source item or construction has become functionally opaque or is apparently redundant, that is, is one of two or more simultaneously available means to mark the same property. Importantly, the source construction is typically at the end of the cline of grammaticalization,⁷ being either absorbed into lexical items, or even at the brink of phonological "zero," that is complete elimination.⁸ A critical decision when defining exaptation is whether to include change "sideways" on the cline of grammaticalization, "lateral shifts" in the terminology of Joseph (2005), where morphemes acquire a new

function on the same level of grammaticalization, or only to include change from a stage lower on the cline to a stage higher on the cline. Both are viable options. Greenberg's (1991) regrammaticalization and Norde's (2002) exaptation are essentially counter-directional to grammaticalization, that is "degrammaticalization" in the sense of Van der Auwera (2002). In contrast, Lass's (1990) original concept is not explicit on the point,⁹ and Croft's (2000) hypoanalysis, as cited above, includes a broader range of changes, which is not necessarily confined to exaptation anyway.¹⁰ However, the narrower definition only including morphosyntactic change counter-directional to the grammaticalization cline is more interesting. By focusing on counter-directional changes, a clearer line can be drawn to grammaticalization, and a more explicit challenge to the claim of unidirectionality is posed. Also, perceptions about exaptation like the following can be more forcefully countered: "[Exaptation] does not contradict grammaticalization in that, as far as the evidence available suggests, it does not lead to mirror image reversals of grammaticalization" (Heine 2003b: 168). It does so, at least on the condition that we confine ourselves to examples with the opposite directionality.

Some researchers have already fully acknowledged that exaptation does pose a challenge to grammaticalization theory. Giacalone Ramat, for instance, suggests that exaptation "...represents a serious challenge to the unidirectionality hypothesis" (Ramat 1998: 123). Traugott admits that "[s]ince this phenomenon [=exaptation in language change] is attested, it does serve as a counterexample to the hypothesis of unidirectionality in grammaticalization" (Traugott 2004: 151).

Still, even by those who do acknowledge exaptation as a tendency counter to grammaticalization, its significance is not estimated highly. Instead, it is seen as a very limited process. Thus, Giacalone Ramat argues that "[a]ll counter-examples to unidirectionality discussed in the literature ... refer to idiosyncratic changes. It is not possible

to identify a tendency of language change, as in the case of unidirectional change” (Giacalone Ramat 1998: 121), and Traugott likewise suggests, “... [p]articlar examples of change do not appear to be cross-linguistically replicated, unlike typical examples of grammaticalization ... It is possible that exaptation is limited to situations of Systemstörung, ... e. g. typological word order shifts” (Traugott 2004: 151).¹¹

It is the purpose of this paper to challenge the notion that exaptation only occurs in idiosyncratic examples which are not replicated cross-linguistically. I wish to show that exaptation can be and in fact is replicated in one domain both within a single language, as well as across languages. Based on these facts, it would still be unrealistic to claim that exaptation rivals grammaticalization as a cross-linguistically common type of change on the same scale. It is, however, a tendency that, exhibiting a directionality reverse to grammaticalization, undeniably exists alongside grammaticalization in the creation of grammatical material. Exaptation and grammaticalization thus both instantiate reanalysis, but with a different directionality.

3. The data

The goal of this section is to provide evidence for the claim that, contrary to common perception, similar cases of exaptation with the same directionality can occur both within one language (Japanese), and across languages in the same functional domain. Subsection 3.1 provides data on recurrent exaptation in Japanese, while subsection 3.2 shows how processes very similar to those presented in 3.1 can be found in unrelated languages.

3.1. Exaptation in Japanese

3.1.1. Causatives

The first case of exaptation discussed here concerns the expansion of a lexical pattern of transitivization to become a grammatical pattern of causativization in Old Japanese. Old Japanese had a limited number of lexical patterns that distinguished transitive from

intransitive verbs of the same root. One of these involves change of inflectional class, originally based on the suffixation of *-e* to the verb root (presumably from **-gi*; cf. Unger 2000: 664). Interestingly, this pattern works in both directions. Thus *tuke-* ‘attach to/stick to’ is the transitive of *tuki-* ‘be attached to’, and *kire-* ‘be cut off’ is the intransitive to *kiri-* ‘cut off’.¹² Two other patterns involve verbs ending in *-ri* that generally mark an intransitive verb in contrast to a transitive verb, and verbs ending in *-si* or *-se* that generally mark a transitive verb in contrast to an intransitive verb, or a ditransitive in contrast to a transitive verb. These are clearly lexical, i.e. non-productive, non-morphological, patterns with all signs of syntacto-semantic idiosyncrasy. Thus, *-ri* can also be found on transitive verbs in equipollent patterns (that is, patterns where the other verb is transitive as well), and *-si* can also be found on verbs used intransitively. There is, for instance, a pair *kazari* vs. *kazasi*, where both verbs mean ‘decorate’ and are transitive. Other verbs are stand-alones with no counterpart whatsoever. What sets them apart, however, from the pattern on *-e*, is that *-ri* at least never distinguishes a transitive verb from an intransitive one, and *-si* at least never distinguishes an intransitive one from a transitive one. It is therefore reasonable to assume that in the speakers’ minds, more saliently than the pattern on *-e*, these verb formations were associated with intransitivity and transitivity, respectively.

We will proceed here with the pattern on *-si* or *-se* that expanded to become a morphological pattern of verb causativization. Following the list given in Unger (1975: 145ff.), there were 49 verbs on *-si* clearly marking a transitive verb in contrast to an intransitive one, but only 6 verbs on *-se*.¹³ Examples for the former would be *sugusi* ‘pass time’ (tr.) vs. *sugwi* ‘pass by’ (itr.), and examples for the latter include *apase* ‘fit in, adapt’ (tr.) vs. *api* ‘fit, meet’ (itr). It was already noted above that semanto-syntactic irregularity marks this pattern as clearly lexical. This is also true from the viewpoint of morphological analysis. For many of these verbs, there is no way to analyze them morphologically into stem

and suffix on a synchronic level in Old Japanese. In the case of *sugusi* ‘pass’, for instance, one would either have to assume a unique verb stem *sugu-*, onto which a suffix *-si* would be added, or the regular verbs stem *sug-*, on which a morphologically unique suffix *-usi* had to be added.¹⁴ The most probable thing to assume is that at some stage of proto-Japanese, a form of the verb for ‘do’, a predecessor of Old Japanese and later *s-*, was affixed to the root *sugu* (and other roots likewise¹⁵). This is also likely from a cross-linguistic perspective, as in many languages diachronically a verb ‘do’ is added to form causatives (cf. Song 1996). At that time, then, it presumably was a productive formation. In Old Japanese, however, the presumably once productive pattern had been absorbed into lexical items and had ended its “career” in grammaticalization. With respect to the typical grammaticalization cline, it had, in morphological terms, arrived at the very last stage of “zero.” It had not, however, become completely meaningless or junk. It is, as argued above, fair to assume that speakers associated a value of transitivization with *-si* and *-se*.

The new productive pattern that arose in Late Old Japanese has the shape *-(s)ase-*. It is morphologically based on *-se* rather than on *-si*. The transitive verbs on *-se* have a low type frequency (6, as mentioned above), but include fairly common verbs such as *mise* ‘show’ and *afase* ‘put together’. They had other interesting properties as well. First, they were, as a rule, ditransitivizing in contrast to transitive verbs. Thus, *mise* ‘show’ (ditr.) contrasted with *mi* ‘see’ (tr.), and *apase* ‘put together, let meet’ (ditr.) with *afi* ‘fit, meet’ (tr./itr.). The ditransitivization, since it involves an animate causee as the third argument, is more causative in nature than simple transitivization of causative verbs. Secondly, all of these verbs except one can be analyzed morphologically according to morphological patterns productive in Old Japanese. Thus, *apase* presumably goes back to proto-Japanese **apa-se* ‘meet’ + ‘do’, but can be morphologically reanalyzed in Old Japanese synchronically as *ap-ase*. If the meaning of the element *-ase* is interpreted as “causative,” such a formation very straightforwardly

forms the basis for a new productive causative pattern, and this is what I suggest happened.

However, there is a morphological twist to the story, namely that the allomorph *–sase* of *–(s)ase*, which is suffixed to thematic verbs, involves accretion of morphological material. The resultant causative in Late Old Japanese is *mi-sase* instead of **myese* < *mi-ase* or **mi-se* (these two forms in fact do exist, but as lexical verbs and not as the causative formation). The *–s-*, which was indicative of transitivity or causativity, was quasi reduplicated.¹⁶ Possible motivations include differentiation from the lexical forms such as *mise* ‘show’ or *myese* ‘see (honorific)’, and making the causative formation more salient. In fact, this kind of accretion through quasi reduplication is not uncommon in Japanese language history as I will show below in 3.1.3.

Crucially, however, *–si* and *–se*, which in times before documentation presumably had moved down the whole grammaticalization cline from lexical verb to “zero”, through reanalysis accomplished a reversal one step up the cline to become a productive morphological suffix again. This is a paradigm example of exaptation because it involves an item that was both morphologically at the end of the cline as well as functionally opaque. It was, however, not necessarily complete junk when it was recruited for grammar again in a new pattern. The directionality seen here diverges from the expected paths of grammaticalization not only morphologically, but also semantically, since we can rather expect a causative morpheme to become a transitivizer than the opposite. Developments in a number of other languages (e.g. Lahu, Tamil, Germanic) show that the regular semantic direction of change between causative and transitive should be from causative to transitive, and not the reverse (cf. Kemmer and Verhagen 1994, Matisoff 1976, Pedersen 1991).

3.1.2. The Potential *–(r)e-*

The next case presented here in more brevity, but discussed in considerable length in extant research in Japan (e.g. Sakanashi 1994, 1995; Aoki 1996; Kinsui 2003), serves to show

that the same kind of exaptative change that occurred with the causative in Old Japanese was quasi replicated in a related semanto-syntactic domain later in Middle Japanese. It concerns the formation of the potential suffix $-(r)e$ from Middle Japanese to Modern Japanese. This suffix can attach to all verbs in Japanese except *si* ‘do’. Examples would be *oyog-e* ‘can swim’ vs. *oyogi* ‘swim’. Since this suffix optionally changes case marking of the verb’s arguments, it is usually considered “voice” in Japanese grammar, together with the causative, the passive and the spontaneous.

It was already mentioned above that one means of forming verb pairs with divergent transitivity was different inflection class. There was an unmarked verb class, and a class where the verb base ends on /e/ (probably going back to $*-gi$). Furthermore, there were a number of verbs taking part in this pattern of verb class alteration where the unmarked member was a normal transitive verb, and the marked member had a spontaneity or middle voice meaning. For example, the verb *kiri* ‘cut’ is employed typically in a syntactic frame like ‘someone cuts something’. The *e* marked intransitive counterpart *kire* can be a normal intransitive ‘something is cut off’, or have a middle voice/spontaneity meaning, ‘something (e.g. a knife) cuts well’. Likewise, *siri* ‘know’ is a regular transitive verb (‘someone knows something’), but the intransitive counterpart *sire* has the meaning ‘something is known’ or ‘something is knowable’.

Now, in Sakanashi (1994, 1995) it was documented in some detail how this pattern started to spread from Middle Japanese to more and more verbs, to a point where one cannot speak anymore of inflectional class alteration, but has to acknowledge a new morphological formation. It should be noted that the productive addition of $-e$ was only possible with verbs whose stem ends on a consonant (in the cases named above the stems are *kir-* and *sir-*), because Japanese avoids sequences of vowels on morpheme boundaries. Therefore, the pattern was limited to verbs with a consonant stem. However, in Modern Japanese, the

allomorph *-re* arose, allowing the spread of this pattern to virtually all verbs. Notably, the new allomorph did not emerge through accretion of *r* but rather through the elision of *ra* from the passive/potential suffix *-(r)are*. The result is the Modern Japanese potential suffix *-(r)e*.

Crucially, the rise of the older allomorph *-e* is a clear case of exaptation. The presumable proto-Japanese suffix **-gi* had been absorbed into lexical items long ago. The last stage at the end of the grammaticalization cline had already been reached, but the remaining phonological element was reinterpreted (reanalyzed) in a different meaning and put to grammatical use again by speakers at a much later time.

3.1.3. More cases of accretion

In this subsection I will briefly point out other cases of accretion in the same syntacto-semantic domain in Japanese language history, in order to show that an accretion such as the one involved in the formation of the Late Old Japanese new causative suffix is not at all uncommon. First, at the same time when the causative suffix *-(s)ase* developed, the passive suffix *-(r)are* developed as well. The Old Japanese suffix *-(r)(a)ye* and verb formations on *-ri*, which were already mentioned above, can be named as its sources. Interestingly, the first attested allomorph of the new *-(r)are* is *-are*, parallel to *-ase* as a starting point for *-(s)ase*. Also, while the allomorph of Old Japanese *-(r)(a)ye* suffixed to verbs with vocalic stem was *-ye*, the same allomorph of *-(r)are* had the shape *-rare*, involving an accretion of *ra*. It is conceivable that the quasi reduplication of the consonants *s* for increased transitivity and *r* for decreased transitivity made the form more expressive, and that *-(s)ase* and *-(r)are*, both developing at the same time and in the same semantic domain, pulled each other along on the same path.

Two other examples given here come from the modern spoken language. Especially in some dialects of Western Japan, many speakers prefer to lengthen their causative forms on consonant-stem verbs by quasi reduplicating the *as* element. Thus, for instance, instead of

forming *yom-ase* ‘let read’ from the verb stem *yom-* ‘read’, they form *yom-as-ase*, with an extra *as*. Okada (2004: 86) suggests “intensifying the causal nature of the expression” as a likely reason. Likewise, some speakers form the potential form of a consonant stem verb such as *yom-* ‘read’ as *yom-ere* instead of *yom-e*. This is apparently done in analogy to vowel stem verbs like *tabe* ‘eat’, which take the allomorph *tabe-re*. From a strictly language-internal structural perspective, phonological accretion is quite mysterious, so the motivation must be sought in the needs of speakers, most probably a need for more clarity of expression.

3.2. Exaptation of causatives across languages

The goal of this subsection is to show that the same or a similar kind of exaptation from what took place in Japanese causatives (section 3.1.1) can be found cross-linguistically. The case of Sanskrit *-áya-* formations (3.2.1) appears to be almost identical to the one in Japanese, while the exaptation of causative morphology in some North American languages discussed in 0 also exhibits significant similarities.

3.2.1. From transitive to causative in Sanskrit

In Classical Sanskrit, transitivity *-áya-* verb formations of the older Vedic period were exaptated as new causative morphology (Jamison 1976, 1983). The older *-áya-* formations were irregular and lexical in nature. In a striking parallel to the *-si/-se* formations of Old Japanese, the verbs with *-áya-* as a rule functioned as transitive counterparts to intransitive verbs, but at the same time there were numerous other cases in which the *-áya-* formations were functionally opaque, partly due to the fact that these formations were from morphologically diverse origins and only gradually acquired the same phonological shape in analogy to each other (Jamison 1983: 78ff, 178ff). For instance, transitive *-áya-* formations existed in an equipollent relationship alongside a synonymous transitive verb based on the same root, e.g. *grbháyati* and *grbhñáti* both ‘grasps’; root *grabh* ‘grasp’ (Jamison 1983: 99). Other *-áya-* formations existed in isolation without corresponding intransitives or any other

verbal formations being attested, e.g. *gūrdhayati* ‘praises’ (Jamison 1983: 82).

This functionally opaque lexical pattern of transitivization was the basis for the development of a morphologically productive pattern of causativization in Epic and Classical Sanskrit. In the later period, *-āya*-formations were only formed on the basis of already existing verbs, that is in a morphologically regular fashion, and, crucially, not only corresponding to intransitive verbs but also to transitive verbs as their causative counterparts (Jamison 1976: 127f). For example, we see formations arising meaning ‘make build’ based on the transitive verb ‘build’ (Jamison 1976: 128). According to Jamison, the new pattern started to spread from verbs of motion, consumption, perception and enjoyment, that is, verbs that are grammatically construed as transitive verbs, but semantically are not typical transitive but intermediate between transitive and intransitive (Jamison 1976: 129-133). Thus, the transitivization of the experiencer verbs was reinterpreted as causativization of an already transitive verb. Again, striking parallels to the Japanese pattern can be recognized. In Japanese as well, the verbs ending in *-se* that formed the basis for the formation of the new causative pattern were syntactically transitive, but semantically untypical transitives, namely verbs of perception and other verbs without an affected object. It was from them that the new causative emerged, and not from the verbs ending in *-si* which were based on simple intransitives.

Formation of causative prefixes in some North American Languages

The last case to be brought up here also involves the formation of a new morphological causative, but unlike the Japanese and the Sanskrit examples not from a pattern of transitivization. Mithun (2002) discusses a number of similar cases in a range of North American languages, but I will confine myself here to one morpheme, the Tümpisa Shoshone causative prefix *ma-* (cf. Mithun 2002: 239, 241f, 246, 253). Based on Mithun, it underwent the following development: (I) Proto-Uto-Aztecan **maʔa* ‘hand’ > (II) Tümpisa *ma-* ‘with the

hand' (lexicalized prefix) (e.g. *ma-sungkwa'ah* 'feel with the hand') > (III) Tümpisa *ma-*causative (e.g. *ma-tukwihwa* "let go out/put out" (not necessarily involving hand action)).

The transition from stage I to stage II is exactly what is expected on a grammaticalization cline. A lexical item becomes grammatical as a prefix and then is absorbed in other lexical items, as part of word formation. The crucial point for our discussion is the development from stage II to stage III, the exaptation of lexicalized material back into grammar. According to Mithun, it is the stage of lexicalization of the pattern at stage II, in which the original meaning and function of the prefix became opaque, that made the further development to causative (stage III) possible:

Hands are in a sense the unmarked instruments of human accomplishment; Because of the large inventory of causative verbs containing hand-action prefixes [...], the implication of causation in these verbs was ultimately reinterpreted as the primary meaning of the prefixes. The reinterpretation could not have taken place without the tight bridging context provided by lexicalization [...] (Mithun 2002: 255f.).

That is, as in the examples of Japanese and Sanskrit, the functional opaqueness at the stage of lexicalization set the scene for reinterpretation by the speakers and the recycling of the item in grammar.

1. Summary and conclusion

The case studies presented above all come from the same domain of voice. They are all clear examples of exaptation, and they exhibit striking parallels in their details. It is no exaggeration to state that contrary to common perceptions about exaptation the same kind of exaptative changes can be found both in the same conceptual domain (voice) cross-linguistically and recurrently in one language (Japanese).

The pattern of morphological and semantic development observed in all cases can be summarized as follows. A lexical item enters the grammaticalization cline, becomes an affix and is later absorbed into the lexicon. This entirely conforms to the typical path of grammaticalization from lexical item or construction to zero or absorption in the lexicon.

Crucially, at the stage of lexicalization, the original function is partly lost and the lexical formations that remain are functionally opaque. Speakers reinterpret the phonological material left in the lexical items and build a new grammatical pattern on it with the function they perceive in it. The item returns from the stage of absorption in the lexicon into grammar. The result, as in grammaticalization, is the formation of grammatical material as the result of reanalysis, but it is in perfect counter-directionality to grammaticalization.

In this paper, I have deliberately restricted myself to a narrow definition of exaptation that constitutes a regular development counter to common directionality of grammaticalization. A very broad concept, such as Croft's hypoanalysis, would allow lateral shifts on the grammaticalization cline as well and would therefore include many more cases. The narrow concept chosen here is still broad enough to identify a number of interesting instances of change both cross-linguistically and within one language. In these examples a specific pattern is indeed replicated. Nevertheless, it would be completely unrealistic to assume now that exaptation is quantitatively on a par with grammaticalization when it comes to the development of grammatical material. Quite the contrary, it is certainly overwhelmingly less frequent. For one thing, at least in the cases discussed here, exaptation seems to presuppose grammaticalization.¹⁷ The material that is exaptated has gone through the cline of grammaticalization first in order to reach the stage of zero (or absorption in the lexicon), which is the starting point for exaptation.

On the other hand, I suggest that the limit in finding cases of exaptation by far is not reached yet, and will presumably never be reached. The first and foremost reason is that, contrary to grammaticalization, it is very hard to identify instances of this process without actual historical data. Take for example, the causative and potential suffixes of Japanese discussed in sections 3.1.1 and 3.1.2. If Modern Japanese were the only stage of the language documented, it would be virtually impossible to find out that these suffixes are the product of

exaptation. Quite the contrary, they would appear as typical instances of grammaticalization, being directly derived from some form of a ‘do’ verb or its reduplication, and some lost suffix, respectively. The same holds for the Sanskrit case. This should lead us to recognize the danger that lies in work on grammaticalization which is built (almost) exclusively on internal reconstruction.¹⁸ But even if a certain amount of historical data in a language are available, as in Japanese, close scrutiny of the data is indispensable in order to identify such cases and not overlook them in the expectation of just another grammaticalization.

Another pertinent issue is where to look for more exaptation, both in terms of languages and in terms of functional domains. Lass (1990: 82) suggested a typology of change based on whether a language is more “wasteful” with its resources or tends to recycle. Is Japanese a more “recycling” language then? Is this perhaps related to the fact that it is strongly agglutinative and consequently head-final? Evidence from Korean or Altaic languages, which have a structure similar to Japanese could corroborate this hypothesis. As was pointed out in the introduction, cases of exaptation presented previously to this research have come entirely from Indo-European languages. Our knowledge of actual historical changes in other language families, or access to data in languages where they are actually available, is too limited to be systematic. With respect to functional domains prone to host exaptations, voice or aspect are certainly more likely candidates among the verbal categories than for example tense or mood, since they are semantically and morphologically on the border line to lexical properties of the verb stem. A recycling from lexicalized phonological material cannot be expected if the target category is not close to lexical stems (cf. the morpheme order regularities in Bybee 1985).

In conclusion, I suggest that the evidence for exaptation cross-linguistically makes it impossible to ignore this process in any serious effort to present a complete picture of how grammatical material in languages is formed. In some functional domains, it appears even to be a valid alternative to speakers in recruiting the grammatical material of their language. Ultimately, however, grammaticalization and exaptation both owe their existence to a mechanism which appears to be more fundamental than both, namely reanalysis. Reanalysis can lead to change both up and down the morphological cline of grammaticalization.

Acknowledgements

I am sincerely grateful to Brian Joseph for his precious advice concerning this paper. Especially, he turned my attention towards the commonality in grammaticalization and exaptation, which both involve reanalysis. Some of the ideas presented in this paper profited from input by the reviewers and editors of my earlier paper on this topic, Narrog (2004). Any remaining errors and deficiencies are, of course, my own.

Notes

¹ More trivially, they also always involve analogy in the sense of Hopper and Traugott (2003: 63-69). If the reanalysis does not extend to a large number of lexical or grammatical items, it remains irrelevant for grammar.

² De Cuypere (2005) offers a detailed discussion of the concept in biology and its relationship to linguistics.

³ I am taking Lass at his word here, and represent the matter as described by him, although the actual situation might have been far more complex. Some later authors have criticized Lass's example (see below).

⁴ This example is in fact no less complex than Germanic ablaut. Again, I present it here as presented by the author.

⁵ In the discussion of exaptation in a special issue of *Lingua* on the topic, centered on Bouchard's (2005) article, the term is applied in a completely different domain, namely in questioning where the properties of language in general come from: "[W]e can assume that properties of language are necessary, not contingent, because they come from an exaptation of properties which are logically prior to language: the notions of language come from elements which language has reappropriated for its own purpose." (Bouchard 2005: 1689)

⁶ Earlier, Meillet had coined the term *renouvellement*, but with a different meaning (cf. Traugott 2004: 122, 145).

⁷ E.g. Discourse > Syntax > Morphology > Morphophonemics > Zero (Givón 1979: 209; Lehmann 1995[1982]: 11).

⁸ Cf. Traugott (2004: 151): "Exaptation in language change can be thought of as the phenomenon of the emergence of a new grammatical function at what could otherwise be expected to be the end of a cline of grammaticalization."

⁹ At one point Lass even suggests that "exaptation can lead to grammaticization" (1997: 318). It should be noted, however, that grammaticization means for Lass specifically "becom[ing] grammatically obligatory", as opposed to grammaticalization, which is for him the morphological downgrading from lexical to grammatical status (1997: 256).

¹⁰ De Cuypere (2005) pleads for an extremely broad concept of exaptation, when he defines it as "[...] language change in which a non-functional language structure becomes functional or in which a functional language structure is reused for a different function" (p. 22). However, as a result, "it is possible to analyse every semantic or functional change as exaptation" (ibid.), which renders the concept vacuous, even for the author himself.

¹¹ Cf. also Heine: "[T]he occurrence of exaptation is idiosyncratic in that it does not appear to allow for crosslinguistic generalizations" (Heine 2003b: 168f).

¹² I am using here the verb base as a citation form (the alternatives are using the verb stem or the verb in finite form). The /i/ in *kiri* and *tuki* is a vowel used generally in forming independent stems, and should not be regarded as an additional morphological element.

¹³ These six are *mise* 'show'/'let see', *kise* 'dress (tr.)', *opose* (*opus.u*) 'make carry'/'burden', *sirase* 'tell'/'let know', *apase* 'put together'/'let meet' and *kikase* 'tell'/'let hear'.

¹⁴ See Narrog 2004: 358f. for more detail

¹⁵ In traditional Japanese linguistics, it has indeed been assumed that the endings *-se*, *-si* ultimately come from the phonologically similar 'do' verb *s-* (cf. Yoshida 1973: 199-202).

¹⁶ It is not an exact morphological reduplication, which would have produced the form *-sese* and not *-sase*.

¹⁷ In contrast, in the case of Lass's ablaut example, a preceding grammaticalization is not being referred to and does not seem to be presupposed.

¹⁸ Given the heavy reliance on internal reconstruction in much work on grammaticalization, which leads to the danger of circularity, Joseph (2004: 50), in a critical review of grammaticalization, even suggests that "grammaticalization is rather just another instantiation of the basic methodology of internal reconstruction."

References

- Aoki, Hiroshi. 1996. "Kanō dōshi no seiritu ni tsuite [On the development of the potential verbs]". *Gobun Kenkyū* 81: 1-12.
- Bouchard, Denis. 2005. "Exaptation and linguistic explanation." *Lingua* 115, 1685-1696.
- Brinton, Laurel and Dieter Stein. 1995. "Functional renewal." *Historical Linguistics 1993: Selected Papers from the 11th International Conference on Historical Linguistics, Los Angeles, 16-20 August 1993*, ed. by Henning Andersen, 33-47. Amsterdam: Benjamins.
- Bybee, Joan L. 1985. *Morphology. A study of the relation between meaning and form.* Amsterdam: Benjamins.
- Campbell, Lyle. 2001. "What's wrong with grammaticalization?" *Language Sciences* 23: 93-112.
- Croft, William. 2000. *Explaining Language Change.* Harlow: Longman.
- De Cuypere, Ludovic. 2005. Exploring exaptation in language change. *Folia Linguistica Historica* 26/1-2, 13-26.
- Fanego, Teresa 2004: "Some strategies for coding sentential subjects in English: from exaptation to grammaticalization." *Studies in Language* 28/2: 321-361.
- Gaeta, Livio 2004: "Exploring grammaticalization from below." *What makes grammaticalization? A look from its fringes and its components*, Walter Bisang, Nikolaus P. Himmelmann and Björn Wiemer, 45-75. Berlin: Mouton de Gruyter.
- Greenberg, Joseph H. 1991. "The last stages of grammatical elements: Contractive and expansive desemanticization." *Approaches to grammaticalization*, Vol. 1, ed. by Elizabeth Closs Traugott and Bernd Heine, 301-14. Amsterdam: Benjamins.
- Haspelmath, Martin. 1999. "Why is grammaticalization irreversible?" *Linguistics* 37: 1043-1068.
- Haspelmath, Martin. 2004. "On directionality in language change with particular reference to grammaticalization." *Up and down the cline: The nature of grammaticalization*, ed. by Olga Fischer, Muriel Norde and Harry Peridon, 17-44. Amsterdam: Benjamins.
- Heine, Bernd. 2003a. "Grammaticalization." Joseph, Brian D. and Richard D. Janda (eds.) *The Handbook of Historical Linguistics*, 575-601. Oxford: Blackwell.
- Heine, Bernd. 2003b. "On degrammaticalization." *Historical Linguistics 2001: Selected papers from the 14th International Conference on Historical Linguistics, Melbourne, 13-17 August 2001*, ed. by Barry Blake and Kate Burridge, 163-179. Amsterdam: Benjamins.

- Hopper, Paul J. and Elizabeth Closs Traugott. 2003. *Grammaticalization*. Second edition. Cambridge: Cambridge University Press.
- Jamison, Stephanie. 1976. "Functional ambiguity and syntactic change." *Papers from the parasession on diachronic syntax April 1976*, 126-135. Chicago: Chicago Linguistic Society.
- Jamison, Stephanie. 1983. *Function and form in the -áya-formations of the Rig Veda and Atharva Veda*. Göttingen: Vandenhoeck & Ruprecht.
- Janda, Laura A. 1996. *Back from the brink*. München: Lincom Europa.
- Joseph, Brian D. 2001. "Is there such a thing as 'grammaticalization?'" *Language Sciences* 23: 163-186.
- Joseph, Brian D. 2004. Rescuing traditional (historical) linguistics from grammaticalization theory. *Up and Down the Cline – The Nature of Grammaticalization*, ed. by Olga Fischer, Muriel Norde and Harry Perridon, 45-71. Amsterdam: Benjamins.
- Joseph, Brian D. 2005. "Greek verb endings: 'Lateral shifts' and grammaticalization", Presentation at *New reflections on grammaticalization 3*, 17-20 July 2005, Santiago de Compostela.
- Kemmer, Suzanne and Arie Verhagen. 1994. "The grammar of causatives and the conceptual structure of events." *Cognitive Linguistics* 5-2: 115-156.
- Kinsui, Satoshi. 2003. "Ra-nuki kotoba no rekishiteki kenkyū" [Historical research on ra-nuki verbs]. *Gekkan gengo* 32/4: 56-62.
- Lass, Roger. 1990. "How to do things with junk: exaptation in language evolution." *Journal of Linguistics* 26: 79-102.
- Lass, Roger. 1997. *Historical linguistics and language change*. Cambridge: Cambridge University Press.
- Lehmann, Christian. 1995 (1982). *Thoughts on grammaticalization*. Revised and expanded edition. München: Lincom Europa.
- Matisoff, James A. 1976. "Lahu causative constructions: case hierarchies and the morphology/syntax cycle in a Tibeto-Burman perspective." *Syntax and Semantics* Vol. 6, ed. by Masayoshi Shibatani, 413-442. New York: Academic Press.
- Mithun, Marianne. 2002. "An invisible hand at the root of causation: The role of lexicalization in the grammaticalization of causatives". *New reflections on grammaticalization*, ed. by Ilse Wischer and Gabriele Diewald, 237-258. Amsterdam: Benjamins.

- Narrog, Heiko. 2004. "From Transitive to causative in Japanese: Morphologization through exaptation." *Diachronica* 21/2: 351-392.
- Newmeyer, Frederick J. 2001. "Deconstructing grammaticalization." *Language Sciences* 23: 187-229.
- Norde, Muriel. 2002. "The final stages of grammaticalization: Affixhood and beyond." *New reflections on grammaticalization*, ed. by Ilse Wischer and Gabriele Diewald, 45-65. Amsterdam: Benjamins.
- Okada, Judy. 2004. Causative *Sa*-Insertion in Japanese: Verbal and Sentential Patterns. *Nihongo bunpō* 4/2: 69-88.
- Pedersen, Eric. 1991. "The ecology of semantic space". *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society*: 457-468.
- Ramat, Anna Giacalone. 1998. "Testing the boundaries of grammaticalization." *The limits of grammaticalization*, ed. by Anna Giacalone Ramat and Paul J. Hopper, 107-127. Amsterdam: Benjamins.
- Sakanashi, Ryūzō. 1994. "Kanō dōshi no hattatsu [The development of potential verbs]". *Gengo jōhō kagaku senkō kiyō* 1/1: 128-142.
- Sakanashi, Ryūzō. 1995. "Edo kōki no kanō dōshi [Potential verbs in the late Edo period]". *Kokugo to kokubungaku* 1/1995: 1-15.
- Song, Jae Jung. 1996. *Causatives and causation, a universal-typological perspective*. London: Longman.
- Traugott, Elizabeth C. 2004. "Exaptation and grammaticalization". Akimoto, Minoji et al. *Linguistic studies based on corpora*, 133-152. Tōkyō: Hitsuji Shobō.
- Traugott, Elizabeth C. and Bernd Heine 1991: "Introduction". Traugott, Elizabeth Closs and Bernd Heine (eds.) *Approaches to grammaticalization*, Vol. 1, 1-14. Amsterdam: Benjamins.
- Unger, James Marshall. 1975. *Studies in Early Japanese morphophonemics*. Ph.D. dissertation, Yale University.
- Unger, Marshall J. 2000. "Reconciling Comparative and Internal Reconstruction: The case of Old Japanese /ti, ri, ni/." *Language* 76:3: 655-681.
- van der Auwera, Johan. 2002. "More thoughts on degrammaticalization". *New reflections on grammaticalization* ed. by Ilse Wischer and Gabriele Diewald, 19-29. Amsterdam: Benjamins.
- Yoshida, Kanehiko. 1973. *Jōdaigo jodōshi no shiteki kenkyū* [Historical studies on Old Japanese Auxiliaries]. Tōkyō: Meiji shoin.

Contact information**Heiko Narrog***Tohoku University, Japan***Full address**

Heiko Narrog

GSICS

Tohoku University

Aoba-ku, Kawauchi 41

Sendai 980-8576

JAPAN

Tel/Fax +81-22-795-7662

E-mail

narrog@gmail.com