Elly van Gelderen, *Third Factors in Language Variation and Change*. Cambridge: Cambridge University Press, 2022. Pp. xvi + 222. ISBN 9781108831161.

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In *Three Factors in Language Design*, Chomsky (2005) broke with much previous theorizing by eschewing the traditional dichotomy of genes versus environment. These, he suggested, did not exhaust the range of influences determining the growth of language in the individual: we should also acknowledge a third set of principles, universal but not specific to the human language faculty or even to human cognition. The following years have seen a flurry of work aiming to clarify and establish the nature and effects of this 'third factor'. Until now, however, there has been no systematic attempt to do so in the domain of language change. This is exactly what Elly van Gelderen's book *Third Factors in Language Variation and Change* aims to do.

Two putative third-factor principles take centre stage in this book. The first is the labelling algorithm that determines how a phrase receives its label, which has been central to Chomsky's work over the last decade (e.g. 2013, 2015). van Gelderen suggests in this book that the pressure to receive an appropriate label can also act as a causal factor in language change. The second principle, following Chomsky *et al*.

(2019), is determinacy: informally stated, there can be only one instance of a given syntactic object in a given workspace/phase. In the book, van Gelderen explores the consequences of these two principles, alone or combined, in accounting for a variety of syntactic changes. The book's empirical domain ranges widely, but most attention is paid to the histories of the Germanic and Romance languages, and English in particular.

After a scene-setting introduction ('The shift towards a minimal UG', pp. 1–28), chapter 2 is devoted to the diachronic effects of the labelling requirement (pp. 29–61). Here van Gelderen revisits her own earlier work on the subject and object cycles (van Gelderen 2011), arguing that spec-to-head reanalyses (e.g. of a subject pronoun) are advantageous from a labelling perspective because they resolve a situation in which previously two phrasal syntactic objects were merged, yielding a potential labelling clash which could otherwise only be resolved by feature sharing. A series of other grammaticalization phenomena, involving demonstratives, Q-particles and negation, are argued to be amenable to a similar account.

The slim chapter 3 deals with determinacy and its effects in variation (pp. 62–86), as a prequel to chapter 4, which looks at determinacy and change (pp. 87–122). These two chapters focus on clause structure, in particularly the relationship between CP (complementizer phrase) and TP (tense phrase). Here van Gelderen argues that a natural point of variation is the possibility of either CP or TP being absent in a given language or structure, thus avoiding problems of determinacy: the absence of CP will yield e.g. present-day English subjectless relative clauses (*It's Simon did it*), while the absence of TP correctly predicts the absence of a range of subject-related phenomena in Old English. Chapter 4 argues that the same principle of determinacy is also responsible for

the reanalysis of topics as subjects, for the copula cycle, and for verbs becoming reanalysed as auxiliaries.

Chapter 5 turns to the interaction of the two third-factor principles, labelling and determinacy (pp. 123–58). Its empirical focus is the link between the loss of verb-second (in the CP-domain) and the rise of expletives in the history of English. Subject-initial verb-second constructions are indeterminate if the subject moves from spec,vP to spec,TP, since the workspace that is the complement of C contains two copies of the subject. The indeterminacy is resolved if V2 languages do not have TP; van Gelderen argues that this is correct for German, Old English and (optionally) Dutch. No TP means no TP expletives, and the introduction of TP and TP expletives is argued to correlate with the loss of V-to-C movement during the Middle English period. A challenge for this proposal not noted by van Gelderen comes from Modern Icelandic, a V2 language that also has TP expletives (see e.g. Booth 2018); if Icelandic V2 involves V-to-C (as argued persuasively by Vikner 1995), then this language is potentially a counterexample to the theory that CP-V2 and TP expletives are incompatible.

Chapter 6, dealing with adjuncts diachronically (pp. 159–97), is something of an outlier in the context of the book. In Minimalist syntax, and in this book, adjuncts are taken to involve a separate operation, pair-merge as opposed to set-merge. van Gelderen argues that a third-factor economy principle prefers set-merge over pair-merge where possible, and that this principle is responsible for adjuncts becoming more tightly integrated into surrounding structure over time (i.e. no longer adjoined). Chapter 7 is a brief summary of the main proposals (pp. 198–9).

Though diachronic generative syntax is by now a flourishing field (see Roberts 2021), those working in it do not always draw upon the latest ideas from their

synchronically-oriented colleagues; this book is a welcome exception. It is a book to be read for the richness of the ideas it contains rather than of the empirical material it presents. The volume does sometimes present its own evidence, as for instance in chapter 5, where some sentences from the start of Chaucer's *Astrolabe* are analysed (p. 134). Because most of these are SV, van Gelderen draws the conclusion that this text shows a decline in V2 – but all of these SV sentences are compatible with V2 and V-to-C movement, and elsewhere in the literature it is shown that the *Astrolabe* is very robustly verb-second (Eitler 2006: 90). Occasionally the book misses making reference to important recent literature, e.g. Light (2015) on a potential TP-expletive in Old English. Overall, though, the book is a breath of fresh air for anyone interested in how insights from contemporary syntactic theorizing can be brought to bear on diachronic questions.

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