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A blueprint of the Entrenchment-and-Conventionalization Model

Abstract: Languages are subject to change, but they are also stable. The linguistic knowledge of the members of speech communities is similar, but also differs in many ways. Language use affects individual linguistic knowledge and contributes to linguistic conventionality. The present paper outlines a model of how language works that strives to do justice to these commonsensical observations. The model consists of cognitive processes and social processes and shows how these interact under the influence of usage events and a range of different types of forces.

Keywords: entrenchment, conventionalization, EC-model, usage-based models

DOI 10.1515/gcla-2015-0002

1 Introduction

This paper presents a blueprint of a model of language whose general outlines were first sketched out in Schmid (2014a). For reasons that will become clear in what follows, the model is referred to as *Entrenchment-and-Conventionalization Model* (EC-Model for short). Rather than formulating rules or explaining specific constructions, the EC-Model constitutes a universal and unified theory of how language(s) work(s). Given space restrictions, the present account of the model will remain programmatic and largely theoretical.

1.1 Axioms

The EC-Model rests on the following observations:

1. Speakers use language in order to communicate.
2. For speakers to be able to do so, they need linguistic knowledge.

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3. Linguistic knowledge is represented in individual language users' minds and brains.
4. Members of a speech community share linguistic knowledge.
5. No two members of a speech community have identical linguistic knowledge.
6. Individual and shared linguistic knowledge are both stable and subject to change.
7. Linguistic structure is shaped by language use.

These observations are treated as axioms in the model, i.e. as indisputable facts that are neither up for discussion nor in need of further proof. The first six axioms themselves are likely to be uncontroversial anyway, even though what they entail for linguistic theorizing may be subject to debate. While the seventh axiom epitomizes a notorious and long-standing bone of contention in linguistics, it will be treated as an axiom all the same, since the EC-Model does not make sense otherwise. Readers who reject the seventh axiom will definitely also reject the EC-Model.

1.2 Demands on the model

Which requirements for an adequate theory of how language works can be derived from these axioms?

1. Such a theory must put meanings and communicative functions of language in usage situations centre-stage. It must be functional rather than formal (cf. axiom 1).
2. It must be cognitively and neurologically plausible (cf. axioms 2 and 3).
3. It must account for the fact that linguistic knowledge is intersubjectively shared and yet variable, so it needs a sociocognitive and a variational component (cf. axioms 4 and 5).
4. It must integrate a dynamic component in order to be able to explain language change (cf. axiom 6).
5. It must have a usage-based and emergentist component in order to find a way of explaining how grammar emerges from usage (cf. axiom 7).

As will be shown, the EC-Model is designed to meet these demands.

1.3 Sources of inspiration

A range of linguistic schools and approaches have proven invaluable sources of inspiration for the EC-Model. Only the most important ones can be mentioned here:

- usage-based or emergentist approaches to grammar (e.g. Bybee 1985; Hopper 1987; Langacker 1988; MacWhinney 1999; Barlow and Kemmer 2000), to language acquisition (e.g. Tomasello 2003) and to language change (e.g. Bybee 2010; Bybee and Hopper 2001)
- cognitive-linguistic conceptions of entrenchment (Langacker 1987: 59; cf. Schmid 2007, Schmid 2014b; Blumenthal-Dramé 2012) and its sub-processes (e.g. Langacker 2008: 16–18)
- construction grammar (cf. Fillmore et al. 1988; Goldberg 1995, Goldberg 2006; Hilpert 2013; Traugott and Trousdale 2013; Hilpert 2014)
- socio-cognitive approaches (e.g. Kristiansen 2008; Croft 2009; Harder 2010; Geeraerts et al. 2010)
- complex-adaptive system approaches (e.g. The Five Graces Group 2009; Blythe and Croft 2009)
- research on individual differences in grammatical attainment (Dąbrowska 2012) and usage tendencies (Barlow 2013)
- exemplar-based approaches (e.g. Bybee 2001; Pierrehumbert 2001)
- cognitive neuroscience (e.g. Pulvermüller 2003, Pulvermüller 2013)
- research into formulaic language (e.g. Wray 2002, Wray 2008; Schmitt 2004)
- work in variational sociolinguistics (e.g. Labov 2001, Labov 2010; Eckert 2000).

1.4 What remains original and unique about the present approach?

In view of these numerous and diverse inspirational sources, the question arises what is specific or even unique to the present model?

First, the EC-Model provides the first unified theory of linguistic structure and linguistic usage which integrates cognitive, sociolinguistic, and pragmatic aspects as well as neurolinguistic findings in an endeavour to explain how linguistic structure comes about and changes. In doing so, it tries to overcome the traditional division of labour between the core linguistic disciplines dealing with systematic aspects of linguistic structure and the use-and variation-related disciplines which pursue an entirely different agenda.

Second, unlike construction grammar, which has been criticised for its non-reductionist, somewhat open-ended list-like conception of linguistic knowledge, the EC-Model seeks to be more parsimonious. It states that a limited set of processes and a potentially unlimited, but quite neatly charted cohort of forces are considered to be sufficient to model and explain how language works.

Third, the model does not only account for structure and use, persistence and change as well as systematicity and variability, it also predicts and handles differences between individual speakers in usage as well as in linguistic knowledge. What is more, it explains why and in which way the same utterances or utterance types can be represented in very different ways and on different levels of abstraction in the minds of different speakers of the same language.

Fourth, the model makes fairly precise predictions concerning the effects of frequency of usage and exposure on the entrenchment processes taking place in the minds of individual speakers, on the conventionalization processes taking place in communities and social groups, and on the interaction between the two. In view of the considerable confusion to be observed at present about the effects and limits of various types of discourse frequencies on processing and representation as well as language structure and change, this alone may seem a worthwhile promise of the model.

2 The general outline of the EC-model

From a bird's eye view, the EC-model is very simple. It consists of four components (see Figure 1):

- linguistic *usage* and four types of *repeated activities* involved in it
- a limited set of *cognitive processes* operating in the minds of speakers, subsumed under the label *entrenchment*: association, routinization and schematization
- a limited set of *sociopragmatic processes* operating in communities, subsumed under the label *conventionalization*: innovation, co-adaptation, diffusion and normation
- a (probably unlimited) set of cognitive, emotive, pragmatic, and social *forces* which influence the way in which entrenchment and conventionalization processes interact with usage to shape and change language.

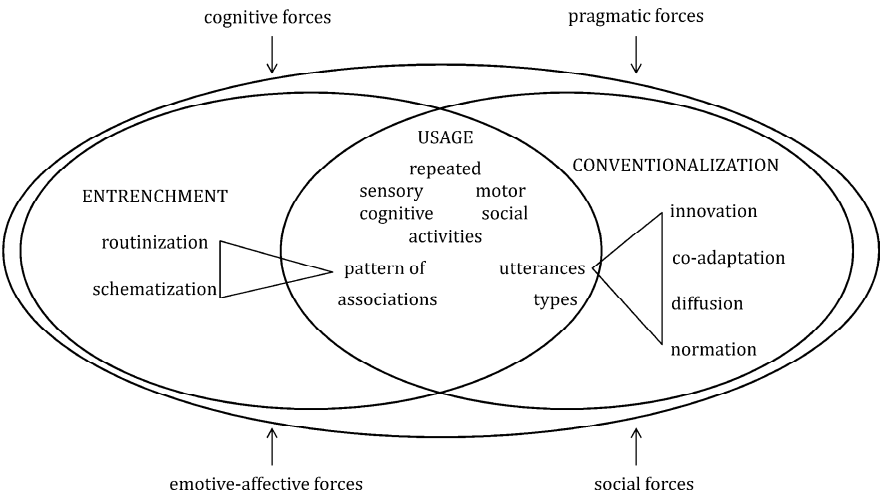

Fig. 1: General outline of the EC-Model

The three central parts of the model – usage, entrenchment and conventionalization – are connected by two overlapping ellipses in Figure 1. This indicates that usage affects both entrenchment and conventionalization, while entrenchment and conventionalization in turn influence usage. Entrenchment and conventionalization, however, are only linked to each other via usage, because only usage in interaction affords the constant updating of individual cognitive and collective social systems. The four types of forces are positioned in such a way that the two types that are more closely associated with what goes on in the minds of individual speakers – cognitive and emotive-affective forces – are found on the left-hand side, closer to entrenchment, while pragmatic and social forces sit next to conventionalization. However, as the arrows pointing to the largest ellipsis representing the full usage-entrenchment-conventionalization cycle indicate, all four types of forces can influence the entire interaction of the three core components.

Before the key components of entrenchment and conventionalization are discussed in greater detail in the following sections, the general idea behind the model should be explained. Striving to be a linguistic theory that actually deserves the label *usage-based*, the EC-Model puts the following four types of activities involved in the use of language centre-stage:

– *motor activity* required for producing utterances in speech, writing, signing or gesturing;

– *sensory activity* required for perceiving utterances and aspects of the situational context relevant for referring, meaning, and understanding;
– *cognitive and neuronal activity* required for planning, formulating, and understanding utterances in context;
– *social and interpersonal* activity inevitably entailed in communication.

These activities are not only a *sine qua non* condition for linguistic structure to emerge, persist, and change in mind and society, but they are also crucially responsible for the way in which this happens. Articulatory motor activities, for example, and the way in which they are carried out contribute to the erosion, fusion, and univerbation processes well known from research on grammaticalization. The same is true for sensory activities (e.g. by contributing to reanalysis, cf. Detges and Waltereit 2002). Cognitive and neuronal activities generate the associations involved in meaning and understanding and contribute to the memory consolidation processes required for the 'storage' and (re-)organization of the neural networks that represent linguistic knowledge (see below for more details). Social and interpersonal activities modulate meanings and communicative functions and thus influence the associations that eventually become routinized and part of linguistic structure.

One key condition for language to work the way it does has been taken for granted in the remarks in the preceding paragraph: the activities entailed in communication must be repeated. More precisely, similar activities of all four types must be repeated in similar situations, serving similar functions. One-off activities that are neither repeated nor ever recalled, e.g. a nonce word or a slip of the tongue, do not shape language. Repetition is required for the entrenchment processes of routinization and schematization which determine the ways in which linguistic knowledge is learnt and represented in individual minds. And it is the basis of the co-adaptation and diffusion processes required for the emergence and stability of linguistic conventions, i.e. the tacit mutual agreement among the members of a speech community that similar communicative tasks are solved in similar ways with similar effects (cf. Lewis 1969; Croft 2000: 95–99; Eckert 2000: 45).

Entrenchment and conventionalization processes play the central role in the model. They explain how what we refer to as *grammar* or *language* emerges from and is constantly updated by the repetition of situated usage events. Somewhat paradoxically, entrenchment and conventionalization are conceptualized both as *effects* of repeated usage and as *processes* involved in the shaping of language. This is necessary in order to account for the double role they play: on the one hand, the cumulative outcome of past repeated linguistic usage

events at a given hypothetical point in time can be reified as 'effects' or 'states' of prior entrenchment and conventionalization processes. It is in this sense that we can observe that a given word or expression is more or less entrenched in the mind of a given speaker and more or less conventionalized in a speech community. On the other hand, the processes of entrenchment and conventionalization actually never cease to have an effect, at least as long as a given word or construction remains manifest in active usage. Each individual usage event has the potential to affect the cognitive systems of those participating in it and the social systems they are part of.

Finally, the forces rendered in Figure 1 capture different types of factors that influence the activities involved in usage, whether or not and in which ways they are repeated, and thus eventually the ways in which they affect entrenchment and conventionalization. I can only hint at some of the factors here:

- cognitive forces: similarity, contiguity, salience, categorization, gestalt processing;
- pragmatic forces: settings, participants, event types, intentions, goals;
- emotive-affective forces: egocentrism, emotion, need for admiration, fun, empathy;
- social forces: social networks, identity, solidarity, peer-group pressure, prestige.

If this list of catchwords reads like a rough compendium of everything that is known or at least suspected to affect language use (and structure) in the fields of cognitive linguistic, pragmatics as well as interpersonal and variationist sociolinguistics, then this is exactly what it is meant to be, for all of these factors shape language. Three points are crucial about this list in the present context however: firstly, it is explicitly acknowledged that *all* these factors from very different fields of linguistic inquiry conspire in shaping language, very much along the lines suggested by complex adaptive systems. Secondly, it is emphasized that all these factors from different fields must not be banned from the core of linguistic theorizing and outsourced to disciplines of secondary relevance such as pragmatics or sociolinguistics, but play a crucial role in it, thus producing a unified model. And thirdly, the precise role of these factors in the emergence, structure, and change of languages is highlighted: they function as forces acting upon cognitive and social processes which in turn shape language.

3 Defining and differentiating entrenchment and conventionalization

In the EC-model, *entrenchment* is defined as the continuous routinization and re-organization of associations, depending on exposure to and frequency of identical or similar processing events, subject to the exigencies of the social environment (cf. Schmid 2014b). This understanding of entrenchment differs from the 'classic' understanding introduced by Langacker (1987: 59) and further developed by him in later publications (e.g. Langacker 2008: 16–18), which focusses on routinization and unit-formation processes. In the EC-Model, entrenchment encompasses three types of cognitive processes: association, routinization, and schematization.

Conventionalization is defined as the continuous mutual coordination and matching of communicative knowledge and practices, subject to the exigencies of the entrenchment processes taking place in individual minds. Four types of conventionalization processes are distinguished in the model: innovation, co-adaptation, diffusion, and normation.

As will have been noted, the definition of entrenchment makes reference to 'the exigencies of the social environment', while the definition of conventionalization includes mention of 'the exigencies of the entrenchment processes taking place in individual minds'. The arena where this mutual contingency and thus the interaction between entrenchment and conventionalization take place is usage and the activities involved in it. On the one hand, the precise way in which a given usage event affects the mind of a given hearer, e.g. whether or not it leaves a strong memory trace, depends on the social circumstances, e.g. on whether the hearer feels solidarity with or distance to the speaker. On the other hand, whether or not the usage event will ultimately have an effect on the conventions shared by a community of speakers depends on the ways in which the constructions licencing it are represented in the speakers' minds.

Card-carrying cognitive linguists are likely to object that conventionalization is essentially an epiphenomenon of entrenchment. Conventionality, they might argue, is nothing more than distributed entrenchment. The more people have an entrenched representation of a given linguistic structure, the higher its degree of conventionalization. For a number of reasons, I do not agree with this view. Firstly, entrenchment processes are different in kind from conventionalization processes: the former are psychological, while the latter are social in nature. Entrenchment takes place in minds, conventionalization in societies and speech communities. Secondly, entrenchment and conventionalization

processes operate over different types of entities: entrenchment operates over patterns of associations and the activities involved in usage, conventionalization operates over utterance types. The only thing that can become routinized in the mind of a speaker is the pattern of cognitive and neural activity taking place while processing a certain linguistic experience. These patterns may differ substantially from speaker to speaker on dimensions such as meaning, function, specificity, size, and schematicity of constructional representation. In contrast, the social processes involved in conventionalization operate over utterance types and are blind to the details of mental representations. If a speaker adopts and repeats a word or expression, he or she contributes to the diffusion of this linguistic element; however, the way in which it will be represented in the minds of different speakers is a different story. Thirdly, entrenchment and conventionalization processes are subject to different types of forces. The propensities to see similarities and categorize them, to chunk recurrent sequences, or to connect things that are contiguous are part of the way in which our mind works. These forces are psychological in nature. In contrast, whether or not an innovation spreads in a speech community depends, for example, on the structure and density of social networks, which are hardly reducible to the workings of individual minds. Sure, whether someone feels as a part of a social group and identifies with its values is ultimately also wired into their brains, but the processes that lead to the emergence of this feeling of identity and the force it can exert on conventionalization can only take place during the interaction in social communities.

4 Entrenchment and how it works

As pointed out in the previous section, the notion of entrenchment essentially refers to the routinization and schematization of associations. The outcome of entrenchment, and hence the structure and representation of language in the mind of a given speaker, depends on the types of associations that become entrenched and the way in which they are re-run in repetitions of similar processing events.

4.1 Association

Defined as a connection between two or more mental states or processes (Langacker 2008: 16), *association* is the cognitive raw material of meaning and under-

standing. Every single time people communicate by means of language, a wealth of patterns of associations becomes active in their minds and brains. In the EC-Model, four types of associations are distinguished and deemed sufficient to explain how linguistic structure comes about: *symbolic, pragmatic, syntagmatic,* and *paradigmatic associations*.

Symbolic associations link the forms and meanings of linguistic elements in the minds of language users. The direction of this association depends on the mode of language use: from meaning to form in production, from form to meaning in comprehension. Symbolic associations afford the symbolic power of language. Entrenched symbolic associations are the cognitive and neural substrate of what we traditionally call *linguistic signs*, i.e. morphemes, words, and constructions.

Pragmatic associations connect symbolic, syntagmatic, and paradigmatic associations and their component parts to mental states activated by perceptual input from the usage event and by subsequent spreading activation and inferential mechanisms. Following traditional conceptions of pragmatics, pragmatic associations are regarded as encompassing not only information about the physical (time, place, props, etc.) and social situation (participants and their social roles), but also the larger preceding linguistic cotext (what was said or written before the current utterance) and the pragmatic acts, moves, and intentions of discourse participants, including inferential mechanisms like implicatures or irony. Pragmatic processes thus play a crucial role in the processes of meaning-encoding in production and intention-reading in comprehension (see Tomasello 2003: 31 *et passim*).

Words and constructions that are ordered sequentially in a given utterance trigger *syntagmatic associations*. In language comprehension, syntagmatic associations are required for integrating meanings, in production they are a major force in the sequential arrangements of the component parts of the utterance. Syntagmatic associations link associations activated by the sequential processing of linguistic forms and meanings. Syntactic schemas, i.e. schematic constructions, do so as well. Crucially, due to their predictive power, routinized syntagmatic associations prime the activation of subsequent symbolic associations. Syntagmatic associations that are processed very frequently can become so strong that the potential of the symbolic associations of the components parts to be activated is weakened, while the whole sequence of words triggers one holistic symbolic association. This corresponds to the process of chunking. Idioms, collocations, collostructions, valency patterns, and other types of co-occurrence patterns that allow language users to predict what will come next rely on more or less deeply routinized syntagmatic associations.

Finally, *paradigmatic associations* link associations triggered by processing the forms or meanings of linguistic elements to potential alternative associations. Paradigmatic associations thus activate what could have been said or meant instead of what was said or meant. Paradigmatic associations strongly interact with pragmatic and especially syntagmatic associations; in fact, they depend on them, because paradigmatic alternatives only come into play within a given linguistic cotext and situational context. A speaker asked to produce a random word without any linguistic or situational context would not activate any strong paradigmatic associations, because all words are equally likely to appear. Paradigmatic associations are thus essentially probabilistic expectations that depend on and are created by syntagmatic and/or pragmatic associations.

4.2 Routinization and schematization

Routinization and schematization are cognitive and neural effects of the activation of repeated identical or at least similar patterns of associations. Routinization refers to the strengthening and increasing automatization of associations, schematization to a process that derives second-order associations from the commonalities of first-order associations (e.g. Langacker 2008: 17). Crucially, the actual outcome of these two processes depends on the nature and composition of the stimuli that trigger a given set of associations. Five idealized types of entrenchment effects can be distinguished (see Table 1 below for a summary and Schmid 2014b: 15 for more details).

Firstly, the repeated processing of *identical form-meaning pairings*, triggered, for example, by exact repetitions of the same word-forms or fixed expressions, contributes to the routinization of the symbolic association linking their forms and meanings. This will facilitate later activation of the same symbolic association and reduce the amount of time and effort required to retrieve the form and meaning of an element in production and comprehension. Following Schmid (2010) and Schmid and Küchenhoff (2013), this type of entrenchment can be conceptualized as a first approximation to *cotext-free entrenchment*. Cotext-free entrenchment is both affected by and contributes to the frequency of usage of a given linguistic element: the more often a word is used, the more entrenched it will become; the more entrenched it is, the more likely it is to be used. Convincing as this may sound, it is of course also highly simplistic, since linguistic items virtually never occur without any cotext and/or context and are therefore always in competition with paradigmatic and pragmatic competitors (see below).

Secondly, the repeated processing of *sequences of identical or similar linguistic elements* contributes to strengthening the syntagmatic associations between their forms and meanings. This can result in a chunking of the given sequence and the emergence of a symbolic association connecting the whole chunked form to one non-compositional meaning, accompanied by a reduction of the strength of the symbolic associations of its parts. The routinization of syntagmatic associations is referred to as *cotextual entrenchment*. Its results include collocations, emergent idioms, and other types of semi-fixed expressions. The degree of cotextual entrenchment of a linguistic element is a function of the relative frequency of this linguistic element in the target sequence vis-à-vis uses of the same element in other cotextual environments. Common statistical measures of lexical associations (collocations) and lexicogrammatical associations (collostructions) essentially gauge cotextual entrenchment (if one neglects the important fact that corpus frequencies are a proxy for operationalizing conventionalization rather than entrenchment).

Thirdly, the repeated processing of *identical or similar linguistic elements under similar contextual circumstances* contributes to strengthening pragmatic associations. This will facilitate the activation of the given linguistic elements or structure *in comparable situations*, which is a case of *contextual entrenchment*. Faced with a specific situation, contextually more entrenched elements are more likely to be activated than elements that are not pragmatically associated, even if the latter show a higher degree of cotext-free entrenchment. This means that a rare expression or construction, such as an idiom, which is strongly associated with a given situation can thus win out over a frequent general-purpose expression.

Fourthly, the repetition of *different elements in an identical or similar cotextual or contextual environment* contributes to strengthening the paradigmatic association between these elements. The cognitive process of analogy plays a key role in this routinization process, as it is responsible for the identification of the shared role elements play in a given cotext or context. Examples of routinized paradigmatic associations include inflectional paradigms, word-fields, and the classic semantic sense relations. Crucially, the combination of paradigmatic associations between elements competing for a given slot in a frame and syntagmatic or pragmatic associations creating this frame lies at the heart of the process of *schematization*. To take an example from language acquisition, once the child recognizes that *gimme teddy, gimme ball* and *gimme flower* share the syntagmatic environment of *gimme* and the pragmatic function of asking for an object, the paradigmatic association between *teddy, ball* and *flower* emerges and this in turn facilitates the emergence of the schema *gimme* X.

Finally, the *repeated processing of different elements instantiating the same schemas* results in the routinization of these schemas. This has three effects: the strengthening of symbolic associations between the forms and meanings of the schema; the emergence of syntactic categories such as word-classes on the paradigmatic dimensions; and an increase in the productive use of the schema, which accounts for the generative capacity to produce utterances never processed before. A survey of the five types of entrenchment effects is given in Table 1.

Tab. 1: Survey of entrenchment effects depending on input conditions and types of associations

repeated processing	**entrenchment effects**	**parameters of usage and structure affected**
of identical form-meaning pairings a....a.....a.....a....a....a ab...ab...ab...ab...ab	routinization of symbolic association: **cotext-free entrenchment**	– frequency of linguistic element – ease and speed of activation
of identical or highly similar sequences of linguistic elements a.b.c....a.b.c....a.b'c....	routinization of syntagmatic association: **cotextual entrenchment**	– relative frequency of a linguistic element in the target sequence vis-à-vis uses of the same element in other cotextual environments – emergence of collocations, semi-fixed idioms, and chunks
of identical or highly similar linguistic elements under similar contextual circumstances axb...axb ...ax'b... in situation S	routinization of pragmatic associations: **contextual entrenchment**	– relative frequency of a linguistic element under specific pragmatic conditions vis-à-vis uses of the same element in other contexts – ease and speed of activation in a given context
of different elements in an identical or highly similar cotextual or contextual environment (a)x(b) ...(a)y(b)... (a)z(b) ... (c)x(b) ... (c)y(b) ... (c)z(b) ... in situation S	routinization of paradigmatic associations: **emergent schematization**	– emergence of inflectional paradigms, paradigmatic relations, word fields – emergence of schemas (in combination with syntagmatic associations) – relative frequency of a linguistic element vis-à-vis other linguistic elements that occur in the same environment

repeated processing	entrenchment effects	parameters of usage and structure affected
of different elements instantiating the same schemas axb ...ayb... azb ...	routinization of schemas	– strengthening of symbolic associations between the forms and meanings of the schema – emergence of grammatical categories (e.g. word-classes) – productive schemas, 'generative' syntactic capacity

The five types of entrenchment effects are constantly at work and to some extent compete with each other, partly determined by the current state of the strength of associations in the network at a given point in time. As is well known (cf. e.g. Bybee 2010; Schmid 2014b), if input is highly uniform (high 'token frequency'), then specific form-meaning pairings, and in particular irregular ones, become strengthened and strings of elements become fixed and eventually chunked (often supported by the routinization of motor activities). If the input is variable, but shares identical or similar meanings or functions (high 'type frequency'), then schemas are strengthened, which increases the dynamic and productive potential of a speaker.

5 Conventionalization and how it works

As pointed out above and depicted in Figure 1, conventionalization subsumes the processes of innovation, co-adaptation, diffusion, and normation. These four processes represent stages of increasing conventionalization. As has been observed above, unlike entrenchment processes, conventionalization processes operate over utterances or, more precisely, utterances perceived as having some sort of commonality, i.e. utterance types. When speakers adopt and repeat a new word or expression that they have heard or read, only the surface string becomes manifest on the level of physically observable interaction which has the potential to affect conventionalization. We do not communicate by means of syntactic structures or constructions (on the level of the abstract system of language), but by means of utterances or constructs (on the level of actual speech). The nature and types of the associations activated in the minds of different speakers, i.e. their 'structure' and 'representation', are likely to differ considerably depending on the prior state of the associative networks of the speakers. For example, what is processed as a lexically fixed chunk in the mind of a

speaker who has used an expression very frequently (e.g. *tip of my thumb*)[1] will probably be processed by recourse to a related phrase (*tip of my tongue*) or a variable schema (NP *of* NP) by a hearer who finds himself confronted with this expression for the first time. None of this comes to the surface of actual discourse, however, as both participants operate with the same utterance. Of course, schemas and variable constructions eventually also diffuse and become conventionalized, but the schematization processes required for this take place in individual minds triggered by exposure to specific, i.e. lexically filled, utterances.

The two core processes involved in conventionalization are co-adaptation and diffusion. These will be in the focus of the following discussion.

5.1 Co-adaptation, diffusion and normation

In rough preliminary terms, the notion of *co-adaptation* (Ellis and Larsen-Freeman 2009: 9) – which is closely related to concepts such as *accommodation* (cf. Trudgill 1986: 1–38; Giles et al. 1991; Auer and Hinskens 2005) and *alignment* (e.g. Pickering and Garrod 2004) – refers to the phenomenon that speakers show a certain tendency to take over and repeat linguistic material produced by their interlocutors earlier on in a given talk exchange. *Diffusion*, at least in a wider sense, captures the cumulated effect of co-adaptation on the larger macro-scale of a speech community, but uses different mechanisms and is subject to other forces.

Co-adaptation works as follows: in a given communicative situation involving two participants P_1 and P_2, P_1 produces utterance U, which is perceived and processed by P_2. The processing event will leave a memory trace and have an effect comparable to priming, namely that associations activated while processing U and related areas of the associative network will become active. This increases the likelihood that P_2 takes up and repeats U or produces parts or a modified version of it. If, and only if, this act of production is performed, co-adaptation has taken place. While the mechanisms behind co-adaptation are thus largely psychological in nature, the process as such only brings about its social effects if a physically observable utterance act is performed and becomes mutually manifest. The silent or solitary rehearsal of an utterance will contrib-

1 Explained as "Just about to hit send on a text message when you think better of it and stop", in *Urban Dictionary*, cf. http://de.urbandictionary.com/define.php?term=tip+of+my+thumb&defid=8139711, accessed 30 April 2015.

ute to entrenchment in the mind of the speaker, but it will not have an effect on conventionalization.

The process of co-adaptation is explicitly conceptualized as being restricted to a single communicative event. The participants involved in an act of co-adaptation must be co-present in a given situation. If an innovation, for example, is to diffuse within the speech community, memory traces must survive in the mind of the co-adapting speaker beyond this communicative situation (Pickering and Garrod 2004: 217–218; Auer and Hinskens 2005: 336). Diffusion does not begin to take place until an innovation is repeated in a fresh communicative situation. Likewise, the conventionality of an existing utterance type is not increased, unless it is repeated in different communicative situations. This entails that the later oral or written repetition of what a person has *read* (rather than heard in conversation) is, by definition, already a case of diffusion rather than simple co-adaptation, because the reactive second utterance is embedded in a new communicative situation. Diffusion is thus a context-related process; it does not only pertain to the sheer number of speakers who use a certain utterance type, but also to the types of situations, social contexts, genres, and registers in which certain groups of users use it.

As emphasized above, conventionalization, and thus also its key subprocess, diffusion, is blind to the underlying structural properties of language. The tacit conventions that the speakers of a language or the members of a speech community agree on are neither couched in terms of subjects and predicates nor, for that matter, in the forms of principles and parameters, or constructions, or valency patterns. Conventions pertain to solving communicative tasks and to ways of saying things (Lewis 1969), but in a framework like the present one, which separates individual knowledge from collective agreement, they must not simply be regarded as shared pieces of knowledge. Speech communities can function perfectly well without an explicit, rather than tacit agreement on the structural properties of their shared code. It is only when metalinguistic awareness and *normation* come into play that structural descriptions in whatever format begin to have an effect on conventionalization. The prescriptive effects of explicit normation, i.e. *codification,* on conventionalization must certainly not be underestimated, but it is the tacit processes of co-adaptation and diffusion that play the key role in conventionalization. The *usualization* resulting from diffusion – i.e. the implicit agreement on how to solve communicative tasks – of course also exerts a strong normative force, but it differs from the prescriptive effects of dictionaries, reference grammars and style guides.

5.2 Innovation

While every single repetition of an utterance type contributes to keeping up or increasing its degree of conventionalization, the effects of co-adaptation, diffusion, and (implicit and explicit) normation are of course most conspicuous in the case of innovations. These are novel utterance tokens that do not instantiate a conventional utterance type, but change such a type (as in the case of articulatory innovations) or cannot even be traced back to an existing type (as in the case of *ex nihilo* word creations). Successful innovations, i.e. those that catch on and diffuse, thus constitute the starting-point of the conventionalization of new utterance types.

Innovation is yet another *prima facie* candidate for an essentially cognitive process: whether deliberately or inadvertently, it is always true of innovations that a speaker produces an utterance that neither he or she nor anybody else has ever processed before. It seems that by necessity, this must take place in speakers' minds. However, this misses the important point that innovations are only innovative before the backdrop of what is regarded as conventional in a speech community, not before the backdrop of the mind of an individual speaker. If someone comes up with a witty and original new word and finds out that this word already exists, then they would no longer think of themselves as having produced an innovation. The very idea of innovation itself presupposes conventionality. And since conventionality is a social agreement, innovation must first and foremost be regarded as a social rather than a cognitive process.

6 How entrenchment and conventionalization interact

According to the EC-Model, what linguists typically consider as *language* or *linguistic structure* comes about by the way in which entrenchment processes and conventionalization processes interact on the basis of usage and the activities involved in it. But what is the nature of this interaction between entrenchment and conventionalization?

Starting from the entrenchment side, repeated usage events bring about the routinization and schematization of the patterns of associations activated in the minds of the speakers and hearers present. This produces routinized associations connecting the forms and meanings of words, fixed expression, and schemas. Entrenched patterns of associations enable users to produce utterances

which have the potential to evoke the intended responses in the minds of hearers, if, and only if, the usage profiles (communicative functions, referring potential) of these utterances in actual usage events are conventionalized. Nevertheless, the patterns and types of associations activated while processing one and the same utterance are not only bound to differ from speaker to speaker, as observed above, but also within speakers on the temporal dimension. What was processed as a variable schema before can gradually become chunked into a fixed expression by the routinization of syntagmatic associations. This internal micro-process can serve as the nucleus of a collective process of language change, if, and again only if, its effects in usage diffuse, e.g. in the form of phonological fusion processes, reanalysed utterance types, or extended or shifted meanings. The same utterance can even be processed by the same speaker in the form of different patterns of associations, depending on cotext and context. This means that input and output conditions of usage on entrenchment are extremely flexible.

All this entails that the interaction between entrenchment and conventionalization depends on the specific characteristics of the communicative situations in which these usage events take place. These include the whole range of parameters that have been part and parcel of pragmatic and sociolinguistic research: participants and their social characteristics and relations, settings, media (written, spoken), modes (scripted speech, casual talk), tones (serious, ironic, facetious), genres, and registers, communicative acts and goals, as well as social networks, values, and stereotypes that reach the surface of actual language use. But how, exactly, are the sociopragmatic features that are gleaned from situations brought to bear on entrenchment processes? This is where pragmatic associations come to the fore: The equally consequential and frequently overlooked link between what what takes place in societies, on the one hand, and in individual minds, on the other, is constituted by the pragmatic associations that connect whatever is perceived during the usage event to the patterns of associations activated while processing the linguistic input and output.

Not surprisingly, in view of the obsession with frequency in usage-based models of language, frequency of usage plays a key role in this interaction between entrenchment and conventionalization. Repetition contributes to routinization and schematization in the various ways described in Section 4, and to conventionalization by facilitating diffusion across speaker groups, genres, and registers. This is of course not a particularly original insight. But the separation of entrenchment and conventionalization allows for a more precise description of the cause-and-effect feedback-loop fashion in which frequency of usage acts

upon linguistic structure: the usage frequency of a conventional utterance type supports the routinization of patterns of associations, which increases the likelihood of their activation and in turn the likelihood of repetition, which contributes to increasing conventionality. Since patterns of associations entail competition between the different types of associations, frequency in this feedback loop is never frequency of use as such, especially when it comes to using it as a proxy for measuring entrenchment, but frequency of use in social situations serving communicative and social functions. For frequency counts of individual linguistic items to be meaningful in terms of conventionality and entrenchment, they have to be measured and interpreted relative to frequencies of syntagmatic companions (cotextual entrenchment), to frequencies of paradigmatic competitors, and to frequencies of pragmatic competitors (contextual entrenchment) (cf. Gries 2012; Schmid and Küchenhoff 2013, Küchenhoff and Schmid 2015).

7 Conclusion

In this short contribution I was unable to offer more than just a glimpse of the EC-Model. Clearly, the actual details of how language works have not even been touched upon. For example, hardly anything has been said about the way in which the forces contribute to shaping language and on the ways in which linguistic structure comes about; the emergence of grammatical categories such as word-classes and clause constituents was only mentioned in passing, and so were the processes that lead to competition between associations representing schematic grammatical and fixed lexical knowledge such as chunking or fusion. Only a very small number of examples were supplied to provide illustrations, and no hints as to how the model could be tested were given, even though some empirical work applying the model is available (Kerremans 2015; Schmid and Mantlik 2015; Günther, forthcoming). Overall, the model as such is certainly not designed as a model in the narrow sense, i.e. a set of falsifiable hypotheses, but as a theoretical framework that is able to spawn a range of predictions that lend themselves to empirical testing.

In accordance with the demands defined in the introduction, the EC-Model is designed as a cognitively and neurologically plausible, functional, interactional, sociocognitive, variational, dynamic, emergentist, and usage-based model of linguistic usage, structure, and knowledge:

– The central claim that both usage and structure ultimately boil down to the repetition of similar patterns of different types of associations seems cognitively and neurologically realistic and accounts for the dynamic and emer-

gent properties of languages. Since patterns of associations are re-run afresh every time a linguistic utterance type is processed, and since these association patterns differ ever so slightly at each of these occasions depending on cotext and context, change is bound to take place.

– The apparent systematicity and stability of individual and shared linguistic knowledge is explained by the massive amount of repetition, which strengthens both entrenchment and conventionalization, albeit in different ways. Some 'structures', including basic clause patterns, or argument-structure constructions, and phrase-internal structures, are instantiated in usage so frequently that they are less subject to change than rarely used constructions and expression such as idioms or rare conjunctions such as *unless* or *lest*. Note, however, that different types of frequencies can support the stability of structures, among them also relative frequency in a given linguistic cotext and contextual frequency under certain pragmatic conditions, which explains that even very rare expressions survive in unchanged form and with stable meanings if they are supported by strong syntagmatic and pragmatic associations.
– The functional aspects of the model reside in its focus on meaning and communicative purposes, which is basically implemented by all four different types of associations, but of particular prominence in the pragmatic associations that link entrenchment and conventionalization processes. As just mentioned, the flexibility caused by variable cotext and contexts also relies on pragmatic associations.
– The explicit separation of individual cognitive and collective social processes supplies the model with the interactional and sociocognitive components required for explaining language variation, which in turn can of course also be a source of dynamic processes.

As pointed out above, a potential merit of the model could be that it introduces an approach to the mechanisms behind language use and structure that can be considered genuinely *unified*: it does not give those aspects of language that can be generalized, e.g. its core structural properties, undue prominence over less easily generalizable, but equally important aspects such as its communicative and social functions. In addition, the aim of the model to do justice to the systematicity and stability, on the one hand, and the flexibility and variability of languages, on the other, may have a chance to be appreciated by the community. Finally, the way in which the model links what goes on in the minds of individual speakers to what takes place in speech communities – by means of taking seriously the different types of activities involved in usage and by

identifying pragmatic associations as the locus of this link – may eventually contribute to giving more detail and substance to the buzzword of *usage-based models*.

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