Marianne Hundt, **Sandra Mollin** and **Simone E. Pfenninger** (eds.). *The changing English language: Psycholinguistic perspectives* (Studies in English Language). Cambridge: Cambridge University Press, 2017. 410 pp. ISBN 978-1-107-08686-9. Reviewed by **Florian Dolberg**, TU Dortmund.

This collected volume is not only commendably coherent in the objects of study covered, but also indubitably innovative in its overall approach. It brings together historical linguistics (investigating language change by means of corpora) and psycholinguistics (investigating language use by means of experiments); two linguistic disciplines that hitherto had by and large ignored one another. Next to an introduction by the volume's editors, the book consists of seven parts, each devoted to one major psycholinguistic factor and its (putative) role in language change: frequency, salience, chunking, priming, analogy, ambiguity, and acquisition. Each of the seven parts in turn comprises two papers, approaching the factor at hand from a psycholinguistic, respectively a historical corpus-linguistic perspective.

In their introduction, **Hundt**, **Mollin** and **Pfenninger** note "a serious gap in the understanding of processes of linguistic change" (p. 1): language change boils down to changes in language use, which in turn "is shaped by language-internal, social, and psycholinguistic factors" (p. 1), with the latter thus far having been given rather short shrift in the systematic investigation of language change. The volume's foremost aim is thus to provide historical linguistics with "direct expert input from scholars familiar with fundamental cognitive processes that [may] shape pathways of change" (p. 1). A second is "to explore the potential (and limitations) of an interdisciplinary approach to language change" (p. 3). Interdisciplinarity certainly is desirable, not least because findings from several independent lines of evidence are, ceteris paribus, more reliable than findings from one line of evidence alone. Obviously, mere juxtaposition of a psycholinguistic and a historical linguistic paper does not automatically effect a 'psycho-historical linguistic' approach; juxtaposition of thesis and antithesis is necessary, though not sufficient to form a synthesis. Still, an important first step is made,

and many of the contributions do achieve, or at least move towards such synthe-ses.

Part I pertains to frequency. **Baayen**, **Tomaschek**, **Gahl**, and **Ramscar** pro-vide its first paper, "The Ecclesiastes principle in language change". Drawing on various previous research, Baayen et al. note that over time, societies and indi-viduals alike 'suffer' a dramatic increase of knowledge, e.g. of different names, words, collocations, products, etc. This accumulation of knowledge comes at a price – hence the biblical reference to Ecclesiastes 1:18, stipulating that "he that increaseth knowledge increaseth sorrow" (p. 32). Simply put: the larger the library, the longer it takes to locate a particular book. Baayen et al.'s summaris-ing contribution has much merit: one and most importantly, it showcases excel-lent syntheses of psycho- and historical linguistics, for instance using historical corpora to model life-long learning of "fictive speakers representing (equally fictive) generations" (p. 46). Two, accumulation of knowledge is one of the broad and basic parallels between the development of individuals and societies, analogous to the parallels between phylogeny and ontogeny, the development of species and individuals. The relationship is not one of identity but of similarity – of relational analogy (see below), to be exact: A mammalian embryo *resembles* a reptile at some point, but *is* not one, and likewise the results and ramifications of accumulating knowledge in individuals and societies diverge. Three, one of the differences is that speakers grow slower with age in various ways, while societies appear not to (the use of pronouns increases for both, however). At the same time, older speakers are more accurate in many respects, inter alia articula-tion, lexical decisions, or collocations and their frequencies, and they are "less effective at learning nonsense" (p. 46). 'Nonsense' here means word pairs that do not or very rarely co-occur, such as *obey – inch*. This point is of course valid in general, but it might be debatable whether anything not encountered before necessarily is nonsense just because it is new. Four, the psychological literature generally views the progressively longer reaction times in older speakers as sig-nifying aging as such to be "an inevitable process of cognitive decline" (p. 37), neither heeding older speakers' higher accuracy nor that their longer reaction times are due to the Ecclesiastes principle – growing slower with age results from searching a larger library, not from cognitive decline. The psychological literature hence reflects "a general attitude to the elderly that has been dubbed […] ageism" (p. 37), i.e. systematic discrimination against seniors. Baayen et al.'s astute observation further supports the more general and profound conclu-sion that all science tends to reflect and reproduce the conditions under which it operates, so that science cannot be independent of these conditions or 'value-free'.

In the second paper **Hilpert** provides a useful overview of five types of frequency and their cognitive correlates as well as how these frequency measures "can be usefully applied to the cognitive study of language" (p. 50). The first three types – text frequency (= token frequency), relative frequency (= tokens of one unit vs. that of another) and type frequency – are well-known. The fourth type of frequency is less well-known and "insufficiently addressed" (p. 63) in (historical) corpus linguistics: dispersion and burstiness measure how (un)evenly the occurrences of a unit are spread across the corpus, from single occurrences at regular intervals to randomly-sized and -spaced clumps. The fifth type is less established still. Behavioural profile frequency measures the frequency of one variant against that of all others. For example, instantiations of a given syntactic construction may vary in terms of the features its parts display, features such as definiteness, animacy, pronominality, length, etc. The frequency of one particular configuration of these features compared to the frequency of all other configurations is the behavioural profile frequency, reflecting that "speakers' choices between such variants are guided by the morphosyntactic and pragmatic context in which the utterance is made" (p. 64). Applied to diachronic corpora, behavioural profile frequency can reveal changes in the number of options speakers have for realising a given construction, changes in their relative preferences for these options given a certain configuration of features, and changes in the relative influence a certain feature (say, animacy of the recipient) has for choosing between variants.

Part II deals with salience, and in its first paper titled "Salience in language usage, learning and change", **Ellis** offers a concise psychological definition. Salient is what stands out, in one or more of three ways. Firstly, there is the physical intensity of the stimulus, e.g. louder, brighter, heavier than the rest. This psychophysical salience pertains to (language) form. Secondly, there is the importance and/or meaningfulness of what is associated with the stimulus semantically, pragmatically, culturally, emotionally, affectively, and/or cognitively. This psychological salience pertains to (language) meaning in the widest sense. Thirdly, there is surprise. Unexpected stimuli are also salient. 'Salience of surprise' pertains to a (linguistic) sign occurring in a context not consistent with prior experience. After an insightful summary of how high and low salience of the three types influence language processing, acquisition and change, Ellis assesses the potential and difficulties of psycholinguistics meeting historical linguistics, concluding that "[s]omething useful has to come from this" (p. 91).

Traugott's contribution centres on grammaticalisation, asking "how do grammatical items come to have low salience?" (p. 93), and concluding that "low salience is an important enabling factor in morphosyntactic change" (p.

108). Traugott provides a summary of various (and not always fully compatible) characterisations of salience in synchronic linguistics, which is partly overlapping with, partly orthogonal to, and partly conflicting with Ellis' psychological take. Although the two papers partly correspond in their conclusions – low salience facilitates change in grammatical items – they demonstrate that the two disciplines they represent have not yet arrived at a consistent description of salience equally valid for both. A step towards a synthesis could be to take Ellis' account and to refine it by subdividing psychological salience into an individual (i.e. emotional/affective), a social (pragmatic, cultural) and a general semantic/ cognitive (e.g. concrete, imaginable, animate) sub-part.

Part III is about chunking. According to **Ellis**' second contribution, chunks are sequences of stimuli (e.g. strings of sounds, letters, morphemes, words, or phrases) that, by virtue of speakers' frequent, recent, and contextualised prior experience of these, are probabilistically recognised and processed as units, so that their formal and semantic compositionality may reduce and even vanish (cf. pp. 113–117). Chunking is rational (cf. pp. 120–122), and probably because of that, everything comes in chunks in psycholinguistic accounts, on all levels (cf. pp. 122–130). After brief excursions into connectionism, statistical learning and Construction Grammar, Ellis summarises Zipf's remarkable pioneering work and its resultant "serious linguistic universals" (p. 139). Zipf's laws and principles are not only astonishing because they capture language use and change in simple formulae that are both psychologically plausible as well as computationally sound, valid for the individual as well as for the community, for any language, for any level of description, for any point and period of time, for language use, acquisition, and change. Moreover, Zipf achieved this hugely elegant synthesis of corpus and psycholinguistics more than a decade before these linguistic disciplines themselves and before the computers that both heavily rely on became widely available. Finally, the laws and principles thus unearthed have been impervious to falsification for almost three quarters of a century and counting.

Bybee and **Moder** complement – or possibly contrast – Ellis' general account of chunking with a case study on *beg the question*'s diachronic development, focusing on "the role of the local and broader social context" (p. 148). Rational analysis and Zipfian universals brought to the table in the previous paper are dismissed as "teetering dangerously on the verge of teleology" (p. 152), because these are seen to "involve goal-oriented acts on the part of speakers or […] the language as a whole" (p. 152), meaning that speakers – or languages – behave the way they do because they want to change language. This assessment certainly is debatable, given that the psycholinguistic consensus

seems to be exactly that what this paper offers in correction thereof, i.e. that "speakers are simply trying to communicate, not to create new grammatical categories" (p. 152). Drawing on in a vast database spanning more than five centuries and comprising about 1,480 tokens, Bybee and Moder trace *beg the question* from its origins as a technical term, labelling a particular kind of logical fallacy (i.e. to ostensibly substantiate a claim by merely rewording it, e.g. *Everybody likes Henry the Hamster because Henry the Hamster is most popular.*), to its now-dominant use (broadly equivalent to 'compel to ask'). Providing many individual examples at the expense of exhaustive quantitative analyses, Bybee and Moder show the expression to become essentially fixed by the late 17th century, no longer featuring intervening material, possibly growing less compositional thereby. A century later, the expression gains currency outside learned debates, concomitantly growing less specific and specialised in meaning (often signifying 'faulty reasoning' in general), and hence less compositional still. From the mid-20th century onwards, the new meaning ('compel to ask') is more abundant than the original (a particular logical fallacy) and the intermediate ('faulty reasoning' in general) one, demonstrating reanalysis to restore compositionality.

Priming is the topic of Part IV. In its first paper, psycholinguists **Pickering** and **Garrod** define priming as "a largely non-conscious or automatic tendency to repeat what one has comprehended or produced" (p. 173), both in terms of contents and form. Priming is a short-term phenomenon, effective over seconds and minutes – in certain cases up to a week, while language change is a long-term development, operating over centuries and decades – in certain cases over years, so that at first glance, the former would appear unlikely to have much bearing on the latter – "it seems a long shot indeed", as Mair (p. 191) puts it. However, Pickering and Garrod make a strong case for priming being a mainspring for alignment, the tendency of interlocutors to converge in their linguistic expression and hence representation. Alignment (known as accommodation in sociolinguistics) persists longer than priming, and could lead to language change by itself: "I immediately copy your form and then remember the form I have just used" (p. 179). More importantly, alignment (and priming) drive routinisation, i.e. "people's tendency to establish novel expressions or novel interpretations of established expressions" (p. 175). Routines last longer still than alignment, and if these routines persist and spread, they lead to language change. Pickering and Garrod state that much is still speculative in this line of argument, as psycholinguistic studies focus on rather short timescales, also effects found in laboratory experimentation may not easily extend or translate to language use 'in situ' and over generations. Still, a proof of principle obtains.

Further, priming, alignment, and routinisation provide a possible pathway for language change independent of generational change, yielding a psycholinguistically plausible mechanism how adult L1 and L2 speakers may contribute to language change.

Mair, "a corpus linguist hardened by long experience" (p. 196), approaches the issue from the opposite end, so to speak. He takes Pickering and Garrod's careful deliberations for what they are worth and equally conscientiously develops them further, for instance by relating the relatively ephemeral phenomena of priming, alignment, and routinisation to the more permanent process of entrenchment, suggesting to use priming experiments to cross-validate findings of recent/ongoing change obtained from corpus analyses, or proposing a way how to implement and operationalise priming and alignment as factors in corpus work. Mair's main focus in all this is not to point out actual or perceived shortcomings of psycholinguistic perspectives in order to show that corpus linguistics is somehow 'better', but rather to highlight weaknesses inherent in (historical) corpus linguistics, in order to assess whether and how psycholinguistic(-inspired) approaches could ameliorate these.

The subject of Part V is analogy. **Behrens**, reporting on analogy in language processing and acquisition, characterises analogy as a domain-general mechanism for categorisation and category-formation, based on the entities involved being perceptually similar (e.g. both are blue) or relationally similar (e.g. both occupy the same relative position in their respective sets). Entities may be perceptually and relationally similar in any number of respects, making "analogy a very powerful mechanism" (p. 215), but a problematic one too, since "it is hard to predict which analogies will actually be drawn" (p. 215). Consequently, historical linguistics, endeavouring to figure out how language in the community changed in the past, uses analogy in well-delineated technical terms (but compare De Smet and Fischer's assessment of analogy in language variation and change as "elusive" and "unruly" (pp. 240–241)). By contrast, language acquisition, trying to predict how language develops in the individual from infant to fully competent adult speaker, often invokes analogy ad-hoc to explain a certain phenomenon. Also, the processes influenced by analogy differ: inter alia, analogy apparently drives the regular *-ed* past tense to extend to more and more originally irregular verbs, thus resulting in the linguistic system of the community to change from one fully operational configuration to another (and then another, etc.). By contrast, analogy in language acquisition can be seen at work in e.g. overgeneralisation errors (such as *goed* for *went*, or *foots* for *feet*), showing the individual's linguistic system to change, approaching that of the community, starting essentially from scratch. These different processes nonetheless exhibit

similarities: "children are better with regular form-function mappings, and in historical developments we often observe regularization processes" (p. 235). Thus, a preference for regularity in acquisition and change probably results from analogy being at work in both, rendering language acquisition and change themselves relationally analogous. Finally, Behrens argues that analogy is not standalone, but in complex interaction with frequency and salience, and that "proposed models that see both the individual and the collective linguistic systems as dynamic or complex adaptive systems" (p. 238) need experimental as well as observational evidence from both language change and acquisition as their empirical basis.

Regarding "The role of analogy in language change", **De Smet** and **Fischer** reason that "if analogy is to be properly understood, its operation must be seen against the background of complex constructional networks capturing the myriad relations between individual constructions" (p. 242). To this end, they extend the notion of 'supporting constructions' from language acquisition to language change, diligently enumerating several caveats while doing so. This notion aims to explain why some constructions are acquired earlier and faster than others, by pointing to the degree in which subparts of these feature in constructions already mastered: the more subparts are reflected in known constructions, and the more known constructions reflect these subparts, the earlier and faster a new construction is acquired. A similar mechanism appears to operate in language change: "an analogical extension is the more likely, the more its outcome resembles one or more already existent patterns" (p. 243), again with the different aspects of resemblance being manifold and cumulative. De Smet and Fischer then convincingly apply this reasoning to the grammaticalisation of semi-modal *have to* and that of the degree modifier *as good as*.

Part VI is devoted to ambiguity. **Felser** summarises a selection of psycholinguistic research on morphosyntactic ambiguity and its resolution before exploring how individual addressees' (mis-)analysis of ambiguous or underspecified structures may lead to re- (or neo-) analysis of these structures in the community's language system and thus grammatical change. This exploration rests on serial models of language processing as well as a somewhat generative view of language. It also explicitly restricts itself to syntax: semantic and pragmatic factors are acknowledged as important, but do not feature.

"Ambiguity and vagueness in historical change" is in several respects complementing Felser's contribution. **Denison** focuses a bit more on lexical than on structural/syntactic ambiguity, and contrasts both types with vagueness: ambiguity involves two or more distinct (and normally mutually exclusive) readings, with typically only one of them having been intended by the speaker/writer, the

other(s) being 'wrong'. Ambiguity is inherent in words or sentences; it is independent of context, hence a semantic phenomenon. Vagueness however "is where a linguistic analysis is in some relevant respect underdetermined, […] but no further information is needed for interpretation" (p. 293). Vagueness is thus a pragmatic phenomenon; addressees may (or may not) draw on contextual information to infer a more concrete interpretation of a general expression, probably without being aware of doing so. Drawing on qualitative dictionary and corpus data, Denison showcases a number of semantic, structural, and word-class changes, demonstrating that for language change "ambiguity […] is not a prerequisite, whereas vagueness often is" (p. 293). In conclusion, he notes "how often it is necessary to consider related changes in different domains – syntax, semantics, pragmatics, chunking, etc." (p. 317), and that "vagueness is typically an enabler of change […], though other factors determine whether and how the change proceeds. Ambiguity seems to be more peripheral and is often the *result* of the change" (p. 318, emphasis original).

Part VII discusses acquisition and transmission. **Lieven** reviews research on several types of errors occurring during language acquisition, thereby finding UG-models involving un- or mis-set parameters offered in explanation of these errors to perform less well than usage-based models invoking differential entrenchment of string frequencies: the errors children make when acquiring language are (partly) systematic, though probabilistic rather than deterministic, and spring from domain-general, frequency-sensitive cognitive mechanisms (e.g. abstraction, analogy, blending, schematisation) applied in a manner not (fully) consistent with what is warranted by adult grammar. Moreover, these acquisition errors only sporadically persist into later childhood, and are gone in adolescence, so that young children and their acquisition errors are unlikely to drive language change. Instead, "[i]t is more likely that adults, adolescents, and second language learners are the source: a conclusion that the majority of authors in this field, whatever their theoretical approach, appear to agree with" (p. 331).

López-Couso complements Lieven's paper, likewise concluding to "question the validity of a child-centred theory of language change" (p. 332). After succinctly reappraising parallels between ontogeny and phylogeny, between language acquisition and change, she notes that while there is copious and diverse evidence for parallels between language acquisition and change, these parallels demonstrate analogy and resemblance between the two, not identity. Further, these parallels between acquisition and change could be "genuine" (p. 338) – in the sense of sharing the same underlying psychological and cognitive mechanisms – or these parallels could be "illusory" (p. 338) – meaning that the main-

springs driving acquisition differ much from those driving change, and only incidentally produce apparently similar results. Both interpretations are equally "difficult to sustain empirically" (p. 338), given "[t]he lack of direct evidence to actual data from earlier stages of the language, which can only be approached by corpus material" (p. 338). Upon reviewing literature on the acquisition and grammaticalisation of the *going to* future, López-Couso assesses the mechanisms behind the two to be not identical: "[t]hus, whereas pragmatic inferencing plays a decisive role in diachronic grammaticalization, cognitive complexity seems to be a more relevant factor in ontogenetic grammaticalization (pp. 345–346). Despite having assessed some of the parallels between ontogeny and diachrony as 'illusory' because their underlying mechanisms are merely similar and not completely identical, López-Couso underlines in her conclusion that "ontogeny sometimes 'retraces' historical change and that certain historical developments can be more fully understood by observing how acquisition happens, and vice versa" (p. 346).

In sum, then, the present volume is clearly successful in providing historical corpus linguists with psycholinguists' expertise on psychological/cognitive factors probably or possibly influencing language change. Conversely, it allows psycholinguists to draw on insights from studies into language change likely to be relevant and helpful for their research. In fact, this book will prove highly instructive for any researchers who would place themselves somewhere in or around the enterprise of usage-based, empirical linguistics. It is likely to be at least thought provoking for those who would not. At any rate, this collection of paired papers provides a sound sketch of the relative success in achieving syntheses of the two disciplines involved: in matters of frequency and also analogy, quite a lot of common ground has been mapped out, and some interdisciplinary research resting on this has borne fruit already, opening up copious avenues for further research. For chunking, priming, and acquisition, some common ground is established, but at the same time more interdisciplinary exchange is needed to arrive at a set of terms and concepts that is equally valid and useful for both disciplines in order to then zero in on the nature, extent, and significance of the parallels between language change and use in these areas. The contributions on salience and ambiguity finally suggest that neither notion is (yet) quite congruent in the two disciplines, which would call for redoubling the efforts to establish a common ground as a basis for future interdisciplinary research. Either way, whether little or lots of common ground has been established so far, whether or not previous or current research has already achieved some synthesis of the two disciplines, it is obvious that "[s]omething useful has […] come from this" (p. 91), and that more will certainly follow if we press on. So, lets!