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Unifying entrenched tokens and schematized types as routinized commonalities of linguistic experience

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Abstract: Proponents of usage-based models of language acquisition, language structure and language change widely agree that the repetition of specific tokens of words and strings in language use (e.g. *give me a break*) is conducive to their entrenchment and has a stabilizing and conserving effect, while the repetition of different instantiations of a variable type or pattern (*give me a kiss*, *give me a smile*, *give me an amen*) fosters schematicity and productivity (*give me a(n) X*). In this paper, I will argue that token-entrenchment and type-schematization are subserved by the same repetition-driven cognitive mechanism. Commonalities observed in linguistic input and output become routinized by repeated activation of patterns of associations. Token-entrenchment and type-schematization do not differ qualitatively but only quantitatively with regard to the variability of what is noticed as being similar. I argue that any form of routinization requires an abstraction over differences between episodes in terms of pronunciation, cotext and context. Therefore, schematization is an inherent component of routinization, but routinization is clearly the more fundamental cognitive process and learning mechanism. I argue that routinized patterns of associations can do the job of constructions in a more flexible, dynamic and parsimonious way and illustrate the potential of this idea with the help of data and insights gleaned from Schönefeld (2015).

Keywords: entrenchment, routinization, language processing and representation

1 Introduction: Token entrenchment vs. type schematization

Among proponents of usage-based models of grammar (Barlow and Kemmer 2000; Bybee 2006; Bybee and Beckner 2010; Langacker 1988; Tomasello 2003) there is an almost astonishing consensus that it is useful to distinguish between two types of repetition: the repetition of identical elements or strings such as *went*

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or *one for the road*, on the one hand, and the repetition of variants of a type or schema, e.g. *laughed, smiled* and *kissed* as instantiations of the past tense schema 'V-ed' or *the girl, her boyfriend* and *his mother* as instantiations of the NP schema 'Det + N'. The first type of repetition is known as *token repetition* and counted in terms of *token frequency* or *string frequency*, the second is referred to as *type repetition* and counted in terms of *type frequency*. The hypothetical effects of token repetition on the associative networks of language users are described as *token entrenchment*, those of type repetition as *type entrenchment* (Ziem and Lasch 2013: 104). In line with Langacker's (1987: 57) original conception of entrenchment, token entrenchment is regarded as being conducive to ease of activation and automatic processing, because it contributes to routinization and strengthening of memory traces and connections in the associative network. The more often a speaker repeats or comes across the exact same element or string, the more strongly it will become entrenched. In contrast, it is assumed that type entrenchment is based on a process referred to as *generalization* (Goldberg 2006), *abstraction* (Langacker 1987: 132–137) or *schematization* (Abbot-Smith and Tomasello 2006; Ambridge and Lieven 2015; Langacker 2008: 17). Once in place, variable schemas can be recruited and exploited to produce and understand new utterances. Therefore, they play a key role for the productive ability of speakers.

Evidence for the predictive potential of this distinction comes from different fields. Research on language acquisition indicates that token entrenchment precedes schematization (Tomasello 2003). This shows in the earlier acquisition of holophrases and frequent irregular forms such as *went* and the later phenomenon of over-generalization, e.g. to *goed*, after the corresponding variable schema has been acquired. In research on language change, it is generally assumed that token or string frequency have a conserving effect, while type frequency contributes to category extensions and increases productivity. Evidence for the conserving power of token frequency comes from the observation that frequent irregular forms of verbs (e.g. *ate, went, kept*) and nouns (e.g. *women, men, feet*) have resisted the regularization pressure exerted by analogical levelling (Bybee 1985: 117–118, 2010: 24–32; Diessel 2007: 92). In contrast, rarer irregular forms such as *knelt* or *learnt*, which are not represented as strongly in the associative network, gradually become prey to this regularization process, because the competition from the highly frequent regular schema is very strong.

2 What lies behind the distinction between token entrenchment and type schematization?

To understand what lies behind the difference between token entrenchment and schematization, it is necessary to go back to the notions of repetition and

frequency. Repetition entails identity or at least similarity. When we say that an utterance or a component part of an utterance is repeated, or when a corpus linguist observes that an element or pattern occurs with a certain frequency, this is based on the recognition that the different utterances or utterance parts are identical or at least similar. In principle, the distinction between token repetition and type repetition seems clear enough:

- Token repetition involves the perceptual similarity of different stimuli, e.g. of multiple occurrences of the forms *went* or *one for the road*.
- In contrast, the kind of type repetition that is conducive to schematization involves a partial perceptual similarity. For example, the forms *kiss*, *kisses*, *kissing*, and *kissed* can be recognized as word-forms of the lexeme type KISS because of the perceptual similarity of the grapheme sequence <kiss> and the phonetic signal [kɪs] shared by all four forms. The recognition of such a systematic partial perceptual similarity tends to give rise to the recognition of a *relational similarity* or *analogy* residing in the structural alignment (Ambridge and Lieven 2015; Behrens 2017; Brown and Rivas 2012; Cordes 2017; Gentner 2003; Gentner and Medina 1998; Paul 1920; Tomasello 2003). The suffixes *-(e)s*, *-ing* and *-ed* are analogous in that they stand in a comparable structural alignment to *kiss*. Conversely, the stems *laugh*, *smile* and *kiss* are analogous in their alignment in the forms *laughs, smiles* and *kisses*, due to the perceptual similarity of the endings <s> and <es>, and [s], [z], and [ɪz].

The distinction between token repetition and type repetition therefore seems to be quite straightforward. However, one might raise the question whether there is really a neat and clear-cut qualitative distinction between full perceptual similarity, partial perceptual similarity and relational similarity. After all, similarity is an inherently gradient concept. In what follows, I will argue that the situation is much more complex and that this insight has implications for the distinction between token entrenchment and schematization.

3 Degrees of similarity in language

Figure 1 will help to survey different degrees of similarity in language. The figure is arranged in columns illustrating decreasing degrees of similarity as we go from left to right. Underlined elements indicate high, though not always perfect, perceptual similarity. Arrows stand for cognitive processes extracting commonalities and producing hypothetical abstract representations marked by capital letters.

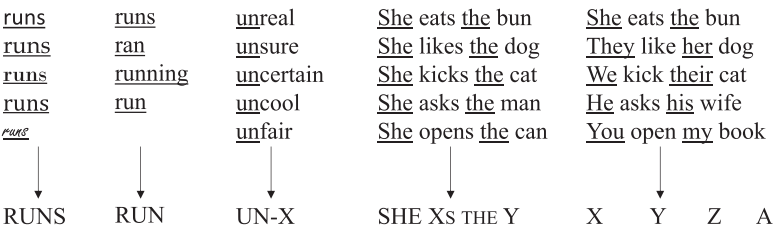

Figure 1: Illustration of different degrees of similarity.

The highest degree of similarity I can think of on or above the word level is the repetition of specific word-forms illustrated by the form *runs* in the first column, where differences are minimal. Arguably, this is as close as we can get to pure token repetition. However, as is indicated by the choice of different fonts, even repeated word-forms are strictly speaking never identical, but only similar, both in speech and writing. The same forms can be pronounced and written in different ways and they are embedded in different cotexts and contexts and therefore also differ at least slightly regarding their context-specific meanings (Ambridge and Lieven 2015: 499). So the idea that token entrenchment operates over exact repetitions and does not require abstraction is already compromised to some extent.

Moving to the second column, schematization becomes more noticeable, because the variance of the word-forms that are considered to instantiate the lexeme RUN is already higher than in the case of word-forms. While analogy hardly comes into play here, schematization does, because the lexeme RUN is an abstraction over different forms and different senses, capturing a less concrete kind of commonality observed in different usage events.

The next column illustrating the schema '*un*-Adj' provides a clear example of how partial and relational similarity can work together to support schematization. While token entrenchment only plays a role insofar as the representation of the prefix *un-* is strengthened, the variability observable in its base-morpheme slot facilitates schematization.

The remaining two columns illustrate the increasing complexity and variability of schemas. In the column beginning with *she eats the bun*, I have kept the forms *she* and *the* constant, which facilitate the recognition of perceptual similarity, whereas any schema which could possibly be abstracted from the right-most column can only rely on relational similarity.

So far I have only looked at formal similarity and neglected the role of semantic similarity, except in the short reference to possible semantic variation among different instantiations of the word-form *runs*. This is rather misleading, however,

because semantic commonalities play a key role for the recognition of formal similarity. For example, the forms of the words *until*, *under* and *undue* invite a generalization into a schema '*un*-X' but, since these forms do not share a semantic similarity, it is unlikely that a relational similarity between the remaining parts is recognized and a schema is formed. Note that the degree to which the elements or expressions listed in one column show semantic similarities is also reduced as we go from left to right in Figure 1.

If one was forced to locate the distinction between token and type repetition on the continuum charted in Figure 1, one would presumably have to point to the space between word-forms and lexemes. That lexemes are mainly unified by conceptual rather than perceptual similarity becomes particularly clear when we consider irregular portmanteau or suppletive forms as in the paradigms *go, goes, going, went, gone* or even *be, am, are, is, was, were* and *been*. Schematization has to rely mainly on semantic similarity in these cases as well as on distributional similarity, i.e. relational similarities to the surrounding cotexts. However, as we have seen, even the repetition of word-forms involves some degree of abstraction, especially if one factors in pronunciation variants conditioned by classic sociolinguistic variables such as region, social class or also situation.

Up to now, I have tried to establish two things. First, schemas can be based on a cline from very high perceptual formal and semantic similarity to purely relational similarity supported more or less strongly by semantic similarity. And second, on closer inspection even the seemingly purest form of perceptual similarity and token repetition, i.e. word-form repetition, involves some degree of abstraction and schematization. Before I will return to this claim in Section 5, it is necessary to discuss common ways of modelling the effects of similarity.

4 How can the effects of similarity be modelled?

The most common way of thinking about effects of similarity is that it is conducive to the cognitive process of categorization and the emergence and representation of cognitive categories or schemas (Ramscar and Port 2015; Ungerer and Schmid 2006: Chapter 1). The smaller the range and diversity of instances that are collected in a category, the more specific, narrow and perhaps also concrete is the resulting category. This assumption is highly compatible with the position of Construction Grammar, where it is common to distinguish between lexically specific, partly variable and fully schematic constructions (Croft and Cruse 2004; Goldberg 1995; Hilpert 2014). Simple and complex lexically specific constructions such as lexemes and fixed expression rely on perceptual similarity between

forms and strong similarity of meanings. Partly variable constructions like *un*-prefixation, the progressive or the *way*-construction partly rely on perceptual and partly on relational and semantic similarity. Fully variable constructions such as the ditransitive or the resultative construction can only rely on relational and semantic similarity, but semantic similarity can be difficult to grasp and describe.

One problem for this account is that schematic constructions are also manifested by specific sequences of elements which are repeated so frequently that they can be regarded as constructions in their own right. For example, the sequence *give me a break* can be treated as a lexically-fixed construction or as an instantiation of the schematic ditransitive construction. The most common way of settling this issue is to go for a third option, encapsulated in the term *multiple storage*. The claim behind this term is that one and the same utterance can be represented on different levels of abstraction in the constructional network, depending on such factors as absolute and relative frequency of repetition, semantic consistency and compositionality. Due to the frequency and slightly idiomatic meaning of *give me a break*, it is probably more likely that it is represented as a lexically filled expression than being activated via the more general ditransitive construction. A notorious problem with the construction-grammar approach is the massive proliferation of units, which is partly caused by allowing multiple storage. Taking the basic idea of Construction Grammar seriously that it is constructions "all the way down" (Goldberg 2003: 223), we would, for example, have to postulate the existence of a *went*-construction, a *said*-construction, a *was*-construction, and perhaps even a *kissed*-construction, alongside a past-tense and many other schematic constructions, if we assume that high frequency facilitates the emergence of a construction (Goldberg 2006; Hilpert 2014).

Exemplar-based models and variants of construction grammar with a strong exemplar-based component would show some reluctance to postulate schemas rashly and reject the idea of multiple storage. Instead, they would model networks in terms of similarities between exemplars clustering in more or less dense clouds (Divjak and Arppe 2013; Pierrehumbert 2001). While it is not difficult to picture how this works for exemplars sharing strong perceptual similarities and perhaps for partly similar exemplars, it requires more imagination how this would work for cases illustrated by the right column in Figure 1. While I find it easy to think of exemplars of the word-form *runs* or the lexeme *run* as stored clusters or clouds of similar episodes of experience, to do the same for the wide range of sentences that would form a cloud corresponding to the ditransitive construction is quite a challenge because the corresponding cloud would consist of sequences which do not have a lot in common.

Although I am aware that these accounts of categorization, Construction Grammar and exemplar theory are highly caricaturistic, I feel entitled to conclude

that, so far, none of them is by itself able to offer a convincing picture of how similarities of varying strengths between concrete utterances are transformed into stored linguistic knowledge.

5 A fresh approach

My own take on the issue of token entrenchment and type schematization is part of the entrenchment component of the modified version of the Entrenchment-and-Conventionalization Model (Schmid in preparation). Like its precursors (Schmid 2014, 2015, 2016, 2017), the revised model claims that both processing and representation take place in the form of patterns of associations. This associationist approach shows similarities with connectionist models (Rumelhart and McClelland 1986; Thomas and McClelland 2008): it is reluctant to postulate second-order representations like schemas, constructions or rules, and it assumes that network connections are strengthened by repetition. It differs from connectionist models, however, in the respect that four types of associations specifically dedicated to linguistic processing and representation are distinguished. In processing,

- *symbolic associations* subserve the relations between the forms and meanings of utterances;
- *paradigmatic associations* are mental links between meanings that compete for associations with a form and between forms that compete for activation when it comes to encoding a meaning or intention;
- *syntagmatic associations* subserve the syntagmatic aspects of processing; and
- *pragmatic associations* connect information gleaned from the context with the processing of meanings and forms.

If patterns of associations are repeatedly activated by similar utterances, they become routinized and thereby part of what is commonly labelled *representation*. This means they become strengthened in their competition with other patterns and can begin to function as attractors in the associative network. They serve as transient activation patterns of the network that it reaches fairly quickly and effortlessly because they have been activated frequently before (Langacker 2000: 7, 2017: 41; MacWhinney 2017: 345). I assume that routinization takes place whenever the associative network of a speaker registers a commonality during the processing of input or output. This takes us back to the issue of similarity and token entrenchment vs. type schematization. The more often this commonality is encountered the stronger the effects of routinization. Arguably, the associative

network is particularly eager to search for commonalities of forms that are associated with commonalities of meanings or functions by means symbolic or pragmatic associations, because these are the targets of meaning and understanding. This seems plausible from a functionalist and cognitive perspective which highlight the communicative and semantic functions of language.

Now how does the routinization of patterns of associations actually work? And what are these patterns of associations in the first place? Some examples will help to answer these questions. The simple word-form *run* is a useful starting point. This form is associated more or less strongly with different meanings, e.g. 'fast pedestrian motion', 'motion' or 'function' (Glynn 2014; Gries 2007), by means of symbolic associations. It is identified with the help of paradigmatic associations linked to similar forms which may or may not be related semantically such as *gun, ran* or *rum*, and to similar meanings such as 'go' or 'walk'. Paradigmatic associations also contribute to subserving the kind of grammatical knowledge that *run* can be used as an instantiation of the probabilistic category VERB. While symbolic and paradigmatic associations dominate the formal and semantic processing and representation of *run*, syntagmatic associations capture its combinatorial options and restrictions, and pragmatic associations register any situational or functional characteristics. Given the high formal and considerable semantic similarity between different uses, the associative network will find it easy to register and routinize the commonality. With regard to how the system learns, simple forms of statistical learning (Jost and Christiansen 2017) should suffice to explain how this works. The more frequently similar forms and similar meanings are associated, the more quickly statistical learning will proceed and the more strongly entrenched the corresponding pattern of associations will become.

Adjectives formed by means of *un*-prefixation such as *unhappy, unfair* or *uncertain* can serve as the next example. Here the associative network registers a syntagmatic association between two forms: the form *un-* and another form syntagmatically associated with it by repeated co-occurrence. The more often a given combination occurs, especially in comparison with the frequency of the base form and the prefix *un-*, the stronger this association will become (Blumenthal-Dramé 2012, 2017). This predicts that *unable* and *unlikely* show stronger internal syntagmatic associations than, for example, *unwaxed* or *unzippable*. Paradigmatic associations in the associative network recognize and routinize the commonality of *un-* and the analogy of the diverse bases *vis-à-vis* the prefix against the backdrop of their shared meanings, roughly 'not X'. The more cases of *un*-X conveying this target meaning the network encounters, the stronger this paradigmatic association will become. Symbolic and pragmatic associations also come into play, of course, but they are not the main aspect here. Rather than claiming that a schema has been formed, I would opt for the more conservative assumption that the

combination of routinized syntagmatic, paradigmatic and symbolic associations enables the network to handle examples of entrenched and novel *un*-prefixations. What is more, we do not have to assume multiple storage, because more frequent elements will automatically be treated as more strongly fixed elements due to particularly strong syntagmatic associations. Since statistical learning and routinization can rely on the perceptual similarity of *un*- and a quite strong semantic commonality, it seems likely that the pattern of associations representing this semi-variable combination can become routinized as an attractor in the network. This attractor would correspond to a hypothetical schema for *un*-prefixation and do the same work, but it is conceived of as a flexible and dynamic state of the associative network.

The same logic can be applied to the schematic constructions on the right-hand side of Figure 1. Here, too, the associative network can register and routinize a commonality regarding paradigmatic and syntagmatic associations which will help to also register a common symbolic association. Yet statistical learning is much more difficult here because the commonalities of the episodes are much harder to detect. As a result, routinization is likely to be slower and perhaps also less strong despite the high frequency with which a pattern like the ditransitive occurs in language. There is no perceptual, but only relational similarity. The semantic diversity of instantiations of the pattern is generally high. However, the network can register repetitions of uses of the most frequent anchor verbs *give, tell* and *send* and associate a meaning of the pattern with the meaning of these verbs. This seems to be a plausible way in which the prototypical transfer scene (Goldberg 1995: 39) encoded by the ditransitive construction comes to be entrenched as a pattern of associations in the associative network. In spite of the massive diversity in the input and output, the fundamental cognitive process is exactly the same as in the case of the word-form *run*: the associative network registers and routinizes commonalities. The only difference is that there is so much variance in what becomes registered as being similar that only a very general commonality can be routinized. If it was not for the semantic similarity brought in by the typical verbs and their high frequency in the pattern, it would indeed be extremely unlikely that any commonalities would become routinized at all.

6 It is routinization all the way up

What I have said in the previous section comes down to a complete reversal of the conclusion of Section 3. Although schematization and abstraction seem

to be at work from the token entrenchment of word-forms or at least lexemes upwards – or right-wards in Figure 1 –, I would argue that schematization is a side-effect of routinization rather than vice versa. All cases discussed can be described as being the effects of the routinization of commonalities registered by the associative network. They only differ in terms of the variance of the commonalities that are registered. Routinization is the process that brings about the effects typically associated with entrenchment, i.e. ease and speed of activation and automaticity. This is also convincing in view of the widely agreed upon position that entrenchment must start from concrete lexically filled utterances and can only later work up its way towards more schematic forms of representation (Bybee 2006; Hilpert 2015; Langacker 1987, 2008; Schönefeld 2015).

How quickly and strongly a given commonality can become routinized depends on a number of factor: the variance among the utterances that are recognized as being similar, the frequency of repetition and, crucially, the possibility to register symbolic or pragmatic associations, which are the main targets of communication. Routinization is always at work, and so are *schematization* or *abstraction*. However, the schematicity of representations is not a process or learning mechanism in its own right but an effect of routinization whose visibility depends on the variance in what becomes routinized. It is hardly visible for the routinization of word-forms but seems very prominent the more variable the commonalities become.

7 An application re-interpreting data and insights by Schönefeld (2015) on *un*-participle constructions

And what's the point? What is gained by collapsing token entrenchment and schematization into one process, i.e. the routinization of associations? What is gained, especially in view of the fact that empirical findings nicely support this distinction? The gain in terms of Occam's razor, i.e. the reduction of two explanatory principles to one, does not seem to justify taking the risk of forfeiting explanatory adequacy in turn. And what is gained by casting doubt on the existence of schemas and constructions and replacing them by more or less strongly entrenched patterns of associations? I will answer these questions by relating them to data and insights taken from an excellent study by Schönefeld (2015), who investigates *un*-participle constructions, illustrated, for example, by verb-participle combinations such as *be unknown, remain unchanged, seem unconcerned* or *go unnoticed*. Schönefeld discusses a range of aspects revolving

around this construction, among them its formal and semantic specifications and its similarities and differences to passive constructions. In addition, and this is my main concern here, she tackles three questions which commonly arise in corpus-based investigations of constructions such as Schönefeld's. All three essentially relate to the issue of generalization (Goldberg 2006).

- The first concerns the upper limits of generalization: do the data support the claim that a highly schematic *un*-participle construction exists? The answer to this question largely hinges upon whether all uses of the potential high-level construction show sufficient formal and semantic similarities to be subsumed under one schematic construction.
- The second question concerns the middle level of generalization: do the attested uses cluster formally and semantically in such a way that one can plausibly model them as reflecting a network of mid-level and/or low-level constructions? This is largely a matter of whether groups of similar uses are internally coherent and externally distinctive enough to justify the claim that these constructions exist.
- The third question relates to the role of lexically specific sequences which stand out by their string frequency, e.g. *be unknown* or *go unnoticed*: are these specific sequences formally and semantically specific enough to warrant the claim – in line with the principle of multiple storage – that they are represented as lexically specific constructions, in addition to instantiating a schematic construction on a more generalized level? Criteria that are commonly applied to answer this question are high string frequency, particularly strong mutual attraction between the component elements and compromised compositionality.

Schönefeld (2015) offers a very insightful and balanced discussion of these questions. Roughly speaking, she concludes that the evidence for the existence of a high-level schematic construction is weak, that there is a network of more specific lower-level constructions, and that it is likely that the most frequent sequences are represented as lexically fixed constructions. Overall, she remains extremely cautious and mentions the option of modelling clusters of uses as exemplar clouds or networks:

> Given that constructions emerge from the experience of exemplars in linguistic interaction (cf. Ellis and Larsen-Freeman 2009: 92) and that the resulting categories "are structured by similarity and frequency, and often exhibit prototype effects" (Bybee 2013: 52), it is not implausible to assume that all of these constructions are associated in an exemplar cloud or a network. They are grouped together because some of them have similar functions and all of them share lexical material. The prefix *un-* is present in all exemplars, and some of the verbs are shared between them (*BE* and motion verbs in particular). (Schönefeld 2015: 456)

The dynamic framework of entrenchment as the routinization of patterns of associations proposed here offers a slightly different approach. Experience is not represented in the form of exemplars but as more or less strongly routinized patterns of association representing commonalities of earlier processing events. Associations of all four types are strengthened differently, depending on the nature of the commonalities registered by the associative network. For example, if the network is confronted several times with the sequence *has gone unnoticed*, then the syntagmatic association between these three forms will be strengthened. As a consequence, the whole sequence will begin to be able to activate a holistic symbolic association, rather than being processed in an analytical manner. Whether this happens after 2 or 20 or 200 repetitions is not such an important issue as in a construction-grammar approach, because the network remains fluid anyway and can react if the sequence becomes less frequent in the input and output for some external, e.g. social, reason (Schmid 2016). As there is a strong perceptual similarity and as the meaning remains stable across different uses, statistical learning and routinization are facilitated.

If the network registers a formal and semantic commonality between more varied utterances including, for instance, instantiations of *BE unknown*, *REMAIN unaltered* and *CONTINUE unabated*, then the paradigmatic associations noticing the similarities between such uses will become routinized alongside the symbolic associations of the parts and the syntagmatic associations between them. If such patterns of paradigmatic, symbolic and syntagmatic associations become routinized, the network will increase its predictive potential to understand other related utterances, e.g. *BE unheard of* or *REMAIN unexplained* and its ability to produce new ones based on this commonality. Phenomenologically and empirically, this routinized pattern may actually correspond to a high-level schema, but it is much more dynamic and open to change by new experience than such a representation format. This more variable pattern of associations is more difficult to learn, because formal and semantic variability is high.

Routinized patterns of associations corresponding to mid-level schemas would come into place in an analogous way. They are more likely to become routinized than higher-level commonalities, because they are based on stronger formal and semantic similarities facilitating statistical learning and routinization. As the network does not establish box-like nodes, but rather adapts to form basins of attraction (Langacker 2017) in response to input and output, it is not necessary to identify a frequency or similarity threshold for the establishment of a construction on some level of abstraction. If a social or personal change affects the frequency distribution in the input or output of a given speaker, the network can react by strengthening certain association in such a way, for

example, that a specific sequence is beginning to be processed as a more or less fixed chunk.

In sum, the approach proposed here is may have the following advantages:

- The number of explanatory principles and cognitive mechanisms is reduced from two to one.
- The unconstrained proliferation of nodes in the constructicon is avoided, because all linguistic knowledge is claimed to be available in the form of differently routinized patterns of association. Differences in terms of schematicity are modelled in terms of different degrees of variance of what becomes routinized.
- More lexical or more grammatical constructions can be modelled by the different dominance of symbolic and syntagmatic associations respectively.
- The massive extra burden on memory caused by the proliferation of nodes and multiple storage is avoided, because different forms of representation depending on absolute and relative co-occurrence frequencies are built into the model by competing strengths of the different types of associations.
- It is no longer necessary to decide on an exact number of related constructions and on the identifying their exact place in the constructional network, because the associative network remains dynamic and sensitive to change.

Note that the analytical procedure and the insights gained by Schönefeld (2015) are not compromised by this suggestion. On the contrary, the in-depth analysis of frequency distributions, co-occurrence patterns and formal and semantic similarities are required in precisely the same way for research using the associationist model proposed here. The only difference is that the results would be couched in a more dynamic, unified and therefore parsimonious format. A further advantages would be that the contrast between processing based on an analogy to one or few existing exemplars and schema-based processing is also transformed into a gradual transition from stronger to weaker similarities.

8 Conclusion

In this paper, I have proposed a unified understanding of token and type entrenchment in terms of variably routinized patterns of associations. It should not go unnoticed that the illustrative application offered here was only made possible by the highly transparent and incredibly detailed way in which Doris Schönefeld (2015) dealt with the *un*-participle construction.

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