1 Defining *template*

1.1 Templates: often invoked, but undertheorized

The notion of a *template* has been used in a number of linguistic domains to refer to grammatical patterns where the form of some linguistic constituent appears to be well conceptualized as consisting of a fixed linear structure, whether in terms of the arrangement of its subconstituents or its overall length.[1] To take two examples, consider Table 1.1, which schematizes the ordering of morphemes in verbs across the Athabaskan family, and Table 1.2, which gives data illustrating the application of a particular nickname formation strategy in Japanese where the resulting nicknames must be bimoraic in length.

The pan-Athabaskan template described in Table 1.1 characterizes verbs in this family as consisting of a series of "slots" into which morphemes of different grammatically defined classes appear. Hoijer (1971) did not explicitly use the word *template* to characterize his analysis, though this term is often found in the Athabaskanist literature to describe the verbal system (see, e.g., Rice (2000: 9)). Section 1.3 will discuss, in detail, the issue of how we might rigorously define *template*, but at this point, it will be sufficient to say that the crucial feature of Hoijer's analysis which prompts the application of the label is that the linear order of these verbal morphemes is treated as grammatically stipulated rather than deriving from some general principle. As such, the use of the term seems to be an extension of its informal use as referring to a device which sets a pattern on the basis of which objects of a given kind can be constructed.

Poser (1990: 81) does explicitly use the word *template* to describe the pattern exemplified in Table 1.2, wherein a full name participating in this nickname construction in Japanese must be realized as bimoraic either via truncation of a longer name (e.g., *hanako* → *hana-*) or lengthening of a shorter name (e.g., *ti* → *tii-*), among other possibilities (see Mester (1990) for additional discussion of the templatic properties of Japanese nicknames). What makes this pattern templatic is the fact that a particular morphological constituent must be of a specific length regardless of what its length would be expected

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[1] Good (2011) gives an overview of the typology of templates which summarizes some of the key points made in this chapter, as well as other parts of this book.

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Table 1.1 *A pan-Athabaskan verbal template
(Hoijer 1971: 125)*

SLOT	DESCRIPTION
1	Zero, one or more adverbial prefixes.
2	The prefix for the iterative paradigm.
3	A pluralizing prefix.
4	An object pronoun prefix.
5	A deictic subject prefix.
6	Zero, one or two adverbial prefixes.
7	A prefix marking mode, tense, or aspect.
8	A subject pronoun prefix.
9	A classifier prefix.
10	A stem.

Table 1.2 *A Japanese nickname
template (Poser 1990)*

NAME	NICKNAME
hanako	*hana-tyan*
yukiko	*yuki-tyan*
akira	*aki-tyan*
taroo	*taro-tyan*
yooko	*yoo-tyan*
kazuhiko	*kazu-tyan*
ti	*tii-tyan*
tiemi	*tii-tyan*

to be on the basis of its lexical segmental specification. Again, the use of the
term is an extension of the informal sense of template to refer to a general
"foundational" pattern, though, in this case, the relevant pattern is a restriction
on length rather than order, as seen in Table 1.1.

   At first glance, the juxtaposition of the data in Tables 1.1 and 1.2, each exem-
plifying apparently quite different kinds of grammatical phenomena, might be
taken to suggest that the word *template* has been applied to such a heteroge-
nous range of patterns as to make a detailed exploration of what it means to be
a "template" a questionable enterprise. After all, a morphophonological size
restriction does not obviously have very much in common with a morphosyn-
tactic ordering restriction. Nevertheless, a leading idea of this book is that there
is a common thread linking a wide number of apparently disparate kinds of
templates that makes examining them together an exercise of clear typological
and theoretical significance. In particular, we will see that a detailed

exploration of "templates" can give us important insights into the nature of linearization in language and can reveal important gaps in our models of how linguistic units come to form linearly ordered and bounded constituents.

Even if some readers ultimately reject the idea that it is sensible to treat the wide range of patterns to be examined here in one place, this book will nevertheless offer a more detailed basis on which to make these arguments since, to the best of my knowledge, the present work is novel in even attempting to examine the extent to which "templates" may represent a unified phenomenon.[2] If nothing else, therefore, the discussion here can be construed as a detailed exploration of a linguistic concept that descriptive linguists have long found valuable despite widespread ambivalence about its status in linguistic theory.

However, my intention is for this book to represent quite a bit more. As will be made clear over subsequent chapters, consideration of "templates" forces us to confront broader questions of the typology of linear stipulation in grammars. This, in turn, will require the construction of new ways of classifying linguistic constructions, and these will themselves require consideration of methods of comparison for characterizations of structural descriptions that have yet to be used within linguistics. Thus, what begins with a juxtaposition of curiosities like those exemplified in Tables 1.1 and 1.2 will develop into something which I hope will be of interest for a wide range of reasons and even to readers who might not be particularly interested in templates in and of themselves.

This chapter will begin by focusing on how we might rigorously define the term *template*, drawing on phonological, morphophonological, morphosyntactic, and syntactic analyses of "templatic" phenomena. The definition that will be ultimately arrived at is first anticipated in Section 1.3, which will be followed by a survey of existing work on templatic patterns in Section 1.4. An examination of various conceptual and practical issues surrounding the study of templates will then be taken up in the remaining sections of the chapter.

This will then set the stage for subsequent chapters of the book which will offer a new kind of typological description language for patterns of linear stipulation of the sort associated with morphophonological, morphosyntactic, and syntactic templates (Chapter 2), a number of case studies illustrating the application of the description language (Chapter 3), and a demonstration of how the framework developed here can permit rigorous typological comparison of templatic constructions (Chapter 4). The book will then conclude with an outline of how this work could be expanded into a large-scale typological comparison of intricate patterns of linearization. This will include brief consideration of theoretical issues relating to templates which are clearly of interest but outside the focus of the main discussion (Chapter 5).

[2] Good (2003b, 2007b, 2011) also takes a similar approach.

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Before moving onto any these topics, however, it will first be important to clarify the theoretical context that will inform the discussion throughout, which is the subject of the next section.

1.2   Theoretical context of this study

The grammatical subject matter of this book is a very special kind of linguistic form, the linearization template, and the analytical approach to be introduced in Chapter 2 will be "formal" in the sense that it will introduce a formalism for describing different kinds of linear stipulation in a relatively precise way. However, the term *formal* has taken on a range of uses in theoretical linguistics. It is therefore important to make clear that this work is not an instance of "formal linguistics" in its commonly employed sense to refer to linguistic work adopting a theoretical orientation that emphasizes, among other things, the delineation of a universal grammar and the encoding of analyses in a formal model based directly on that delineation (see, e.g., Newmeyer (1998: 7–9), Dryer (2006: 223), Nichols (2007b), and ten Hacken (2007: 217) for relevant discussion).

At the same time, the overall theoretical perspective adopted in this book is one that could be labeled *typological*, but this term, too, must be appropriately qualified. No universals will be proposed, and no systematic genealogically balanced survey has been undertaken. In short, this work will not – and is not designed to – develop a set of typological "results" that can become the basis for new theoretical models of grammar. Instead, the primary concern of this book is devising the methodological foundations through which we might systematically discover the range and nature of variation in templatic (and related) constructions. Indeed, one of its central claims is that designing a rigorous means to compare templatic constructions is far from trivial and can only be successfully achieved by enhancing existing methods in multivariate typology (see Bickel (2010)), a kind of methodology which itself has only recently been properly developed (see Section 2.7 for further discussion).

This orientation may be disappointing, and even confusing, to some readers, especially those more accustomed to generative approaches to the analysis of linguistic phenomena. This is because *explanation*, in particular, is not a key concern of this book. Rather, it is focused on the development of a system of explicit *description* and rigorous *comparison*. In the ideal case, the means used to create the relevant descriptions and the methods used for comparison will further allow for the creation of replicable results (see Chappell (2006) for relevant discussion in a typological context). This approach is taken here not because explanation is considered to be unimportant, but, rather, because, in this context, attempts at explanation would seem to be premature (though Chapter 5 will contain some speculation in this regard). There has, to this point,

only been something approaching systematic investigation of templates in one grammatical domain, morphophonology (see Section 1.8.2). It would, there-fore, seem ill-advised to try to theorize on the general properties of templates before we even have a common language to talk about them. The discussion in Chapter 2 will hopefully make clearer why this work takes an apparent step "backwards" in its goals in focusing more on a "taxonomic, data process-ing approach" (Chomsky 1965: 52) than on one which promises to be more "explanatory" (see also Joos (1958: v)).[3]

For those readers who are more familiar with the showcase results of typo-logical investigation, for example, the establishment of the famous "Green-bergian" patterns of word order (see, e.g., Dryer (2007)), as opposed to the methods of typology, as practiced by "typologists," Bickel (2007) and Nichols (2007b) contain discussion that should make the general approach assumed in this book clearer. In particular, this work should be understood as explor-ing the problem of templates at the "hypothesis-raising" stage, starting with a "convenience sample," rather than the "hypothesis-testing" stage (Nichols 2007b: 234), and it attempts to achieve this goal by "developing sets of vari-ables" rather than serving as another "method used in U[niversal] G[rammar] research" (Bickel 2007: 242). This approach can be contrasted with that advo-cated by Baker & McCloskey (2007), which is more concerned with how certain kinds of cross-linguistic investigation that are sometimes given the label "typological" can provide important data for refining universalist-oriented theories.

Adopting such an orientation means that this work may appear to be more clearly aligned with "functional" approaches to linguistics rather than more "formal" approaches (at least in the caricatured senses of the terms described by Newmeyer (1998: 1–5)). However, this distinction, is not, in fact, clearly relevant at the level of investigation of templates found here. This is because our understanding of templates, across phonology, morphology, and syntax, is, in my view, not even at the point where the oppositions between such approaches even matter. We do not yet know how to coherently talk about tem-plates, let alone know how to determine if their properties support one broad theoretical stance over another.

Indeed, while future work on this topic may argue for the adoption of one or the other of these perspectives in the analysis of templates, the present book, while far from atheoretical (as will be clear in Chapter 2), is intended to be

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[3] Anonymous reviews of the work leading up to this book have, at times, been sharply divided: For some reviewers, the need for the approach assumed in this work seems immediately obvious. Different reviewers seem to think of it as essentially misguided. I believe that this opposition is most likely the result of some linguists, especially those identifying as "typolo-gists," seeing more value in work which aims for "mere" descriptive adequacy, while others believe that it is more important to focus, from the outset, on explanatory adequacy.

agnostic on most of those issues which animate debates between proponents of major linguistic theories today. This follows from my own conviction that quite a lot of theoretical groundwork needs to be laid before more "interesting" debates about templates, and other forms of linear stipulation, can be usefully conducted.

Before moving on, there is another issue regarding the broad theoretical context of this study that is worth remarking on, since it is also likely to be somewhat novel to many readers. A key feature of the analytical point of view adopted in here is that grammatical patterns of linear stipulation may involve richly articulated structures of interacting elements which can be categorized across a number of distinctive dimensions. Indeed, the structures that will be proposed here to characterize linear stipulation (see, e.g., Chapters 2 and 3), in many respects, have a degree of complexity more typically seen in the representation of syntactic constructions. Linearization patterns, by contrast, are too often treated as representable in the simple form of strings which are primarily manipulated by a single operation, namely concatenation. Suffice it to say that, here, the representational device of the string is considered inadequate for properly capturing patterns of linear stipulation, and the case studies in Chapter 3, in particular, can be considered an implicit argument for this position. Of course, the idea that there is more to linear stipulation than the assemblage of strings is not especially innovative, as it has long been a mainstay of phonological theory (see, e.g., Section 1.8.2 for relevant discussion in the present context). However, the syntactic literature, in particular, often seems to adopt the view (whether implicitly or explicitly) that strings, representing words and concatenations of words, are a more or less adequate means for representing the surface linearization patterns of grammatical structures, a view which is seen as overly simplistic here (see also Section 5.3.1).

1.3   Templates as unexpected linearity

The term *template* has been applied to phenomena in a number of distinct grammatical domains (e.g., phonology, morphology, and syntax) in the linguistics literature and has also been used informally in fairly distinct ways. This is, at least partly, due to the fact that the word has a non-technical sense that has allowed it to be extended to a wide range of phenomena, some of which clearly have little in common with each other. Here, I delimit the possible range of phenomena to be examined to descriptive or formal schemes primarily employed to characterize constraints on linear realization, whether in terms of order (as in Table 1.1), length (as in Table 1.2), or some combination of the two (as in Table 1.3, to be further discussed in Section 1.4.2).[4] This

[4] The opposition between templatic restrictions involving ordering or length developed here is anticipated by Mester's (1990) distinction between "mapping" and "delimiting" templates.

delimitation is based on a consideration of the term as found in diverse sources, including Simpson & Withgott (1986), Itô (1989), Kari (1989), Zec & Inkelas (1990), Inkelas (1993), Stump (1997), Van Valin & LaPolla (1997), Rice (2000), and Downing (2006). It has, therefore, been arrived at via a descriptive examination rather than intending to be a prescriptive statement, which will have consequences for the development of a formal model of templatic restrictions in Chapter 2. An important point for later discussion is that, having arrived at this informal delineation, this study will also examine phenomena that fall within it even if the word *template* has not been specifically used to describe them (see, e.g., Section 1.4.5 for a clear example).

I give the actual definition of *template* that will be assumed in this work in (1). Much of the rest of this chapter will be devoted to its justification.

(1) **Template:** An analytical device used to characterize the linear realization of a linguistic constituent whose linear stipulations are unexpected from the point of view of a given linguist's approach to linguistic analysis.

This definition highlights two key features of templates (i) that they involve linear stipulation and (ii) that they can only be understood with respect to what kinds of linear stipulation are considered "normal" within a given approach to linguistic analysis. It should immediately be clear that, if one assumes a definition like that in (1), the apparent subjectivity of linking the term to a given linguist's expectations regarding linearity makes it problematic as a basis on which to conduct a rigorous investigation. I will come back to this issue in Section 1.5.

A final aspect of the definition worth noting is that a template is treated here not as a feature of the grammar of a given language but, rather, as a device used to analyze a given set of grammatical patterns. This is because we cannot easily speak of templates without referring to a given linguist's analysis of the linearization of a grammatical constituent. This issue will be discussed in detail in Section 1.7.

1.4   An initial survey of template types

1.4.1   Templates in phonology, morphology, and syntax

The focus of this section is consideration of representative examples of work on templates across morphophonology (Section 1.4.2), morphosyntax (Section 1.4.3), phonology (Section 1.4.4), and syntax (Section 1.4.5). Section 1.4.5 will also discuss the possibility of templates in the domain of phonosyntax. I begin with the two types of morphological templates since they have

played a more prominent role in the literature than the other two types to be considered. In Section 1.4.6, there will be brief discussions of cases where the word template has been used in the linguistic literature to refer to phenomena which are not of primary interest here and which deviate from the more common use of the term to refer to structures involving apparent linear stipulation. In some cases, the works to be discussed below do not explicitly use the word template to describe their analyses of the relevant phenomena. Nevertheless, the conceptual relationship between patterns frequently labeled templatic and these other patterns is clear enough to make it important to examine them here as well.

As will be seen, the overview of template types makes use of qualifications of the term, describing, for example, a given template as *morphophonological* or *phonological*. These terms are adopted here for expository convenience, rather than reflecting a particular analytical tradition, and the senses of these terms, as developed below, should not be expected to automatically carry over into other literature on templates. A good example of this can be found in Vihman & Croft (2007) who apply the term template to patterns which they characterize as phonological but which, here, would be better characterized as morphophonological, since the relevant constraints apply at the level of the word, rather than a purely phonological unit.

One of the distinguishing features of this study, as opposed to previous work on templates, is its attention to apparently templatic phenomena across grammatical domains in order to see what, if anything, they may have in common. Such "cross-domain" studies of grammatical patterns are not typical to the field, especially in work which conceptualizes grammar in terms of "modules" and "interfaces" (see Ramchand & Reiss (2007) for overview discussion). However, this is necessitated here for two reasons. First, templates themselves have been invoked across domains. It may be that this is due to infelicitous conceptual conflation, but we will not be able to determine if this is the case without first trying to see if these different "templates" may have something in common (and, as we will see in Section 1.5, they do appear to). Second, analytical invocations of templates are invariably bound to the problem of how to account for the linearization patterns of grammatical constituents, which itself is clearly a cross-domain issue insofar as accounting for patterns of linearization is a central concern of phonology, morphology, and syntax.

Moreover, even if problems of "linearization" are not usually modeled as belonging to a single "component" or "module" (though see Sadock (2012: 111–146)), there is clearly something component-like to linearization's interaction with other domains of grammatical generalization insofar as there are common features of linear ordering relations in phonology, morphology and syntax. The "primacy" of linearization, in this regard, is not frequently emphasized in my experience, though this observation is not particularly novel.

For instance, immediately after introducing his famous first principle regarding the arbitrary nature of the linguistic sign, Saussure gives a second principle regarding the "linear nature of the signifier", stating that, while it "is obvious, apparently linguists have always neglected to state it, doubtless because they found it too simple; nevertheless, it is fundamental, and its consequences are incalculable. Its importance equals that of Principle I; the whole mechanism of language depends upon it. . . " (Saussure 1916/1959: 70).

Before moving on, it is important to stress here an issue that will be returned to at various points below: the characterization of a given pattern as templatic is the product of a particular linguistic analysis. Therefore, analytical disagreements can easily lead to one work treating a given pattern as being best explained by a template, while another would reject the need for a template, or at least a highly elaborated one. Perhaps the clearest example of this in the literature involves contrasting analyses of the Athabaskan verbal system as exemplified by Kari (1989, 1992) and Rice (2000) (see also Hargus & Tuttle (2003)), wherein the former adheres to the sort of templatic approach schematized in Table 1.1, while the latter devises an alternative analysis that attempts to avoid the use of templates for languages of this family (see Section 1.4.3 for further discussion). I will return to the significance of this general issue in Section 1.7, and it will also play a role in the discussion in Chapters 2 and 3.

1.4.2   Morphophonological templates

By *morphophonological template*, I refer to templatic analyses where the linear realization of the components of a morphological construction is described in terms of constraints involving phonological categories. The most famous templatic constructions of this type are almost certainly so-called CV "skeleton" templates (Halle & Vergnaud 1980: 84), familiar in particular from Semitic morphology, where the order of consonants and vowels in a given morphological category apparently needs to be stated separately from the order of the consonants and vowels of its constituent lexical items. Work done by McCarthy (1979, 1981) is generally considered foundational for the contemporary analysis of these patterns, though earlier treatments can also be found (see Ussishkin (2000: 5)). (See Broselow (1995: 180–182) for an overview in the context of generative phonology.)

An example of this type of template can be seen in Table 1.3, which gives data from Sierra Miwok, a Penutian language of California, adapted from Freeland (1951: 94). Smith (1985) gives an early application of a CV-skeleton analysis to Sierra Miwok, based on the descriptions of Broadbent (1964) and Freeland (1951) (see also Goldsmith (1990: 83–95)).

The data in Table 1.3 exemplifies the four stem shapes associated with verbs of a particular inflectional class (Freeland's "type I") in Sierra Miwok. The

Table 1.3 *CV templates in Sierra Miwok (Freeland 1951: 94)*

PRIMARY	SECOND	THIRD	FOURTH	GLOSS
tuyá:ŋ	tuyáŋ:	túy:aŋ	túyŋa	'jump'
polá:ŋ	poláŋ:	pól:aŋ	pólŋa	'fall'
t̯opó:n	t̯opón:	t̯óp:on	t̯ópno	'wrap'
hut̯é:l	hut̯él:	hút̯:el	hút̯le	'roll'
telé:y	teléy:	tél:ey	télye	'hear'
CVCV:C	CVCVC:	CVC:VC	CVCCV	

alternations among these stem forms are governed by the suffix (e.g., a tense suffix) which immediately follows the stem (Freeland 1951: 96). As indicated in the bottom of row of the table, these alternations can be schematized via patterns of consonants and vowels (including indication of length). The forms of the stems across each stem class make use of the same consonant and vowels, in the same relative order respectively, but the lengths of the consonants and vowels change and the positioning of the consonants and vowels with respect to each other can change (as can be seen by contrasting the Fourth stem with the other three stems). Freeland (1951) does not explicitly give the CV patterns indicated in Table 1.3, though these are easily derived from her description. In the present context, it is noteworthy, that, while the templates illustrated above in Section 1.1 primarily exemplified restrictions involving order (Table 1.1) *or* length (Table 1.2), the Sierra Miwok CV template describes restrictions of both order and length. The two classes of restrictions are not, in principle, mutually exclusive, and I will return to this issue in Sections 2.4.4 and 2.5.

What prompts the use of the label template (see, e.g., McCarthy (1981: 387)) for a pattern like the one exemplified in Table 1.3 is the fact that a word's CV-patterning is generally expected to be derivative of a fixed linear specification of its morphemes' segmental patterns. For example, in an English word like *cat*, the fact that it shows a CVC shape can be straightforwardly treated as an epiphenomenon of fact that it has a segmental specification /kæt/, which simply happens to consist of a consonant followed by a vowel followed by another consonant. Accounting for a pattern like that seen in Table 1.3, by contrast, requires an additional analytical device – in this case a morphophonological template. What makes this template *morphophonological*, in the sense of the term as understood here, is that the morphological construction of the stem is subject to constraints characterized in terms of phonological categories, namely consonants and vowels.

Table 1.2, discussed in Section 1.1, offers another example of a morphophonological template, in that case one involving a restriction solely in terms