1 Compositionality

Natural languages are held in a tension between their use as vehicles of communication, which implies consistency between speaker and hearer, and the fact that such use inevitably begets change. A language system is a finite resource of items – affixes, words, categories, constructions, idioms, set phrases (the exact inventory depends on one’s theoretical stance) – out of which speakers can produce, and hearers can interpret, a potential infinity of messages. For this to be possible, there has to be some way in a given sentence or text for the whole to be understood on the basis of its parts. This is the principle of compositionality, which in its simplest form states: “The meaning of a complex expression is a function of the meanings of its constituents and the way they are combined” (Szabó 2012: 64). Countervailing this is the fact that with recurrent use some combinations may get routinised or conventionalised and come to have a value different from what we might expect on the basis of our knowledge of their parts. This process can be seen at work in different ways in the genesis of new grammatical constructions, or grammaticalisation, and in the development of various types of fixed expression, or what Wray (2002) has called ‘formulaic language’.

In its modern form the principle of compositionality is standardly attributed to the German mathematician and philosopher Gottlob Frege (1848–1925), and thus is roughly contemporary with the great nineteenth-century explosion of historical linguistics. It has guided the majority of work in the formal analysis of natural language syntax and semantics ever since (see the contributions to Werning et al. 2012). Within this research tradition the constituents in question are typically syntactic categories and/or features, while there has been less focus on the way those elements are realised through a language’s morphology and phonology. If we are to cover both dimensions of form and content, as in the historical arena we must, we need to put beside compositionality a second principle which, following Langacker (1987: 448), we may call analysability and which “pertains to the ability of speakers to recognise the contribution that each component structure makes to the composite whole.” To see the difference in a historical context, compare two examples that we will discuss in more detail in what follows. The change which introduces went as the suppletive past of the lexeme GO obscures analysability but the form gives expression to a combination of constituents ‘GO + PAST’ which is still compositional in syntactico-semantic terms. By contrast, when the French string est allé comes to mean ‘went’ as well as ‘has gone’, the form remains analysable: it consists of the present of ÊTRE ‘be’ plus the perfect participle of ALLER ‘go’. What has been
lost is the compositional relation between the parts, since, on most semantic accounts of tense, a present auxiliary plus a perfect participle do not combine to yield the interpretation \([\text{PAST}]\).\(^2\)

Despite the considerable quantity of research into compositionality over the years, very little of that debate acknowledges the fact that languages change, including in ways that precisely threaten the working of natural languages as compositional systems. It is striking for instance that there is no mention of language change in the whole 746 pages of the recently published *The Oxford Handbook of Compositionality* (Werning et al. 2012). In this chapter therefore we explore the lessons that evidence from the diachronic domain can provide for our accounts of language structure and change and the relation between them.

## 2 Interaction of compositionality and change

We begin with the example of numeral words in some European languages, a case in which compositionality is kept constant, but the dimension of what we have called analysability is susceptible of significant variation over time. Consider for instance the arithmetic concept ‘76’. We would not expect, and do not find, that across languages this is expressed in a way that is arbitrarily different from the expression of ‘6’ or ‘70’ or ‘66’, but differences there are nonetheless. Thus, English *seventy-six* follows the general rule whereby there are more or less transparent designations for the decades which then combine with the digits according to the rule ‘decad digit’. German follows a similar principle except that the rule there is ‘digit und decad’, hence *sechsundsiebzig*. Compare now French *soixante-seize*, on the one hand, and Danish *seksoghalvfjerds*, on the other, both of which in different ways reveal traces of an earlier vigesimal (20-based) system. The French expression is literally ‘sixty-sixteen’; that is to say the Latin word *septuaginta* ‘seventy’, which is retained in Italian (*settanta*), Spanish (*setanta*) and indeed some regional varieties of French (*septante*), is dispensed with and one counts through from 60 to 79 by simply combining the word for ‘sixty’ with the numerals from ‘one’ to ‘nineteen’. Danish, on the other hand, retains the principle of using the numerals ‘one’ to ‘nine’ within the decads but the etymology of *halvfjerds* ‘seventy’ is literally ‘half fours’, that is to say ‘half way from three twenties to four twenties’ or ‘three and a half times twenty’. In the same vein Danish for ‘50’ is *halvtreds* ‘half threes’ or ‘two and a half times twenty’ and ‘90’ is *halvfems* ‘half fives’ or ‘four and a half times twenty’. Note too that French has retained the Latin pattern where the rule is ‘decad digit’ whereas Danish follows the more general Germanic model ‘digit and decad’. In short, both French and Danish have innovated in this domain but in different ways and with different consequences for the internal structure of the system and the analysability of the number words.

In an important sense, the example of the expression of numerals is not typical. Although there is great diversity in the structure of numeral systems worldwide (see Epps et al. 2012 and references there), in the context of Roman and post-Roman Europe the decimal system was the accepted basis for trade and science and therefore changes could only emerge in the expression side of language and the differential analysability of number names. Things are different when we get into the core grammatical systems of natural languages. When it comes to the expression of tense, gender and so forth, there is no comparable external guarantee of conceptual stability and the systems can expand, contract and change focus in a variety of ways. As a case study in this respect, we will look briefly at the expression of past and perfect in Latin and the Romance languages.

In Latin, reference to the past was divided between two verb forms known traditionally as the imperfect and the perfect: *laudabat* ‘(s)he was praising’ and *laudavit* ‘(s)he praised’. Whereas the former, as our English rendering implies, commonly conveyed a sense of
incompleteness or progressivity, the latter covered both the simple past meaning ‘praised’ and the perfect meaning ‘has praised’ (Harris 1982; Haug 2008; Haverling 2010). Beside these forms there emerged a construction built out of the verb habere ‘have, hold’ plus the past participle of another verb as in:

(1) a hoc quid intersit ... certe
this.N.ACCSG REL.N.NOMSG differ.3SG.PRS.SBJ certainly
habes substuctum
have.2SG.PRS.IND reckon.PST.PTCP.N.SG
‘you have certainly reckoned what is the difference’
(Cicero Att 5.21.13)3

b auxilia ... quae ... prodesse eis
remedy.N.NOMPL REL.N.NOMPL benefit.INF that.DATPL
comperta habemus
find.PST.PTCP.N.PL have.1PL.PRS.IND
‘remedies which we have found to benefit them’
(Scribonius Largus 106)

In context, as Adams (2013: 620–628) shows in detail, uses with verbs of mental state such as these in general admit of both a perfect interpretation and a possessive one (‘have in mind’), and thus they provide the pivotal point of change. While in the former biclausal construction exemplified in (2) the sense is clearly one of possession and the ‘have’ verb and the participial verb have different subjects, in (1) the verbal semantics forces identity between the two subjects and therefore leads to a pragmatic context in which listeners can take habere plus participle to constitute a single construction (see Garrett 2012 for further discussion of the mechanisms at work here):

(2) a per iocum dictum habeto
as joke.N.ACCSG say.PST.PTCP.N.SG have.IMP
‘(you) consider this said (by me) in jest’
(Plautus Poen 542)

b si cerebrum percussum habuerit
if brain.N.ACCSG strike.PST.PTCP.N.SG have.3SG.FUT.PRF
‘if it has a brain that has been struck (by another animal)’
(Mulomedicina Chironis 526)

Crucially, both the examples in (1) and those in (2) are still susceptible of a compositional analysis; what has changed are the semantic components that the forms give realisation to. Whereas in (2) habere is a full lexical verb meaning ‘hold, possess’ and the participle is a secondary predicate applied to the object of that verb, in (1) we have (the beginnings of) a periphrasis in which habere contributes the deictic tense value and the participle the relative tense plus the main lexical content (Vincent 2011). From these ingredients all the Romance languages develop a perfect periphrasis with ‘have’ or ‘be’ as auxiliaries, though we will not go into the details here (see Ledgeway 2011: 452–458 and Loporcaro 2014).

In the next stage of development, which is characteristic of modern French and northern varieties of Italian but not, for example, of Spanish and Portuguese, the present perfect form
may also express simple past. Thus, note the use of the same verb forms in (3a) and (3b) and contrast the forms required in the English translations:

\[(3)\] a Pierre a déjà visité Manchester
\[P\text{ have.3SG.PRS never visit.PST.PTCP M}\]
‘Pierre has already visited Manchester’

b Pierre a visité Manchester l’année dernière
\[P\text{ have.3SG.PRS visit.PST.PTCP M last year}\]
‘Pierre visited Manchester last year’

The best account to date of the mechanism behind this shift of meaning is that offered by Schaden (2012), who suggests that while speakers may intend their use of the present perfect to underscore the current relevance of the event in question, hearers will often only pick up on the fact that the event is being reported and ignore the associated implicature of relevance (see Deo, this volume, for further discussion of this mechanism). In this way the pastness of the event becomes salient, and eventually imposes itself as a new meaning of the form within the verbal system. The form previously used to express simple anteriority – what French grammars call the ‘past historic’ – thereafter falls out of use or is reserved for formal speech and written contexts. From our point of view the crucial shift is that the verb form at this point seems no longer to be compositional, since there is a conflict between the [PAST] value of the whole periphrasis and the feature [PRESENT] that can be assigned to a ‘have’ in other contexts, e.g. Pierre a une petite soeur ‘Pierre has a little sister’. Thus, for example Spencer (2001: 283) concludes:

The ‘constructional morphology’ approach comes into its own when we consider cases such as the Simple Past Tense of Spoken French (and several other languages). In a sentence such as Jean a lu ce livre the auxiliary is in the Present Tense form while the participle is tenseless, yet the construction as a whole conveys the notion ‘Past Tense’.

This type of change is by no means unique to the Romance languages. The general pattern, sometimes labelled ‘aoristic drift’, was already noted by Meillet (1909/1982: 149–158), who pointed to parallel developments in modern German, Armenian and a number of Slavic and Indo-Iranian languages. Much more rarely documented is the reverse change whereby the synthetic verb form acquires the meaning normally associated with the periphrasis, yet this is exactly what emerges from a recent study of Rioplatense Spanish as spoken in Buenos Aires. Thus, compare the two examples in (4), taken from the field data reported in Fløgstad (2012):

\[(4)\] a Yo fui de visita a Gualeguaychú, hace unos 3 años
\[I\text{ go.PRET.1SG of visit to G ago some 3 years}\]
‘I went for a visit to Gualeguaychú about three years ago’

b Fui a Gualeguaychú
\[go.PRET.1SG to G\]
‘I have been to Gualeguaychú’
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Crucially, what Fløgstad calls the preterite verb form *fui* in (4b) does not express the fact that the speaker went to Gualeguaychu on a specific occasion, but that she has been there at some point in her life, and that this fact is of relevance to the current speech situation. At this stage of the research, it is not clear what is the driving force behind this change, which has come about within the last hundred or so years, but it shows yet again how the balance between compositionality and analysability may alter with the passage of time. In addition, the example demonstrates that while there may be recurrent and even expected pathways of change, such as present perfect coming to express past (Bybee *et al.* 1994: 91–93), in the right historical circumstances languages may follow alternative and even opposed paths. We return to this issue of the apparent directionality of change in section 6 below.

3 Change in relation to linguistic theory

Although, as we have noted, the idea of compositionality is rooted in the same fertile intellectual soil of the late nineteenth-century German university that produced the seminal thinking about language change reviewed in Lass’ chapter in this volume, the subsequent developments are essentially independent. Where the linguistic debates focused on the regularity or otherwise of in particular phonetic change, the concept of compositionality was taken up within the essentially time-free accounts of logical structure and formal language theory. It is true that historical linguists investigated the role of analogy as a countervailing force to the ravages of sound change (what is sometimes called Sturtevant’s Paradox – see Anderson, this volume), but in the terms we have been using here the debate around analogy focuses on the issue of analysability rather than of compositionality. This separation was in a sense licensed by the Saussurean distinction between synchrony and diachrony, famous of course after the publication of the *Cours de linguistique générale* in 1916 but already being worked out and publicly discussed in the 1890s (Joseph 2012: 514–515). The effect of this distinction is to make the study of language structure an autonomous domain, in which the analyst’s task is to elucidate the network of structural relations which hold the system together and which constitute the basis of speakers’ ability to use the language for everyday purposes. A speaker is, not unreasonably, assumed to have no knowledge of the history of this system and therefore diachronic considerations cannot impinge on the characterisation of that system. This rigid separation (or ‘firewall’ to use Kiparsky’s felicitous phrase in this volume) between synchrony and diachrony is continued in the thinking of various structuralist schools of linguistic thought in the United States and Europe and, crucially, in the development of transformational generative grammar and other mathematically-based systems such as HPSG and LFG from the mid-twentieth century onwards. At the same time it is within these latter that we see the convergence between linguistics and the logical systems which are the heirs to Frege’s original insight. In short, discussions of compositionality have, until recently, stood firmly on the synchronic side of the divide, and hence their failure to interact with the data and circumstances of language change.

Two developments serve to alter this state of affairs and bring change back into the picture. The first is the investigation by Labov and his co-workers from the 1960s onwards of sociolinguistic variation as the basis of shifts over time in phonetic features like the raising of vowels or the pronunciation of [r]. Important, however, as this strand of research was to become in its own right in subsequent years, it is in the main restricted to the phonetic and phonological dimension of language. More significant in the present context therefore is the second development, namely the rediscovery of the idea of grammaticalisation by researchers such as Givón, Lehmann, Traugott, Hopper, Heine and others in the 1970s and 1980s (for a
recent and exhaustive survey, see the contributions to Narrog and Heine 2011). Not only does this line of research restore the study of morphosyntactic change as a core part of the discipline, in the hands of some of these researchers the investigation of these recurrent historical patterns of change displaces grammar or syntax from the central position it had come to occupy within synchronic linguistics. Thus, Hopper and Traugott (1993: 17) raise the question of whether grammar should not rather be seen as “a provisional way-station in our search for the more general characteristics of language as a process for organizing cognitive and communicative content.” On this view, the pursuit of explanations for linguistic phenomena is directed outwards to the contexts of language use rather than inward to an abstract and innate universal grammar. This view is strongly endorsed in the seminal paper by Evans and Levinson (2009: 444), who conclude: “The emerging picture, then, confirms the view that most linguistic diversity is the product of historical cultural evolution operating on relatively independent traits.” In similar spirit, Dryer (2006) observes: “… functional explanations – explanations for why languages are the way they are – apply primarily at the level of language change.”

Since it is a universal property of languages that over time they change, there is much to be applauded in this shift in perspective, which in one sense represents a return to the nineteenth-century agenda for the discipline, albeit one fortified by the tools and concepts of more recent research. However, one unfortunate consequence of these developments has been the emergence of an artificial dichotomy between so-called ‘formalists’ and ‘functionalists’. As argued, for example, in Vincent and Börjars (2010), formalism is a desirable feature which serves to make a theory rigorous and testable. It does not, in and of itself, preclude the search for explanations grounded in the external circumstances of language use and transmission. It is by no means impossible to be both a formalist and a functionalist. Work that attends to issues of compositionality in change necessarily relies on formal accounts of language structure but does not beg the question of how that structure is ultimately to be explained, as will become clear in the examples to be discussed in the next and subsequent sections, and as is evident in Deo’s and Kiparsky’s chapters in this volume.

4 The case of ought

Key to any attempt to demonstrate compositionality are the assumptions that are made about the parts out of which a given constituent is constructed. Thus, in discussing the emerging Romance perfect periphrasis in section 2, we relied on an approach to tense which distinguishes between the time of an event in relation to a given reference point, so-called ‘relative tense’, and the location of the event in relation to the moment of speech, so-called ‘absolute tense’. Without this kind of model, which ultimately goes back to the philosopher Hans Reichenbach (1891–1953), we could not make sense of the historical developments (see Vincent 2011 for further discussion). In the case study which concerns us in this section we follow up the diachronic implications of the account of ‘weak’ and ‘strong’ necessity offered in von Fintel and Iatridou (2008), where once again we witness the striking interaction of compositionality and change.

By strong necessity the authors intend the meaning conveyed by English must, which they contrast with weak necessity as expressed in English by the modal ought. They go on to suggest that there is a general equivalence detectable across languages according to which the expression of weak necessity in a given language is achieved by combining the expression of strong necessity with whatever means is deployed in that language to convey counterfactuality. This last is in turn analysed as resulting from the combination of [PAST] and [FUTURE]. In short we have the following formula:
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(5) weak necessity (ought) = strong necessity (must) + future + past

A case in point where this proposed semantic compositionality is matched by formal analysability is Modern Greek, as in the following example:

(6) Oli tha eprepe na plenun ta cheria tus
    all FUT must.pst PART wash the hands their
ala i servitori prepi na ta plinun
    but the waiters must.prs PART them wash

‘Everyone ought to wash their hands but the waiters must wash them’

When the future particle tha combines with the past of the modal prepi the result is equivalent to English ought. Other languages in which the expression of weak necessity is decomposable in this way, and which are labelled by von Fintel and Iatridou (2008) as ‘transparent’, include the Romance languages, Russian, Croatian, Dutch, Icelandic and Hungarian. These can be contrasted with what they call ‘opaque’ languages like English where the word expressing weak necessity is not overtly analysable, and which they claim are in the minority. In consequence, where in English the strings he ought to and he would have to have distinct meanings, the same form is used for both in languages like Greek. Thus compare (6) with (7):

(7) an o Fred iche aftokinito, tha eprepe na to dhilosi
    if the Fred have.pst car FUT must.pst PART it register.inf

‘if Fred had a car, he would have to register it’

We may then ask: in a transparent language, how does strong necessity in a counterfactual world come to express weak necessity in the actual world? The equivalence crucially depends on a theory of modality, originally due to Angelika Kratzer, according to which there is a set of possible worlds and a so-called ‘ordering source’, which ranks worlds according to sets of criteria and expectations and thus determines necessity. In their account, von Fintel and Iatridou postulate a further ordering source which expresses the set of morally desirable actions rather than the absolute ones that characterise strong necessity. This secondary ranking in terms of what is most desirable is promoted over the primary ranking achieved by the strong modal. Counterfactual morphology is appropriate because what is expressed here is a kind of alternative scenario though in the actual and not in a different world. So far so good (though see Portner 2009: 79–81 for some reservations). But now we may reasonably ask: if source re-ranking is the norm cross-linguistically, how come it does not apply in English? To which they answer: because the existence of the independent lexical item ought blocks the re-ranking of the ordering sources, which in turn leads us to inquire into the origin of the word ought. This is the modern reflex of the Old English ahte, the past tense of agan ‘own, owe’. The evolution of ought has pre-empted the expression of weak necessity and in so doing introduced a new kind of opacity by blocking the default compositionality attested in Greek and other languages.

The same pattern of lexical blocking can be seen in Modern Welsh, where the verb DYLWN is only used in the imperfect or pluperfect with the meaning ‘ought’:

(8) a Dylet ti fynd
    ought.2sg you go.inf

‘You ought to go’
By contrast in Middle Welsh, the verb had a full paradigm and both the meanings ‘ought’ and ‘owe’ (examples here courtesy of Maggie Tallerman):

\[
\text{(9) a pedeir keinhawc a dyly } y \text{ gan } y \text{ perchen} \\
\text{four pence PART owe.3SG.PRS it from the owner} \\
\text{‘he’s entitled to four pence from the owner’}
\]

\[
\text{(9) b ef a dylassei } y \text{ roi mywn cadwyn} \\
\text{he PART owe.3SG.PLUPRF it put. INF in chain} \\
\text{‘he ought to have put it in a chain’}
\]

In etymological terms there is then a sharp contrast between the way the English and Welsh words for ‘ought’ have developed and the situation in the Romance languages. Recall that these fall within von Fintel and Iatridou’s (2008) class of transparent languages, and yet at the same time the ‘ought’ word in these languages – French devrait, Spanish debería, Italian dovrebbe, etc – also derives from a word meaning ‘owe’, namely Latin DEBERE. The difference is that here the whole paradigm of the source word has survived and continues to mean both ‘owe’ and ‘must/ought’. Side by side with this a new periphrasis developed out of the infinitive plus forms of HABERE ‘have’; with the present forms we get a future meaning and with the past forms a conditional or counterfactual one: cantare habeo ‘I will sing’ vs cantare habebam/habui ‘I would sing’. When the latter combines with DEBERE the result is debere habebam/habui, translatable as ‘ought’ but analysable exactly as von Fintel and Iatridou’s schema predicts: MUST + FUTURE + PAST (Vincent 2013). The surface transparency however is lost as a result of subsequent sound changes which lead to the univerbation of the auxiliary and main verb to yield a single morphological form. If von Fintel and Iatridou are right, the etymology also holds true as the synchronic analysis. In our terms, compositionality is retained even while analysability is lost.

This example is moreover a good demonstration of the point made above, that there is no incompatibility between exploring the mechanisms of morphosyntactic change and having recourse to the methods of formal semantics which underlie von Fintel and Iatridou’s analysis, with all the additional rigour and testability they provide. For further discussion of the role of formal semantic methods in the analysis of change, see the chapter by Deo in this volume.

### 5 Dahl’s paradox

An added dimension of complexity in the relation between compositionality and change is provided by what we can call Dahl’s paradox since its existence was most clearly diagnosed by the Swedish scholar Östen Dahl when he wrote:

What is not always appreciated is the extent to which grammaticalization processes may interfere with compositionality. Suppose … two elements, A and B, combine in a construction C, which … has a perfectly compositional semantics. C then acquires a new meaning, although A and B as used on their own preserve their old meaning. Then, C combines with D to form a new construction, whose interpretation is compositional in
the sense that it can be derived from the meanings of C and D, but non-compositional in
the sense that it is not derivable from the meanings of its ultimate constituents, A, B, and
D together.

(Dahl 1997: 103)

To see how this plays out in a specific instance, we will examine the development of a new
set of tense forms in French, the so-called *surcomposé* or ‘overcomposed’ forms. Thus,
consider (10) (this and subsequent examples in this section are taken from Apothéloz
2010):

(10) *Quand elle a eu terminé la chanson*,
when she have.3SG.PRS have.PST.PTCP finish.PST.PTCP the song
on a applaudi.
one have.3SG.PRS clap. PST.PTCP
‘When she had finished her song, people clapped’

(from Léo Malet *Le soleil n’est pour nous*, 1949)

Here the verb in the main clause *on a applaudi* ‘people clapped’ is a narrative past expressed
by means of the perfect periphrasis, as discussed in section 2 above. The standard way in
French to refer to an event preceding a past narrative is, as in English, by means of the past
perfect: *quand elle avait terminé* ‘when she had finished’. The author here, however, uses a
more colloquial construction in which, instead of the past of the auxiliary *avait* ‘had’, we find
what is formally the present perfect of the auxiliary, *a eu* ‘lit. has had’, combined with the
past participle of the lexical verb, *terminé* ‘finished’. The outcome precisely matches the
situation described by Dahl: the auxiliary string *a eu* has the non-compositional value [PAST]
but the combination of the auxiliary string with the perfect participle is compositional: [PAST]
+ [PERFECT] yields [PAST PERFECT]. This is the same mechanism applied at the level of the
auxiliary as the one discussed above under the heading ‘aoristic drift’, and the effect is to add
an extra dimension of morphosyntactic structure to the French auxiliary system. It is akin to
the developments in the Balto-Finnic case systems described in Kiparsky (2012) in the way
it blends properties of analogy and grammaticalisation.

The complications do not stop there. For some unaccusative verbs French uses the perfect
auxiliary *être* ‘be’ rather than *avoir* ‘have’, thus *il était parti* ‘lit. he was left’ beside *il avait
terminé* ‘he had finished’. For the *surcomposé* of these verbs, we find two different outcomes
attested (Apothéloz 2010: 113), both translatable into English as ‘she had left’:

(11) a *Il a été parti.*
he have.3SG.PRS be.PST.PTCP leave.PST.PTCP

b *Il est eu parti.*
he be.3SG.PRS have.PST.PTCP leave.PST.PTCP

In (11a) we see the pattern we might expect on the basis of the example *elle a eu terminé*, in
which *a été*, the present perfect of *être*, replaces the past *était*. In (11b) on the other hand we
find *eu*, the past participle of *avoir*, combined with the auxiliary appropriate to the main verb.
To account for this, two possibilities suggest themselves: either a main verb which selects
*être* somehow manages to overwrite the auxiliary that would normally be assigned to *avoir*;
or else *eu* has been reanalysed as a tense-shifting particle which can be inserted into either of
the strings *il a terminé* or *il est parti*. Both these analyses have the effect of restoring a degree of compositionality to the system.

A final wrinkle of complexity is provided by yet another construction which is built out of the same morphosyntactic ingredients but which appears to be compositional throughout. Whereas the pattern we have just described, even if frowned on by prescriptivists, has been attested across the whole of France for several hundred years, this second pattern is limited to southern and Swiss French varieties and Franco-Provençal, and serves to express a resultative or experiential situation located in the past, as in (12):

(12) a … beaucoup d’histoires sur un vieux nain qu’on a eu vu sur leurs pâturages
   many of-story.PL on a old dwarf that-one have.3SG.PRS have.PST.PTCP see.PST.PTCP on their.PL field.PL
   ‘… many stories about an old dwarf that people had seen in their fields’

b on est eu rentré avec un seul œuf
   one be.3SG.PRS have.PST.PTCP return.PST.PTCP with a single egg
   ‘it has happened that we have only come back with a single egg’

In both these examples the speakers are reporting past experiences, so in an entirely compositional way the perfect conveys the experience – the experiential perfect is a well-established cross-linguistic category – and the additional participle conveys the pastness. This pattern has parallels in other languages, as for instance in the recently emergent Danish construction seen in (13) (Jensen 2001):

(13) min mor har haft repareret cyklen
    my mother have.PRS have.PST.PTCP repair.PST.PTCP bicycle.DEF
    ‘My mum had repaired the bike (and then it got broken again)’

The literal meaning in (13) is thus ‘Mum had the bike in a state of having been repaired’. Schaden (2007) develops a tense logic which is rich enough to capture in compositional terms the type exemplified in (12) and (13), which he calls *superparfait* ‘superperfect’. He further observes that this pattern seems always to have been the diachronic source out of which the *surcomposé* pattern in (10) emerges, something which lends credence to the view that periphrases start out as transparent and compositional even if this is subsequently obscured. It should be noted in conclusion that Schaden’s model even allows him to offer a compositional account of the outcome of aoristic drift, thus reinforcing the point made above that arguments about compositionality or otherwise are crucially dependent on the analytical systems deployed (for more discussion, see Vincent 2011: 430–432). This, of course, is as it should be: we would not expect to find ‘theory-free’ explanations in the diachronic domain any more than we do in synchrony.

6 Grammaticalisation

At various points in this chapter we have made reference to the concept of grammaticalisation, and some of the examples we have discussed such as the emergence of a perfect auxiliary from a verb of possession or a necessity modal from a verb meaning ‘owe’ are classics of the specialist literature. It is, however, important to appreciate that, despite occasional references
in that literature to ‘grammaticalisation theory’, what we are dealing with under this rubric is a phenomenon in need of a theory to help us understand and explain it; it is not a theory in its own right. Furthermore, whatever theoretical account proves in the long run to be most fruitful, it will need to take into account the dimensions of compositionality and analysability that we have been discussing.

Three aspects of grammaticalisation have attracted particular attention. The first is its potential to create new grammatical items and hence new patterns of grammatical contrast. The classic definition here is that of Antoine Meillet (1912/1982: 131): “l’attribution du caractère grammatical à un mot jadis autonome [the attribution of a grammatical value to a formerly autonomous word].” In Meillet’s thought, this process, together with analogical innovation, are the only two ways by which new grammatical forms can be created. The difference is that the latter simply creates new instances of structures that are already part of the grammar, thereby restoring analysability where this had been lost or obscured. Thus, in the Latin imperfect there is a contrast between the first singular ending in -bam and the third singular in -bat. Sound change erodes the final consonants leading to the homophonic form in Old Italian cantava ‘I/(s)he was singing’. Modern Italian has rebuilt the first person by analogy with the present canto ‘I sing’ to yield the opposition cantavo ‘I was singing’ vs cantava ‘(s)he was singing’. Grammaticalisation by contrast leads to genuinely innovative structures, which can introduce new forms of compositionality, as we saw with the emergence of the Romance periphrastic perfects, and in the long run lead to some degree of non-compositionality.4

Second, grammaticalisation throws up recurrent, semantically motivated shifts. Thus, both English will and the Swahili affix -ta- express futurity and derive from verbs meaning ‘want’; verbs meaning ‘go’ become markers of future in French, Margi (spoken in Nigeria), and a number of unrelated Papuan languages (see Bybee et al. 1994 for further documentation). The semantic links of metaphor and metonymy which are thereby brought into focus naturally invite an explanation in terms of the concepts and categories of the external world rather than the mechanisms of a putative innate universal grammar (though see van Gelderen, this volume, for the attempts to connect UG and grammaticalisation). In particular, understanding this diachronic data has both contributed to and benefited from the development of the technique of semantic mapping (see the papers in Vol. 8 [2010] of the online journal Linguistic Discovery).

Third, and most controversial, such changes appear to demonstrate a directionality: ‘go’ verbs frequently become future markers but markers of futurity do not develop into verbs of motion (Börjars and Vincent 2011b; Kiparsky 2012). This semantic backdrop lends an important extra dimension to discussions of compositionality since it brings into the equation conceptual categories such as motion and possession as well as the higher order features such as definiteness and modality which are the staples of the formal semantic tradition, and raises the question of how they are to be connected to each other (see Deo, this volume).

Perhaps not surprisingly, given the centrality of verbal constructions within the grammars of natural languages, much of the literature on grammaticalisation has investigated the mechanisms by which new periphrastic expressions of tense, aspect and modality have come into being. However in almost all cases the focus has been on the semantic trajectory of the developing auxiliary rather than the equally important, and from the perspective of compositionality crucial, relation between that item and the non-finite form (infinitive, participle, etc.) with which it combines. When we look more closely with this consideration in mind, we can distinguish between those diachronic trajectories that are to be expected, given the universal dimensions alluded to above, and those that seem to
call for special explanation. It should also be underscored that even when the pre-conditions for change are met there is no necessity for the change itself to take place. The history of expressions involving ‘go’ verbs in Romance is instructive from this point of view. Thus, French, Spanish and Portuguese exemplify the scenario most frequently discussed in the textbooks:

(14) a  *il va manger*
    he go.3SG.PRS eat.INF
    ‘he will eat’
    (French)

   b  *no vamos a poder respirar*
    not go.1PL.PRS to be-able.INF breathe.INF
    ‘we will not be able to breathe’
    (Spanish)

   c  *vou cantar*
    go.1SG.PRS sing.INF
    ‘I will sing’
    (Portuguese)

With this pattern, which has almost completely displaced the synthetic future in Latin American varieties of Spanish and in Brazilian Portuguese, what has to be accounted for is that a present auxiliary combined with an infinitive (typically thought of as a tenseless form) yields a future meaning. In this connection the account of the English *be going to* construction in Eckardt (2006: chapter 4) provides an instructive model.

Italian presents a different scenario. The ‘go + INF’ pattern is not attested with a futurate meaning, but ‘go’ does combine with a perfect participle to produce a modal passive:

(15) *Le fragole vanno lavate accuratamente*
    the.F.PL strawberry.F.PL go.3PL.PRS wash.PST.PTCP.F.PL carefully
    ‘The strawberries should be carefully washed’

While the passive value can reasonably be derived from the participle, and the grammaticalising ‘go’ verb can provide the future orientation, it is less clear that either part of the construction provides a warrant for the necessity component of the meaning here, and to that extent this example demonstrates the way grammaticalisation can compromise simple compositionality.

A more striking challenge to standard assumptions about the semantic directions built into grammaticalisation is the development of ‘go + INF’ in Catalan, as exemplified in (16):

(16) *el seu discurs va causar un gran impacte*
    the his speech go.3SG.PRS cause.INF a great impact
    ‘His speech had a great impact’

This development, in which ‘go + INF’ comes to express past rather than future, goes directly counter to the predicted directionality. Neither component of the construction warrants a past meaning, so how does it happen that the two combined do? The answer seems to lie in the suggestion by Detges (2004) that the construction emerges out of the use
in Mediaeval Catlan of the verb *anar* ‘go’ to highlight significant points in the narrative not unlike the colloquial English *go and* as in *suddenly, she goes and slaps his face*. The narrative use of the so-called ‘historic present’ combined with the ‘go’ auxiliary has opened the door to the grammaticalisation of the ‘historic’ or past component of the meaning at the price of compositional transparency. As Detges (2004: 224) comments: “The grammatical function of the *perfet perifràstic* in modern Catalan is the unintended by-product of discourse techniques which aimed at rhetorical efficiency”. This example thus shows us – as did the development of the synthetic perfect in Rioplatense Spanish – that, although there are paths of historical development which are attested time and again, these may be crossed or cut off by other, apparently contradictory, developments in the appropriate circumstances.

### 7 Gaps in the system

A phenomenon that runs directly counter to both compositionality and analysability is defectiveness, that is to say the circumstance in which the expected form simply is not present in the language. Thus, for many speakers of English there is no past participle of the verb *stride* and hence there is no way to complete the sentence in (17):

(17) He strode into my office and he would have ____ into the Dean’s office as well if I hadn’t stopped him.

There is no evident phonological constraint at work here and analogy has not stepped up to the plate despite the fact that forms such as *stridden*, like *hidden* and *ridden*, or *strided*, like *chided*, would seem to be readily available. Nor is there any semantic incompatibility; other verb forms from this semantic class like *walked*, *marched*, * barged* and *run* slot readily into the gap in (17). And yet for *stride* the gap remains. This phenomenon is relatively well documented in the domain of morphology (see the contributions to Baerman et al. 2010), but it is less commonly noted that the same effect is observable with periphrases. Thus in Italian both the verbs *essere* ‘be’ and *venire* ‘come’ may be used as passive auxiliaries as in (18):

(18) a) *Giorgio era/veniva* criticato dai suoi colleghi

‘George was (being) criticised by his colleagues’

b) *Giorgio fu/venne* criticato dai suoi colleghi

‘George was criticised by his colleagues’

Yet only *essere* is available in the compound periphrasis required for the perfect passive in (19):

(19) *Giorgio è stato/*venuto criticato

‘George has been/*has come criticised’

We find a similar restriction with the Italian construction in (15) discussed above:
The reason for the ungrammaticalities in (19) and (20) cannot be phonological or morphological since both venire and andare have the entirely well formed past participles venuto and andato, which can be used in simple sentences such as Giorgio è venuto/andatoieri ‘George came/went yesterday’. It also seems unlikely that the motive for their exclusion is semantic given the availability of alternative expressions of the past in (18) and in (20b). Rather it seems as if the periphrasis has not yet reached this part of the paradigm, a fact which suggests that as new periphrases emerge they spread gradually rather than all at once into the pre-existing structural categories of the language in question. A conditioning factor here may be expressive necessity. Compare an example such as (21) from the Engadine (Rhaeto-Romance) dialect of Scuol (Manzini and Savoia 2005: 622):

\[(21)\text{\ la\ jakka\ ez\ jyda}\]
\[\begin{array}{llll}
\text{the.F.SG} & \text{coat.F.SG} & \text{be.3SG.PRS} & \text{come.PST.PTCP.F.SG} \\
\text{blettfa} & \text{dalla} & \text{plovdfja} \\
\text{soak.PST.PTCP.F.SG} & \text{by.the.F.SG} & \text{rain.F.SG}
\end{array}\]

‘The coat got soaked by the rain’

The likely determining factor here is that in this dialect, as elsewhere in Rhaeto-Romance, the ‘come’ verb is the only available auxiliary for passive constructions, so the feature complex [PERFECT, PASSIVE] would go systematically unexpressed if the pattern in (21) were not deployed. We can compare here the way in Latin the verb esse ‘be’ did not have a past participle, a circumstance which was not problematic in the classical language since there were no grammatical contexts in which it would have been required. With the emergence of the periphrastic perfects described in section 2 above, the dictates of the system changed and recourse was had to the past participle of another verb, stare ‘stand’. Even then we cannot be sure of the pattern that will develop. Thus, Italian has a syncretic form with the same participle stato being used for both essere ‘be’ and stare ‘stand’, while Spanish has two distinct forms: sido for ser ‘be’ and estado for estar ‘stand’.

This crossing of a form from one verbal paradigm to another is characteristic of suppletion, which has sometimes been seen as linked diachronically to defectiveness. The conditions under which suppletion can emerge are relatively unstudied (see Börjars and Vincent 2011a for some discussion), but this is another area where compositionality raises its head. What is the nature of the lexical relation between English go and wend such that the past of the latter can fulfill the same role for the former, while wend has recourse to analogy to create the replacement form wended?
8 Light verbs and co-composition

There is another kind of construction involving a finite verb and a non-finite form that at first sight looks very similar to the tense and mood periphrases discussed in the previous sections. These are the co-called ‘light’ verb constructions exemplified from Urdu and Bengali in (22) (examples drawn from Butt 2010 and Butt and Lahiri 2013, who also provide references to the wider literature):

(22) a  
\[ \text{naadyya}=\text{ne} \quad \text{yassiiin}=\text{ko} \quad \text{paoda}=\text{n} \quad \text{kat}=\text{ne} \quad \text{dii}=\text{ya} \]
Nadya.F.SG=ERG Yassin=INS plant.M.NOM cut-INF give.PRF.M.SG
‘Nadya let Yassin cut the plant’

(22) b  
\[ \text{ram} \quad \text{bag}=\text{ta}=\text{ke} \quad \text{mer}=\text{e} \quad \text{p}=\text{el}=\text{l}=\text{o} \]
Ram.NOM tiger-CLF-ACC hit-GER throw-PST-3
‘Ram killed the tiger’

In (22a) the verb de ‘give’ is used in combination with the infinitive of another verb to yield a construction with a permissive interpretation. In (22b) the two verbs ‘throw’ and ‘hit’ combine to yield the causative meaning ‘kill’. On Butt and Lahiri’s account, constructions like these display a number of distinctive properties. Synchronically, they constitute a single clause to which both verbs contribute arguments; hence their alternative designation as ‘complex predicate’. However, it is from the diachronic point of view that these constructions are most obviously different from periphrases. Whereas the latter, over time, can become separate grammatical entities from their parent verbs, with their own semantic, syntactic and morphological properties, light verbs remain linked to the corresponding main verb. This in turn means they are diachronically stable both constructionally and in formal terms. They never, for example, develop idiosyncratic morphology and they never undergo univerbation. They never become temporal or modal auxiliaries although they may develop unpredictable or even idiomatic meanings as in the Bengali example (22b). They represent, in effect, diachronic dead ends.

In support of this claim to diachronic stability, Butt and Lahiri track these constructions as far back as Vedic Sanskrit in the middle of the second millennium BCE, although, as they note, it is not always easy to be sure of the exact interpretation and, as always with historical material, we are not able to apply a range of tests and evaluate the outcomes. Nonetheless, other constructions of this kind also show similar persistence. Thus the modern Italian (and more generally Romance) causative construction exemplified in (23) is also found in some of our earliest texts, as in (24):

(23) \[ \text{Maria} \quad \text{ha} \quad \text{fatto} \quad \text{cantare} \quad \text{Paolo} \]
Maria has.3SG.PRS make.PST.PTCP sing.INF Paul
‘Mary made Paul sing’

(24) \[ \text{perché} \quad \text{mi} \quad \text{facesti} \quad \text{tu} \quad \text{venire} \quad \text{in} \quad \text{questo} \quad \text{misero} \quad \text{mondo} \]
why me make.2SG.PST you come.INF in this miserable world
‘Why did you bring me into this miserable world’

(Bono Giamboni, thirteenth century)
And indeed there are apparently similar examples already in Latin:

(25) ut justos vivere faciat
      in.order.that just.M.PL.ACC live.INF make.3SG.PRS.SBJ
‘in order that he should make the just live’

(Tertullian adv Marc 5.3)

At the same time, we know that this was not the most usual way of constructing a causative in Latin, and thus it is reasonable to assume that this construction came into existence at an early stage in the development of the Romance languages and then spread. Once it was established, however, it has not shown any signs of change for upwards of a millennium. Moving beyond Indo-European, the wide-ranging survey of these constructions and their history by Bowern (2008) raises some reservations about the notion of stability, but confirms that in the core cases this is a genuine effect that is attested across a number of different language families and geographical areas. She also shows how these constructions can extend over space and time and are particularly susceptible to borrowing in contact situations. At the same time she evidences cases from the Australian languages Gooniyandi and Ngan’kityemerri where light verbs have undergone univerbation. In her analysis of the North Caucasian language Udi Harris (2008) also challenges the suggestion that light verbs never undergo univerbation.

Assuming then that Butt and Lahiri are right in their claim that light verbs, unlike auxiliaries, never or only rarely become separated over the course of time from the associated main verb, we come face to face with one of the classic issues for traditional accounts of compositionality, namely the fact that apparently the same lexical item can have different senses when combined with different items. Thus, compare the interpretations of cut in cut the cheese, cut the grass, cut someone’s salary, cut someone’s throat, cut the meeting and so forth. In such cases, we do not have the option of saying that compositionality has become obscured with the passage of time, as we did in the case of grammaticalising periphrases, since ex hypothesi the light verb constructions are stable over time. However, to list them as separate items would fail to capture the morphological and phonological identity. The solution proposed in Butt (2010) is to postulate a single under-specified lexical entry, with further details being added once the verb has been combined with an object. Formally, the mechanism required to achieve this is co-composition (see Pustejovsky 2012 for discussion of the technical properties of this analysis). Once again, a diachronic conundrum can be illuminated by recourse to analytic techniques that are traditionally the province of synchronic grammar.

9 Formulaic language and folk etymology

In the previous section we considered the circumstance in which a verb could come to form part of a new construction without thereby becoming separated from its lexical ‘host’. The extreme case of this kind is through incorporation into an idiom, a development which nullifies the need to find any semantic connection between the two occurrences. We do not ask what semantic contribution kick makes to kick the bucket, but neither do we want to claim that the verb in this idiom is a separate item for the purposes of determining its morphology and phonology. What idioms demonstrate is that in appropriate circumstances form and content may become completely divorced. In this section we look briefly at some further diachronic implications of this fact.
The first of these concerns are what Wray (2002) calls ‘formulaic language’, by which she means prefabricated sequences of words used as a whole. These include but are not limited to idioms; imprecations, greetings, proverbs and the like also fall into this category, as do fixed expressions such as if I were you, which can be decomposed according to the rules that generate/interpret for example if I was/were very wealthy but arguably in everyday usage are not. What data of this kind suggest is that even where a sequence appears to be the outcome of the normal generative mechanisms of grammar it may not be. However, once such a sequence has been stored and used as a whole, it can also begin to develop special uses and associations of its own that ultimately separate it from its etymological constituents. This route is particularly clear in discourse particles such as English notwithstanding, nevertheless, anyway and the like, where the spelling reveals their complex origins but at the same time the orthographic convention of writing them as a single word reflects the fact that they have come to have their own usage and distribution (see Traugott and Dasher 2002: Chapter 4). In such cases, different languages may converge on the expression of a given discourse function from a variety of lexical sources; thus, contrast English however with Italian tuttavia ‘lit. all way’ and Danish alligevel ‘lit. all like well’. Here, the apparent analysability is misleading and there is no compositionality either, although there are cross-linguistic recurrences that hint at an underlying semantic motivation. Thus, both the Italian and the Danish words contain an expression of universal quantification, which can also be found in a related English expression such as all things considered.

Another domain where frequency of occurrence and independent storage can provide the answer is suppletion. Bybee (2007: 171) writes: “Suppletion requires the splitting of paradigms … My hypothesis is that the increase in the frequency of went and its consequent greater lexical autonomy contributed to its split from wend”. (For further considerations tending in this direction, see Bybee and Beckner, this volume.) Lexical autonomy would in turn permit the item to develop the more generalised (or perhaps underspecified) meaning which would be required for it to integrate with its new host verb go.

A process which goes in the opposite direction involves imposing structure on items where none previously existed, the mechanism which underlies what is traditionally called ‘folk etymology’ (Maiden 2008 and references therein). Thus, German Liebstöckel ‘lovage’ is derived from the Latin term for this plant Levisticum but appears now to be made up of the components lieb ‘dear’ and Stöckel ‘stick’. Sometimes such reanalyses can make at least partial semantic sense, as when the French loan écrevisse becomes anglicised as cray/g191 sh, but often they do not. Rather, examples of this kind suggest that in some circumstances the requirement to achieve analysability is prioritised even at the price of introducing a spurious appearance of compositionality. There are also examples of partial phonological similarity that appear to correlate with meanings but yet do not yield to straightforward decomposition as with English words of ‘unmoving light’ that begin with the phoneme sequence /gl/ (glare, gleam, glint, glimmer, etc) as famously discussed by Bloomfield (1933: 245) and recently revisited by Aronoff (2012).

What, in their different ways, the examples in this section demonstrate is that the dictates of speakers’ use and storage may override the simple requirements of transparency and computability, and that the crucial evidence for this is to be found precisely in the historical domain. It is only by comparing the diachronic before and after that we can see what must have been the mediating behaviour of the language users.
10 Conclusions

In this chapter we have sought to set out a range of theoretical issues and empirical questions that arise when the concept of compositionality and the fact of language change are juxtaposed. We argue that this is both a necessary step, since compositionality is an intrinsic property of systems with the communicative range of natural languages, and a desirable one since the study of compositionality, and the logical tradition to which it belongs, imposes a degree of formal rigour on the historical analysis. At the same time it by no means excludes recourse to functional explanations as the driving force of change. Indeed the evidence of change serves to reveal the points at which compositionality can be obscured or break down, something which follows from the fact that, while form and content are of course inevitably related in natural language structure, they may, and often do, undergo change at differential rates and thereby slip out of alignment.

Notes

1  I am grateful to the editors for their comments on an earlier version of this chapter. Responsibility for errors of fact or interpretation remains mine alone.

2  On a point of notation, I use small capitals to designate either lexemes (ALLER, GO) or syntactic/semantic features (PAST, PERFECT), and italics for word forms either cited in isolation or as part of connected phrases and sentences. Translations are placed between inverted commas.

3  Example glosses follow the Leipzig Glossing Rules (www.eva.mpg.de/lingua/resources/glossing-rules.php), except for the following additional abbreviations: GER – gerund; IMPF – imperfect; PART – particle; PRET – preterite; and PLUPRF – pluperfect.

4  A possibility that was not apparently envisaged by Meillet is that in certain circumstances the mechanisms of analogy and grammaticalisation may combine to produce new grammatical material, as in the example of the French surcomposé forms discussed above. It may even be argued that analogy alone can from time to time create new patterns (Kiparsky 2012; this volume). Another category of change which we do not discuss here but which challenges Meillet’s dichotomy is exaptation (Lass 1990; Vincent 1995; Traugott 2004).

Further reading


References


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Nigel Vincent


Compositionality and change


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