Unifying Structure-Building in Human Language: The Minimalist Syntax of Idioms

by

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Townspeople in the process of literally painting the town red (*High Plains Drifter*, 1973)

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ABSTRACT

Idioms have traditionally posed difficulties for different syntactic frameworks, because they behave in some senses like lexical items but in other senses like syntactically complex phrases. In particular, despite showing evidence of having internal syntactic structure, they have apparently limited syntactic flexibility relative to non-idiomatic phrases. This dissertation proposes a Minimalist architecture which makes a sharp distinction between the lexicon and the syntax, but nonetheless accounts for the hybrid properties of idioms. I argue that idioms, like non-idiomatic structures, are built by iterative application of Merge, preserving the Minimalist notion that there is a single basic structure-building operation, Merge, in natural language. However, idioms are also stored wholesale in the lexicon in the form of syntactic structures with associated phonological and semantic representations. These lexically stored idioms do not serve as input to structure building through Merge. Rather, if the syntactic derivation builds a structure which matches a lexically stored idiom, then that structure may optionally be interpreted via the lexically stored idiom meaning.

Given my proposal that all idioms are built by means of Merge, I analyze extensive evidence for syntactic flexibility across different types of idioms, and argue that the apparent limitations on the syntactic flexibility of idioms can be explained without positing any idiom-specific restrictions. Rather, I explain how the conceptual-intentional interface imposes independent semantic restrictions that constrain the syntactic derivation of particular idioms, accounting for distinctions that include the much-discussed contrast between decomposable idioms (whose meaning is distributed among their parts, e.g. *spill the beans*, in which *spill* can be paraphrased as ‘divulge’ and *beans* can be paraphrased as ‘secret’) and non-decomposable idioms (whose meaning is not distributed among their parts, e.g. *kick the bucket*, in which no independent meaning can be identified for *kick* or *bucket*). The semantic representations I propose for non-decomposable idioms are associated with their entire lexically stored structure, unlike those for decomposable idioms. This distinction interacts with independent semantic

constraints to explain the apparently limited syntactic flexibility of non-decomposable idioms relative to decomposable idioms. This approach extends to idioms a unified structure-building procedure for natural language, while explaining the linguistic properties of idioms in a principled way, consistent with Minimalist assumptions.

Chapter 1

Introduction

1.1. What is an idiom?

Native speakers may have an intuitive sense of what an idiom is, at least when it comes to prototypical cases like *kick the bucket* ('die') or *spill the beans* ('divulge a secret'), which I will be referring to frequently throughout this dissertation. But it is surprisingly difficult (perhaps impossible) to pin down a theory-neutral definition of what precisely characterizes an idiom. We might think that a basic property of idioms is that they are complex multi-word expressions that carry a non-literal meaning, but under certain non-lexicalist approaches, even single words might be considered idioms (as suggested by the title of Marantz's 1996 paper "'Cat' as a phrasal idiom"). We might think that a basic property of idioms is that their meaning is non-compositional, but the meaning of an idiom like *spill the beans* could be argued to be derived compositionally from the idiomatic meanings of its parts.

Further complicating the question is what I call the demarcation problem of idioms: what sorts of things count as idioms? Consider, for example, conventionalized expressions such as *center divider*. The meaning of *center divider* is predictable from one of the literal meanings of each part (at least to the extent that the meaning of any compound is predictable), so in that sense it is unlike prototypical idioms. On the other hand, the choice of items is arbitrary (we do not say *middle divider* or *center separator*, though there is no principled reason why we shouldn't), so in that sense it is like prototypical idioms. Or consider proverbs, such as *The early bird gets the worm*. Proverbs, like idioms, have non-literal meanings, but there are indications that they differ from idioms in some ways: there is typically a synchronic metaphorical connection between the literal and figurative meanings of proverbs, for example.

A priori, there is no answer to the demarcation problem: whether or not prototypical idioms form a natural class with conventionalized expressions and proverbs will depend on one's theory of idioms. I will thus set aside the question for the time being, and attempt to build a theory based primarily on prototypical cases. Once the theory has been developed, I will return to the question. I begin with the following preliminary definition of idioms:

(1) *Idiom (preliminary definition)*

A multi-word expression whose meaning is not compositionally predictable from the literal meanings of its constituents[1]

The use of the word *literal* in (1) is important. As previously mentioned, the meaning of *spill the beans* is arguably predictable from the meanings of its constituents, under the view that, in the idiom *spill the beans*, *spill* means 'divulge' and *beans* means 'secret'. Crucially, though, its meaning is not predictable from the literal meanings of the words that are part of it, where the literal meaning of a word is its meaning when it does not occur in an idiomatic context (however that context may be defined).

Note that this definition excludes conventionalized expressions like *center divider* (since their meanings are compositionally predictable from the literal meanings of their constituents), but includes proverbs. I will return to the demarcation problem in Section 5.8, where I will argue that neither conventionalized expressions like *center divider* nor proverbs count as idioms in my framework.

1.2. Why are idioms interesting?

Since the early days of generative linguistics, idioms have posed interesting architectural problems (Chafe 1968, Fraser 1970). There are several senses in which idioms, at least superficially, appear to behave unlike other phrases. First is their non-literal, conventionalized meaning, already mentioned. Second is their apparently limited syntactic flexibility, which varies from idiom to idiom. I say "apparently limited" because I will argue that there are no intrinsic limitations on the syntactic flexibility of idioms; rather, cases of apparent syntactic inflexibility result from the interaction between the semantic properties of a given idiom and independent semantic restrictions. The canonical case of an apparently syntactically inflexible idiom is *kick the bucket*, in which the NP cannot (for instance) undergo passivization or topicalization:

[1] Note that it is difficult to define what counts as a 'word' cross-linguistically, particularly when it comes to polysynthetic languages. The data considered in this dissertation involves fairly clear-cut cases of multi-word expressions, but the notion of 'multi-word expression' may have to be relativized to other types of languages if the approach is further extended cross-linguistically.

(2) a. +John kicked the bucket.
b. –The bucket was kicked.
c. –The bucket, John kicked.

(3) *Heed was paid.

(Here and throughout, I use the following notation for examples. "–" indicates that an example is grammatical only with a literal, non-idiomatic reading. "+" indicates that an example is grammatical with either an idiomatic or a non-idiomatic reading. "*" indicates that an example is ungrammatical under all readings, like (3) above. "~" indicates that an example is grammatical only with an idiomatic reading – i.e. there is no corresponding literal reading, such as the examples in (4) below.)

Third, some idioms appear not to be formed according to standard syntactic processes; some examples are given in (4).

(4) a. ~trip the light fantastic ('dance well')
b. ~by and large ('in general')
c. ~to kingdom come ('into the next world')

I will refer to these sorts of idioms as "syntactically idiosyncratic" idioms for presentation purposes, though I will end up arguing that, contrary to appearances, they are formed by standard syntactic operations that apply in other domains of the grammar.

These three properties (non-literal conventionalized meaning, apparently limited syntactic flexibility, and syntactic idiosyncrasy in a subset of cases) make it tempting to assume that idioms are atomic lexical items without internal syntactic structure, not syntactically complex phrases. However, this approach turns out not to work, since idioms clearly have at least some internal syntactic structure (as will be shown in detail in Chapter 4). A simple illustration of this is the fact that verbal idioms can be inflected normally, and inflection (treated as a syntactic phenomenon) applies to the verbal head, not to the idiom as a whole:

(5) a. shoot the breeze ('chat')
b. shooting the breeze
c. *shoot the breezing

Indeed, it is difficult (perhaps impossible) to find an idiom which is completely impervious to internal syntactic manipulation. This is the crux of the problem which idioms pose: on the one hand, they seem to behave like lexical items, but on the other hand, they have internal syntactic structure.

For non-lexicalist theories, such as Distributed Morphology (Marantz 1997, Harley 2014) or Nanosyntax (Starke 2009), the problem is mitigated, since these theories do not make a distinction between syntax and the lexicon in the traditional sense. In these approaches, there is no strict division between words and multi-word expressions, so multi-word expressions are expected to share properties with words, and the existence of idioms is to be expected. I will take Distributed Morphology to be representative of this tradition; I discuss DM approaches to idioms in Section 3.4, but I will argue in Section 5.9 that standard DM accounts make overly strong predictions about the systematicity of the relationship between the syntax of idioms and their semantics. Specifically, I will argue that these accounts predict that idioms should always have the same aspectual properties as their literal counterparts, and that that prediction is not borne out because it is too restrictive.

However, I will argue that idioms can be dealt with in standard Minimalist syntax (a lexicalist theory), without weakening the basic assumptions of Minimalism. In other words, I will argue that idioms are built up over the course of the syntactic derivation by iterated application of Merge, just like every other type of multi-word expression. In yet other words: idioms are not special in terms of how they are built. However, idioms are special in that, unlike other multi-word expressions, they are lexically stored in addition to being built in the syntax.

More specifically, I will argue that the syntax operates derivationally via free application of Merge. Idioms are stored in the lexicon in the form of syntactic structures and associated semantic and phonological information – crucially, lexically stored idioms do *not* participate in Merge. Rather, the application of Merge can result in a syntactic structure which matches an idiomatic structure stored in the lexicon; in that case, the semantic information stored along with the idiomatic structure may optionally be used to interpret the structure. The derivation then continues as usual, and data about the apparent (in)flexibility of idioms fall out from the way the derivation proceeds. Idioms differ in their semantic decomposability: no idiom-related meanings can be identified for the individual components of the idiom *shoot the breeze*, while we can identify meanings for the components of *spill the beans* (*spill* arguably meaning ‘divulge’ and

the beans meaning ‘a secret’). This is reflected in how semantic information is stored on idiomatic lexical items: for idioms like *shoot the breeze*, there is a semantic representation for the entire idiom, while idioms like *spill the beans* have semantic representations for the individual words, which combine compositionally. These semantic properties then interact with the syntactic derivation; both *shoot the breeze* and *spill the beans*, for instance, may be passivized in the syntax, but only in the latter case will the result be interpretable, due to semantic properties of the idioms that constrain the syntactic derivation.

I summarize below the primary assumptions I adopt in this dissertation. (6a-e) are assumptions which are commonly made in part of the Minimalist literature, while (7a-c) are specific to my theoretical approach to idioms (though (7a) in particular has precedents in non-Minimalist theories).

(6) *Primary architectural assumptions from Minimalist syntax*

a. Syntactic structure is built derivationally by iterative application of binary Merge, which applies freely, constrained only by the Extension Condition. The lexical items which participate in Merge are triples of syntactic, phonological and semantic information.

b. The Extension Condition does not apply to adjunction.

c. Spell-Out, in which LF and PF representations are created and sent to the semantics and phonology respectively, takes place at the phase level, where Voice and C are the phase heads; specifically, the complement of the phase head is spelled out.

d. Semantic interpretation is compositional, but takes place only at Spell-Out, not at every application of Merge.

e. There are no construction-specific principles in the syntax.

(7) a. Idioms are stored as treelets with syntactic, semantic and phonological information, but those treelets do not participate in Merge, unlike atomic lexical items.

b. At Spell-Out, a constituent in the derivation may be interpreted according to the semantic information stored with a given idiom if that constituent matches the stored treelet with respect to syntax and phonology; syntactic and phonological information cannot be overridden.

The goals of this dissertation are twofold. First, to demonstrate that the problems apparently posed by idioms are not as serious as they seem. Second, and more importantly, to

show that idioms can be used to clarify fundamental questions about syntactic architecture and the syntax-semantics interface in a Minimalist framework: What is the relationship between the syntax and the lexicon? What are the necessary building mechanisms of syntax? At what point(s) in the derivation is meaning computed? What sort of information can be stored in the lexicon?

The structure of the dissertation is as follows. Chapter 2 reviews several different approaches to issues involving the syntax-semantics interface, which I will argue idioms can be used to shed light on. In particular, I discuss the debate over whether syntax is derivational or representational, the debate over the relationship between the syntax and the lexicon, and the debate over at what point(s) semantic interpretation takes place.

Chapter 3 reviews previous approaches to the syntax and semantics of idioms, and the advantages and limitations of those approaches. It begins by discussing early generative approaches to idioms, such as Chafe (1968) and Weinreich (1969). It then discusses an influential recent approach to idioms: the approach of Nunberg, Sag and Wasow (1994), who argue that facts about the syntactic behavior of idioms can be explained in terms of the semantic properties of those idioms, and various more recent proposals in the same vein. Next, it reviews a representative example of a constraint-based, non-derivational approach to idioms: that of Jackendoff (1997, 2002, 2011). It also discusses Distributed Morphology (Marantz 1997, Harley 2014) as a representative derivational but non-lexicalist approach to idioms. Finally, it reviews some non-generative approaches to idioms, such as Fellbaum (2015) and Egan (2008).

Chapter 4 provides evidence that idioms have internal syntactic structure, and discusses the ways in which their syntactic flexibility is apparently restricted, arguing that those restrictions can be explained in terms of independent principles. I focus in particular on topicalization, passivization, pronominalization, adjectival modification, and head movement. In each case, I argue that the facts about the syntactic behavior of idioms can be explained in terms of how independent syntactic/semantic properties interact with the semantic properties of those idioms, without having to propose any specific constraints on idioms.

Chapter 5 introduces the syntactic architecture I propose, and illustrates it with the derivation of some cases involving idioms. I propose that idioms are stored as lexical items including syntactic, semantic and phonological information. The syntactic derivation proceeds via iterated application of Merge, and if the lexically stored syntactic structure associated with an idiom is built up in the derivation (specifically, at the phase level), the idiomatic reading

becomes available. The derivation then proceeds as usual, but in some cases the result will be semantically uninterpretable, due to interactions between the semantics of the idiom and independent syntactic properties. Chapter 5 discusses a number of details of this syntactic architecture, including the timing of Spell-Out and what it means for a lexically stored syntactic structure to match a structure built derivationally. It also reconsiders some data which is difficult to deal with in a derivational approach, including McCawley's paradox (McCawley 1981) and the existence of idioms with variables, and suggests ways to deal with them.

Chapter 6 experimentally motivates the cognitive distinction between semantically decomposable and semantically non-decomposable idioms which underpins much of the preceding argumentation. It presents the results of an experiment with two components. First was a decomposability norming task, in which subjects were presented with idioms and asked to judge to which extent they could assign meanings to the individual components of those idioms. Second, subjects were presented with syntactically modified versions of those same idioms and asked to judge their acceptability. The results of the experiment show that the claims in the literature about the semantic (non-)decomposability of idioms are borne out by native speaker judgments, and that judgments of semantic decomposability correlate with judgments of semantic flexibility in ways consistent with the argumentation in Chapters 4 and 5.

Finally, Chapter 7 summarizes and concludes.

This dissertation contributes to our understanding of idioms in a number of ways. First, it is the first investigation of idioms which develops a detailed derivational syntactic analysis in a Minimalist framework. This includes formal syntactic and semantic analyses of phenomena which have not previously been analyzed, such as semantically external adjectival modification of non-decomposable idioms, which has been recognized since Ernst (1981) but not formally analyzed. Second, it proposes an original architecture for the relationship between the syntax and semantics which combines the advantages of a number of previous accounts, including those of Nunberg, Sag and Wasow (1994) and Jackendoff (1997, 2002, 2011). It is the first account of idioms in which they are both fully stored in the lexicon and fully built derivationally, allowing their hybrid properties to be accounted for. Third, the proposed architecture helps shed light on a number of important questions about the architecture of the language faculty, including the relationship between the syntax and the lexicon and the extent to which syntax and semantics are strongly derivational. Finally, it provides experimental evidence for a distinction between

decomposable and non-decomposable idioms and the correlation between decomposability and syntactic flexibility.

Chapter 2
Issues in the Syntax-Semantics Interface

2.1. Introduction

The previous chapter introduced some properties of idioms which raise important questions for theories of syntax, semantics and the interface of the two. In particular, there are some senses in which idioms seem to behave like atomic lexical items (i.e. blocking the application of syntactic operations internal to their structure), even though they are syntactically complex phrases. If indeed idioms are atomic lexical items, then there are important implications for the nature of the lexicon, and how it feeds the syntactic derivation, as well as how idioms are spelled out (both phonologically and semantically). If idioms are not atomic lexical items, then we need an alternative explanation for their properties, which again will have important architectural implications. I will end up arguing for the claim that all idioms are lexically stored, and some are atomic lexical items, arguing that the theory of idioms I propose is compatible with a derivational architecture which follows the basic principles of Minimalism, but departs from current Minimalist theories regarding some aspects of lexical insertion and Spell-Out. This chapter, therefore, will introduce the relevant architectural issues that serve as background to the formal analysis of idioms, and discuss how they are resolved in various syntactic frameworks.

2.2. Early generative grammar[2]

Early generative grammar, beginning with *Syntactic Structures* (Chomsky 1957), posited a sharp distinction between deep structure (or D-structure) and surface structure (or S-structure). Phrase structure rules generate the D-structure, which in turn is subject to transformations in the mapping to S-structure. This implies a sharp distinction between lexical insertion and what we would now refer to as the syntactic derivation; all transformations take place only after all lexical items have been inserted into the D-structure.

[2] This section is largely based on Partee's (2014) history of the syntax-semantics interface.

Katz and Fodor (1963) propose that the interpretation of a sentence is dependent on its transformational history (i.e. the derivation). The phrase-marker, representing the D-structure, is extended to what they call a T-marker, including all the transformations between D-structure and S-structure. The meaning computed from the D-structure is then altered by the transformations applied. Though Katz and Fodor's semantics are not fleshed out in detail, the general approach anticipates the derivational, compositional approach to semantics pioneered by Montague.

On the other hand, Katz and Postal (1964) take the opposite approach, arguing that meaning is computed from D-structure alone. Thus while Katz and Fodor take negation (for example) to be a transformation applied to D-structure, Katz and Postal assume that a negative morpheme is already present at D-structure. This view predicts that transformations are unable to affect interpretation, although there are apparent counterexamples to that prediction, as pointed out by Chomsky (1957). The two sentences in (1) differ in scope, with *everyone* taking higher scope than *two* in (1a), and *two* taking higher scope than *everyone* in (1b) (though for some speakers, (1a) also has an interpretation in which *two* takes higher scope than *everyone*).

(1) a. Everyone in this room speaks two languages.

b. Two languages are spoken by everyone in this room.

Nonetheless, the Katz and Postal theory has the appealing quality that the D-structure is the input to semantics and the S-structure is the input to phonology, with the syntax serving as a bridge between the two systems. As we will see in Chapter 3, it also provided an approach by which they could explain apparent restrictions on the flexibility of idioms, although that approach turns out to be too restrictive.

There were two general trends in response to the Katz and Postal theory: generative semantics and interpretive semantics. Generative semantics was an extension of the Katz and Postal theory. According to generative semantics, semantic interpretations themselves are the input to the derivation – the D-structure consists of semantic representations, which undergo transformations turning them into an S-structure representation which can serve as input to the phonology. The generative semantic program resulted in highly complex sets of transformations and highly abstract D-structure representations. More importantly for our purposes, though, generative semantics posits that the D-structure is not composed of lexical items: just like

transformations, lexical insertion takes place after the D-structure has been generated from semantic representations.

In contrast, interpretive semantics posits that D-structure is syntactic, and that both transformations and semantic interpretation apply to syntactic structures which have already been generated. Generative semantics eventually fell by the wayside, leaving interpretive semantics as the dominant framework. However, interpretive semantics is a broad framework, consistent with many different possible theories of the relationship between syntax and semantics. Under interpretive semantics, the relationship between syntax and semantics may not be particularly close at all.

As it happened, Montague (1973) proposed a theory in which there was indeed a close relationship between syntax and semantics. According to Montague, there is a homomorphism between the syntax and semantics, both of which can be represented as an algebra. For each rule combining syntactic parts to create a larger expression, there is a corresponding rule indicating how their meanings are combined. This was the first major theory of architecture addressing semantics directly which was strongly derivational and compositional.

The Montagovian tradition led to the approach of Heim and Kratzer (1998), which is standard today in Minimalism. Heim and Kratzer also propose a compositional approach, but it differs from Montague's theory in one crucial way. According to Heim and Kratzer, rules of semantic composition do not operate in tandem with syntactic rules. Rather, the syntactic derivation derives the Logical Form (LF) of a sentence, a syntactic representation which is then acted upon by rules of semantic composition. Thus while Heim and Kratzer's theory is compositional, it is not strongly derivational in the same way that Montague's theory is. (Although there is still a close relationship between the syntax and the semantics, since the LF is syntactically derived.)

Thus even within compositional theories of interpretive semantics, there is an important distinction to be made: semantic composition may take place derivationally, in tandem with syntactic composition (see Epstein et al. 1998, Uriagereka 1999), or it may take place at LF, post-syntactically.

2.3. Minimalism

Minimalist approaches to the syntax-semantics interface fall into the compositional framework of Montague and Heim and Kratzer. According to typical Minimalist assumptions (e.g. Chomsky 1995), lexical items are combined via Merge; the syntactic derivation involves a series of applications of Merge, which is defined in (2).

(2) *Merge*

An operation which takes two elements X and Y and combines them to make a two-membered set, {X, Y}

Merge creates two types of syntactic relations: the two elements which serve as input to an instance of Merge are said to be in a sisterhood relation, while the object created by an instance of Merge is said to be in a motherhood relation with the two elements which served as input to that instance of Merge. Merge may be either External (in which case neither element is a member of the other), or Internal (in which case one element is a term of the other); Internal Merge is analogous to Move in earlier theories (see Chomsky 2001a, Di Sciullo and Isac 2008). (There may be other operations, such as Agree, depending on the theory, but all Minimalist theories take Merge to be the basic syntactic operation.)

Merge has been argued to be subject to the Extension Condition (Chomsky 1995), which states that each instance of Merge must extend the syntactic structure – in other words, it must involve the root node, which is the node corresponding to the entire structure which has been built at a given point in the derivation. If Merge cannot destroy motherhood or sisterhood relations, and a node can only have a single mother, then the Extension Condition must hold, since any instance of Merge which violates the Extension Condition will necessarily either destroy a previously created syntactic relation or create a multi-dominance structure in which a single node has multiple mothers. In this dissertation, I will adopt the Extension Condition, but I will assume that Merge is otherwise unconstrained (Free Merge).[3] In particular, Merge does not have to be motivated by feature checking; any two syntactic objects can always Merge, as long as the Extension Condition is respected. (However, see Section 5.2 for an argument that the Extension Condition does not apply to adjunction.)

[3] In principle, then, my system is compatible with multidominance structures (e.g. Epstein, Kitahara and Seely 2012).

After the application of all syntactic operations, the structure resulting from the syntactic derivation is then spelled out: in other words, it is sent to the phonology and the semantics. More precisely, two objects are generated from the resulting syntactic structure: LF (familiar from Heim and Kratzer) and Phonological Form, or PF. PF is interpreted by the phonology, and LF is interpreted by the semantics. These representations ultimately interface with language-external systems, the articulatory-perceptual system and the conceptual-intentional system respectively. A standard assumption is that PF and LF are different: LF can contain only interpretable features (those which are relevant for semantic interpretation), while PF can contain only uninterpretable features (those which are irrelevant for semantic interpretation). Thus Spell-Out is sometimes conceptualized as splitting the syntactic structure into non-overlapping parts. There is some confusion, however, about the nature of LF and PF. Chomsky is careful to note that LF and PF are syntactic objects, which are interpreted by the semantic and phonological components of the grammar, respectively (Chomsky 1995, Chapters 3-4). Under this interpretation, the expression "sent to LF" or "sent to PF" (often seen in discussions of Spell-Out) is misleading: a more precise phrasing would be "an LF representation is sent to the semantics" and "a PF representation is sent to the phonology."

The architecture in which the input to the syntactic derivation comes from the lexicon and the output of the syntactic derivation is sent to the semantics and the phonology is thus often called a "Y-model," since the output of the derivation branches into two components, like the shape of the letter Y (see e.g. Chomsky 1981, 1986 and references therein). We can think of the Heim and Kratzer architecture as being an example of a Y-model as well. The picture is somewhat complicated by the introduction of phase theory (Chomsky 1998, 2001b, 2008). According to phase theory, the syntactic derivation is divided into domains called phases (typically CP and vP), and Spell-Out occurs at each phase boundary – specifically, the complement of the phase head (C or v) is spelled out after merger of the phase head. An even more extreme version of this idea is put forth by Epstein and Seely (2006), who propose that Spell-Out takes place after every application of Merge (see also Epstein et al. 1998). This proposal is much more strongly derivational than even standard phase theory, making it more akin to Montague's proposal. In Chapter 5, I will adopt a weakly derivational system, in which interpretation of idiomatic and literal meanings takes place at the phase level, but I will also argue that the facts are compatible with a strongly derivational system.

The issue which I have so far omitted in the discussion of Minimalism concerns the input to the syntactic derivation. I mentioned that the lexicon is the input to the syntactic derivation, though this is not strictly true, under some Minimalist theories. Rather, Chomsky (1998) proposes that elements are taken from the lexicon to form a lexical array, and elements from the array are then taken as the input to Merge. The notion of lexical array was introduced by Chomsky to deal with data like (3):

(3) a. There is likely to be a proof discovered.
b. *There is likely a proof to be discovered.
c. A proof is likely to be discovered.

Chomsky (1998) argues that the ungenerability of (3b), leading to ungrammaticality, is due to the principle Merge-over-Move: an EPP feature on T is preferentially satisfied by merger of an expletive, rather than movement. Since *a proof* was moved to the specifier of the embedded T in (3b), instead of an expletive being inserted, Merge-over-Move is violated. But Merge-over-Move predicts that (3c) should be ungrammatical if the full lexicon is accessible, since an expletive could be inserted instead of *a proof* moving. Hence Chomsky proposes that a lexical array is chosen; in (3a), *there* is included in the array, while in (3c), it is not. A notion similar to the lexical array is the numeration (Chomsky 1995), which is identical to an array except that its elements contain indices indicating how many times they are to be used in the derivation.

Finally, there is the notion of a lexical subarray, which is similar to a lexical array, except that it is limited to the elements used in the derivation of a single phase. According to Chomsky (1998), there is a conceptual motivation based on semantics for the choice of lexical subarrays. Essentially, Chomsky considers the phase to be the syntactic counterpart of a proposition, so a subarray must contain all of the content necessary to express a proposition: either v or C, and any arguments which are necessary due to the selectional requirements of v or C. Chomsky argues that vP forms a propositional unit, in that theta-roles are assigned within the vP, while CP forms a propositional unit, in that it expresses a full clause, including tense and force. But note that Chomsky takes vPs which lack external arguments, such as unaccusative or passive vPs, not to be phases, even though external arguments are not selected by those v heads. As pointed out by Citko (2014), this calls into question the idea that phases can be defined as the syntactic counterpart of propositions. Another argument against this idea is given by Epstein (2007), who

points out that it is the phase-head complement (VP and TP, not vP and CP) which is sent to the intferaces, and the VP and TP do not form propositional units by themselves.

To summarize, the general architecture adopted in Minimalism is a Y-model, in which lexical items serve as the input to the derivation, and the output of the derivation is sent to the phonological and semantic systems. There are several major ways in which specific instantiations of the Y-model differ: Spell-Out may happen at the phase level, at the end of the derivation (as in Government & Binding), or after every step of the derivation, and lexical items may be selected directly from the lexicon, or from an array, numeration, or subarray.

I will argue in Chapter 5 that idioms are compatible with a strongly derivational syntax, if not a strongly derivational semantics. By a strongly derivational syntax, I mean one in which structures above the word level are always built derivationally by Merge. I will be adopting a Heim and Kratzer-type semantics, which is not strongly derivational in the Montagovian sense. Specifically, I will be combining a Heim and Kratzer-type semantics with phase theory, so that semantic interpretation takes place only at the phase level.[4]

2.4. Parallel architecture

Recent work by Jackendoff (1997, 2002, 2011) has provided an alternative architecture which differs radically from the generative approaches described in the preceding sections, known as his parallel architecture approach. Parallel architecture is an example of a constraint-based grammar, which differs from derivational generative approaches in that it does not posit a step-by-step syntactic derivation, but rather posits syntactic representations which must satisfy grammatical constraints.[5]

[4] As pointed out by Epstein and Seely (2006), however, sub-phase-level fragments such as *the mall* are also interpretable, hence it is arguably necessary in at least some cases to do interpretation in the absence of a phase. I set these cases aside, while recognizing that a phase-based model may have to be supplemented with sub-phase-level interpretation.

[5] There are a number of other constraint-based syntactic formalisms, including lexical-functional grammar and head-driven phrase structure grammar (HPSG), but I do not discuss them here – instead I take Jackendoff's parallel architecture to be representative of constraint-based systems in general, for the purpose of broadly comparing models of syntactic architecture. The reason I choose Jackendoff is that he has done extensive work on idioms, discussed in Chapter 3. But see Chapter 3 for discussion of an approach to idioms in the framework of Sign-Based Construction Grammar (a variation on HPSG); as the discussion in Chapter 3 shows, the Sign-Based Construction Grammar approach differs in some ways from Jackendoff's approach to idioms.

The details of Jackendoff's formalism will be discussed in Section 3.3, where we review his theory of idioms. What is important for current purposes are the broad differences between parallel architecture and the generative architectures previously discussed.

The key architectural difference between the two types of systems is that, in parallel architecture, the syntax, semantics and phonology are independent components which work in parallel. That is, there are syntactic, semantic and phonological formation rules, which generate syntactic, semantic and phonological structures, respectively. For example, consider the phrase *the man*. When a phrase like *the man* is built, the three structures are built in parallel: the syntactic component builds an NP structure, consisting of a determiner and a noun, the phonological component builds the structure [ðə mæn], and the semantic component builds a semantic representation. (For Jackendoff, semantic representations are mentalistic, in the sense that, for a given language user, a phrase refers to an entity in the world as that language user conceptualizes it. Semantic representations of sentences are partly compositional, but also incorporate inferences, world knowledge, and other components which are treated as pragmatic in other theories.) Those three representations are combined by an operation called Unification, resulting in a structure satisfying any constraints which apply to the three structures. Roughly speaking, Unification is an operation which combines two sets of feature structures by taking the union of the feature/value pairs, if those feature/value pairs are consistent (see e.g. Shieber 1986). The Unification operation can also be used to stitch syntactic structures together to make larger structures. An S consisting of an NP and a VP, for example, can be combined with an NP consisting of a Det and an N and a VP consisting of a V and an NP, creating an articulated sentence structure. See Section 3.3 for an illustration of structure-building via Unification. Crucially, this process is non-derivational, in the sense that there is no generative algorithm for combining structures: they can be combined in any order, so long as all the relevant constraints are satisfied. Semantic, syntactic and phonological structures are linked by subscripts, ensuring correspondence among the three components – for example, the phonological representation [ðə], the syntactic representation Det, and the semantic representation DEF (for definite determiner) will all have the same subscript, ensuring that they are bound together when a structure like *the man* is built.

Another major difference is that in parallel architecture there is no strict distinction between the lexicon and the syntax. Whereas in Minimalism syntactic structures are built from

atomic lexical items, in parallel architecture syntactic structures may themselves be stored in the lexicon, and combined (via Unification) into larger structures. In this sense, there are affinities between parallel architecture and Construction Grammar (e.g. Goldberg 1995).

Jackendoff often uses idioms to argue in favor of parallel architecture and against Minimalism. In Jackendoff's system, idioms can be lexically stored, just as complex syntactic structures already are. Crucially, semantic information can then be stored along with the idiom as a whole, instead of having to be applied to a syntactically derived idiom. We will look at Jackendoff's argumentation in more detail in Section 3.3, but for now, the important point is that there are *prima facie* reasons to believe that the parallel architecture is supported by the behavior of idioms. The approach I will end up taking, though compatible with Jackendoff's approach in a number of ways, differs strongly from parallel architecture in that it involves a derivational Y-model, in which the syntax is clearly separated from the semantics and phonology.

2.5. Distributed Morphology

Another framework which has been argued to be particularly suited to the analysis of idioms is Distributed Morphology (Halle and Marantz 1993). Like parallel architecture, it differs significantly from Minimalism in its architectural assumptions. Distributed Morphology (DM) is typically described as having three fundamental distinctive properties (Late Insertion, Underspecification, and Syntactic Hierarchical Structure All The Way Down), which I sketch here.

First, unlike Minimalism, DM is an anti-lexicalist theory, in the sense that there is no lexicon feeding the syntax. In fact, there is no lexicon at all in the normal sense; the functions performed by the lexicon in other theories are distributed throughout various components in DM. The syntax is fed by a set of morphosyntactic features, which undergo standard syntactic operations. There is a post-syntactic Spell-Out operation, in which terminal nodes, composed of sets of morphosyntactic features (including semantic features which enter into the syntactic computation), are replaced with Vocabulary Items. A Vocabulary Item is defined as a correspondence between a phonological string and a set of morphosyntactic features comprising the environment in which the phonological string may be inserted. For instance, the phonological string /d/ in English, representing the past tense morpheme, may replace a terminal node consisting of the feature [past]. Finally, there is a so-called Encyclopedia, which contains

information about the meaning of Vocabulary Items. Crucially, the morphosyntactic features are separate from both the phonological and semantic features in DM, in contrast to lexicalist theories, in which all three types of features are present in the lexical items which feed the syntax. DM is thus referred to as a Late Insertion theory, since purely phonological and semantic features do not enter the derivation until after all syntactic operations have taken place.

Second, Vocabulary Items are underspecified in the sense that phonological strings may be underspecified for the environments in which they can be inserted. English present tense inflection provides an illustration of underspecification (example adapted from Bobaljik 2011). Consider the two Vocabulary Items in (4):

(4) a. /s/ ↔ [3sg, pres]
b. Ø ↔ [pres]

The string /s/ is specified for person, number, and tense, but the null string is specified only for tense. Spell-Out is subject to the following principle, known as the Subset Principle (Halle 1997:428):

Subset Principle
The phonological exponent of a Vocabulary Item is inserted into a morpheme if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

The Subset Principle ensures that, for instance, /s/ cannot replace a terminal node with the features [2sg, pres], since it is specified for one feature not present in the node, namely [3] (third person). Hence **You walks* is ungrammatical. The null string (4b) can replace a terminal node with the features [2sg, pres], because it is specified for a subset of those features. Conversely, the Subset Principle also ensures that the null string cannot replace a terminal node with the features [3sg, pres]. Even though it is specified only for the feature [pres], which is a subset of the features in the terminal node, there is another string which is also specified for a subset of the relevant features. Since the other string, /s/, matches more features, the null string cannot be chosen.

The third difference is Syntactic Hierarchical Structure All The Way Down. In lexicalist theories, morphology and syntax usually differ in that only syntax has hierarchical structure. In

DM, both morphological and syntactic operations manipulate hierarchical structures of the same sort. In other words, syntactic structure is not solely above the level of the word; there is also sub-word level syntactic structure. This is because morphological operations take place between the syntax proper and Vocabulary Insertion. (Here, "morphological operations" refers only to morphophonological processes which are not dealt with syntactically in DM, such as "affix-hopping" below – crucially, it does not refer to all sub-word level operations.) In DM, this is necessary because there is not a straightforward mapping between the output of syntax and the input to Vocabulary Insertion. Consider English affix-hopping (example again adapted from Bobaljik 2011). In English, inflectional information such as the past tense morpheme is affixed to the end of the verb, but in the syntactic structure, Infl is above V. Where Chomsky (1957, 1981) posits affix-hopping in order to get the correct order, DM posits a morphological process, such as Marantz's (1989) Morphological Merger.

(5) *Morphological Merger*
A syntactic complementation relation: [X° YP]
may be realized in the phonology as an affixation relation:
X affixed to Y, the head of YP: [[Y] X] or [X [Y]]

In English, the former option is chosen. Note that Morphological Merger operates on hierarchical syntactic structures.

Another important feature of DM is the distinction between f-morphemes and l-morphemes. F-morphemes (or functional morphemes) are terminal nodes whose spell-out is deterministic, in that they can be replaced only by a single phonological string. L-morphemes are terminal nodes which can be spelled out by several different phonological strings. Since semantic features are not present at Vocabulary Insertion, a terminal node in a nominal syntactic position may hold any noun – thus a single l-morpheme could be replaced with *person*, *chair*, *dog*, and so forth. DM actually goes even further, and claims that a single l-morpheme can belong to any lexical category, depending on its syntactic configuration. There is a single l-morpheme, Root, which will be a noun if its nearest c-commanding f-morpheme is a determiner, a verb if its nearest c-commanding f-morphemes are v, aspect, and tense, and so on. (On the notion of category-neutral roots, see Pesetsky 1995 and Marantz 1997. Though see Harley 2014 for a proposal that roots are actually individuated in the syntax, but not by phonological or semantic

features.) Thus, we see systematic relationships between lexical categories: *destroy* is the spell-out of a category-neutral root in a verbal position, while *destruction* is the spell-out of a category-neutral root in a nominal position.[6]

Of course, there are gaps; not every noun has a corresponding verbal form – there is no verb *to cat*, for example, even though DM predicts it to be possible. The Encyclopedia serves to rule out such impossible forms. It happens that *cat* has a conventionalized meaning in a nominal context, but not in a verbal context, as specified by the Encyclopedia. In contrast, *destroy* has a conventionalized meaning in both a nominal and a verbal context.

To illustrate how the derivation works in DM, consider the (simplified) derivation of a simple sentence, *John walks*. A category-neutral root, √, merges with a categorizing f-morpheme, v. The result then merges with a terminal node with the features [3sg, present], and subsequently with the subject (which again can be thought of as a category-neutral root which has been merged with a categorizing f-morpheme, in this case n). After completion of the syntactic derivation, Vocabulary Insertion takes place. The root which has been merged with v can be spelled out as a verb, such as *walk*, while the root which has been merged with n can be spelled out as a noun, such as *John*. The terminal node with the features [3sg, present] is spelled out as /s/, in accordance with the Subset Principle outlined above. Encyclopedic information is then inserted, ensuring that *John* and *walk* get interpreted correctly. Finally, Morphological Merger takes place, ensuring that /s/ is pronounced as an affix on the verb *walk*.

The DM treatment of word meaning has been argued to be especially well suited to dealing with idioms. Since there is no relevant syntactic distinction between "words" and "phrases" in DM, there should also be no notion of idiom which is limited to the phrasal level. And indeed, Marantz (1995) argues that all content words are idioms, in that they have a conventionalized meaning based on the context in which they occur. Phrasal idioms, then, should be amenable to being treated in the same way as *cat* or *destroy*: for example, the Encyclopedia may specify that *kick* can take on the meaning 'die' in the context of *bucket*, and correspondingly *bucket* can take on a null meaning in the context of *kick*. Put another way, idioms are indeed

[6] Some work in DM (Embick 2000, Embick and Halle 2005, Embick and Noyer 2007) argues that Late Insertion does not apply to Roots, only to f-morphemes. Embick abandons Late Insertion for Roots because he argues that it predicts that suppletion of Roots should be possible, when in fact it does not occur. See Haugen and Siddiqi (2013) for arguments in favor of Late Insertion for Roots, including arguments that Root suppletion is indeed attested.

syntactically complex, but words are also syntactically complex in DM, so the fact that idioms behave in some ways like words is not surprising. In Section 3.4, we will look at the DM analysis of idioms in more detail. In Section 5.9, I present evidence suggesting that DM approaches to idioms make the wrong predictions for some data, specifically regarding the relationship between the aspectual properties of idioms and their literal counterparts.

2.6. Summary

Of course, the previous sections have far from exhausted the range of theoretical approaches to the syntax-semantics interface and the architecture of the grammar. However, several themes emerge from the preceding discussion. First is the question of derivation versus representation: is syntactic structure formed piecemeal via a structure-building operation (as in Minimalism and DM), or are syntactic constraints largely representational (as in parallel architecture or in Government & Binding)? Idioms are a useful test case, because it has been argued that idioms are not derived syntactically (e.g. Katz and Postal 1963, Weinreich 1969, Nunberg et al. 1994 for non-decomposable idioms, Jackendoff 1997, 2002, 2011), and thus they pose a potential problem for derivational approaches. Second is the question of the relationship between syntax and the lexicon: is syntax fed by the lexicon (as in Minimalism), or is there a more complicated relationship between lexical information and the syntax (as in parallel architecture and DM)? Again, idioms are a useful test case, because they have some apparently lexical properties, but have more internal structure than the sorts of lexical items typically assumed in Minimalism.

Within a derivational approach, a third question presents itself. Given a strongly derivational syntax, does semantic composition also take place derivationally, in tandem with the syntactic derivation? Idioms can help shed light on this question as well, since as I will discuss some idioms are at least partially non-compositional, despite having internal syntactic structure. We might imagine, then, that idioms can be built derivationally in the syntax, but their meaning is computed post-syntactically. This is precisely what I will end up arguing in the following chapters. The bulk of the argumentation in the following chapters will be dedicated to analyzing data regarding idioms, but the discussion in this chapter should be kept in mind throughout, since the treatment of idioms will bear on how these questions are answered.

Chapter 3
Previous Approaches to Idioms

3.1. Early generative grammar

As mentioned earlier, a central problem posed by idioms is their apparent hybrid nature, since they seem to behave in some ways like atomic lexical items and in some ways like phrases. In early generative linguistics, there were several attempts to reconcile the hybrid behavior of idioms. The first major attempt was by Katz and Postal (1963), who posited that the lexicon contains idioms in addition to regular lexical items. In their system, the lexical entry for an idiom consists of a string (e.g. *kick the bucket*), semantic markers specifying the idiomatic meaning, and the category dominating the string given the idiomatic reading (in this case, Main Verb, in their terms). If the deep structure contains the relevant lexically specified terminal string dominated by the lexically specified category, then that string may be optionally given the idiomatic interpretation. The apparent syntactic inflexibility of idioms is a consequence of the fact that, in Katz and Postal's system, transformations such as passivization are triggered by formatives present at deep structure. Thus in the above example, the category Main Verb would dominate not *kick the bucket* but rather *kick the bucket passive* – the idiom followed by the formative triggering passivization. Hence the idiomatic meaning is not available for the passive, since *kick the bucket passive* is not the lexically specified terminal string. But this approach undergenerates, since it predicts that no idioms should be passivizable, which we know not to be the case. For instance, *spill the beans* is passivizable:

(1) +The beans were spilled.

Chafe (1968) also points out that Katz and Postal's analysis wrongly predicts that idioms should not be modifiable by manner adverbs (e.g. *John kicked the bucket gracefully*), which are also dominated by Main Verb at deep structure in Katz and Postal's theory. Finally, Katz and Postal themselves recognize that syntactically idiosyncratic idioms (those which appear to be syntactically ill-formed, such as *trip the light fantastic*) should not be generable under their

theory, since the syntactic component simply does not produce the required strings. Of course, their analysis is also untenable under a Minimalist approach, in which individual syntactic constructions are not lexically specified.

Weinreich (1969) takes a similar approach to Katz and Postal, but rather than trying to explain apparent syntactic inflexibility in terms of deep structure formatives, he posited that the lexical entry for an idiom would also specify its transformational properties (i.e. which transformations it could undergo). This increases the empirical coverage of Katz and Postal's theory, but is still clearly unsatisfactory, since it fails to capture the fact that the transformational properties of idioms are to a significant extent systematic (as we will see). It simply restates the facts. Weinreich also proposes to solve the problem of syntactically idiosyncratic idioms by storing them in the lexicon like non-idiom lexical items, without internal structure. This avoids Katz and Postal's problem, but goes too far in the other direction, because at least some syntactically idiosyncratic idioms must have some internal structure. For example, *trip the light fantastic* is inflected normally; see Chapter 5 for evidence for the internal syntactic structure of syntactically idiosyncratic idioms.

Chafe (1968) took the difficulties faced by previous attempts to indicate that a paradigm shift was required, away from generative syntax towards what he called generative semantics, a term which he used to refer to a system in which the semantic component generates structures which are converted into phonetic structures (as opposed to a Y-model in which the semantic and phonological systems interpret the output of the syntax). Chafe explains the unavailability of the passive with *kick the bucket* in terms of the fact that *kick the bucket* is semantically intransitive, even though it is syntactically transitive. If the input to the syntax is semantic, then it stands to reason that *kick the bucket* is not passivizable, for the same reason that *die* is not passivizable. Similarly, *kick the bucket* does not allow adjectival modification of *bucket* (for the most part; I return to possible exceptions to this in Section 4.2.4), because *bucket* is not semantically available for modification. Chafe's arguments are intriguing, but he does not introduce his framework in enough detail for his claims to be evaluated precisely. Chafe's system involves semantic representations which undergo what he calls "mutation rules," producing post-semantic representations. The process by which the semantic representation 'die' comes to be symbolized by the semantic representation 'kick-the-bucket', which is then represented by a particular phonetic string, is one such mutation, in Chafe's system. However, Chafe points out that some

"semantic tampering" of post-semantic representations is necessary in order to allow modifications like *kick the proverbial bucket* or *very hot potato*. Nonetheless, he has no specific theory of what sorts of semantic tampering are allowed. The approach I will end up taking is similar in one respect to Chafe's, in that it leverages the semantic properties of particular idiom chunks to explain their apparent syntactic (in)flexibility, but it is couched in a standard Minimalist framework in which the syntax, resulting from iterative application of Merge, feeds both the semantics and the phonetics.

The first very detailed investigation of the syntactic flexibility of idioms is that of Fraser (1970). Fraser proposes a frozenness hierarchy for idioms, shown in (2):

(2) L6 – Unrestricted
L5 – Reconstitution (e.g. action nominalization)
L4 – Extraction (e.g. passivization)
L3 – Permutation (e.g. particle movement)
L2 – Insertion (e.g. indirect object movement)
L1 – Adjunction (e.g. gerundive nominalization)
L0 – Completely Frozen

According to Fraser, any given idiom belongs to a level on the hierarchy; it can undergo any transformation lower on the hierarchy. For example, if an idiom can undergo permutation, then it can also undergo insertion and adjunction. (See Fraser for details about the transformations that would go in each level.) Fraser claims that there are no idioms on level L6. His approach is rather similar to Weinreich's, in that it stipulates that each idiom has a specified set of transformational properties. Fraser is somewhat more systematic – the frozenness hierarchy makes very specific predictions – but the hierarchy itself still wants explanation: why would transformations be ordered in such a way? And moreover, how is it determined which idioms fall into which level? The explanatory problem is especially important here, since the transformational properties of idioms are not explicitly taught, but speakers nonetheless have fairly robust judgments about them.

3.2. Nunberg, Sag and Wasow (1994)

The general approach taken by Weinreich and Fraser, in which transformational deficiencies of idioms were largely stipulated, remained mainstream until and throughout much

of the Government and Binding/Principles and Parameters era, with some exceptions attempting to systematically explain the syntactic properties of idioms (e.g. Newmeyer 1974). The most systematic investigation of the properties of idioms from this period is that of Nunberg, Sag and Wasow (1994). Nunberg et al. distinguish between semantically decomposable idioms, which they define as those "whose meanings – while conventional – are distributed among their parts," and semantically non-decomposable idioms, which they define as those "which do not distribute their meanings to their components" (491). (They refer to the two classes respectively as "idiomatically combining expressions" and "idiomatic phrases," but I use the more transparent terms "decomposable idioms" and "non-decomposable idioms," respectively.) *Spill the beans* is an example of the former, since *spill* can be paraphrased as 'divulge' and *the beans* can be paraphrased as 'the secret.' *Kick the bucket* is an example of the latter, since *kick* and *the bucket* do not have paraphrases, on the idiomatic reading. A key observation they make is that there is a strong (but not perfect) correlation between semantic decomposability and syntactic flexibility. Since *kick the bucket* is non-decomposable, it can undergo fewer syntactic transformations than *spill the beans*.

What is most important about Nunberg et al. for our purposes is that they provide a principled way of accounting for facts about the syntactic flexibility of idioms. As they point out, most previous literature had identified idiomaticity with non-compositionality, when in fact idioms differ with regard to their degree of compositionality. Nunberg et al.'s central insight is that differences in compositionality among idioms can be leveraged to explain differences in syntactic flexibility. As an illustration, let us consider their explanation of the fact that *kick the bucket* cannot be passivized. Since *kick the bucket* is non-decomposable, they treat it as a construction in the sense of Goldberg (1995): it has the same syntactic structure as a regular verb phrase, but the idiomatic meaning is associated with the construction as a whole. They argue that the passive is a relationship which holds between a pair of lexical forms, not a pair of phrases. In other words, passivization is treated as a transformation which applies to verbal heads – but the idiomatic meaning of *kick the bucket* is not associated with the verbal head. A passive sentence like *The bucket was kicked* can be derived only from passivization of the verb *kick* (which means 'kick', not 'die'). On the other hand, a decomposable idiom like *spill the beans* is built by general syntactic principles, and its idiomatic reading is compositional, so it can be passivized: passivization applies to the verb *spill*, which in this case means 'divulge'. Similar arguments

apply to other transformations. In general, facts about the apparent difference in syntactic flexibility of various idioms are explained in terms of the semantics of those idioms under Nunberg et al.'s approach. I believe this approach is essentially on the right track, though my analysis will differ in several respects. First, as I will argue below, Nunberg et al. do not successfully account for co-occurrence restrictions on idiom chunks. Second, they do not propose specific syntactic analyses to account for various syntactic properties; I will develop such analyses in Chapter 4. Third, and more crucially, they posit a syntactic bifurcation between decomposable and non-decomposable idioms: only the former are built in the syntax by standard syntactic processes, while the latter are constructions. The theory I will develop will unify the two classes of idioms, arguing that all idioms are built in the syntax by standard syntactic processes.

Nunberg et al.'s general approach has been adopted in some recent generative work. For example, Bargmann and Sailer (2016) argue that the apparent partial syntactic inflexibility of non-decomposable idioms relates to the properties of particular syntactic processes and the semantics of those idioms. For example, they argue that passive subjects in English must be discourse-old, which explains restrictions on the passivizability of non-decomposable idioms. However, they argue that even non-decomposable idioms like *kick the bucket* can satisfy the discourse restrictions on passivization, and thus be passivized in certain circumstances in English. In Chapter 4, I will argue against that particular claim, but I will adopt Bargmann and Sailer's general approach, in which facts about the apparent differences in syntactic flexibility of idioms are explained in terms of the interaction between independent syntactic properties and the semantic properties of particular idioms.

Before concluding this section, I will introduce another important problem in the analysis of idioms: the problem of co-occurrence restrictions. The problem of co-occurrence restrictions is most apparent with approaches which specify that at least some idioms are built from separate lexical items, as Nunberg et al. propose. For example, if *kick the bucket* is built from *kick*, *the*, and *bucket*, the following question arises: Under what circumstances is the idiomatic reading available? *Kick the bucket* is not itself stored as a lexical item with an associated idiomatic meaning, so the meaning must be stored on one or more of the individual lexical items from which it is built. One approach, suggested for example by Ruhl (1975), is to say that *kick* is polysemous: it can have its literal meaning, but it can also mean 'die'. The latter meaning must

only be available in the context of *the bucket*. For a decomposable idiom, such as *spill the beans*, the meaning can be distributed among the parts, so *spill* can mean 'divulge', but only in the context of *beans*, and *beans* can mean 'secret', but only in the context of *spill*. The obvious question is then: What does it mean for a lexical item to appear in the context of another lexical item? Any approach in which idioms are built up from separate lexical items must face this question. This includes Nunberg et al., since they assume that decomposable idioms are built up from separate lexical items. As I will discuss in Chapter 5, my approach faces the problem of co-occurrence restrictions, since it posits that idioms are derivationally built in the syntax; however, the fact that idioms are also lexically stored allows for the co-occurrence problem to be solved.

Nunberg et al. suggest a principled approach to co-occurrence restrictions. Their idea is that co-occurrence restrictions fall out from the semantics of the individual lexical items, similar to selectional restrictions. For example, they argue that *spill the beans* involves a literal "spilling-the-beans" meaning conventionally associated with a "divulging the secret" meaning. This has two important consequences: first, both *spill* and *beans* have to be present for the idiomatic reading to be available, and second, they must be in a configuration such that *beans* is semantically the object of *spill*. A slightly different argument applies to decomposable idioms which are not metaphorically based on a literal meaning, such as *pay heed*. The idiom *pay heed* means something like *pay attention*, but *heed* is much more restricted in its occurrence than *attention*, as shown in (3) (Nunberg et al. 1994:505):

(3) a. You can't expect to have my attention/*heed all the time.
b. He's always trying to get my attention/*heed.
c. He's a child who needs a lot of attention/*heed.
d. I try to give him all the attention/*heed he needs.

Nunberg et al. argue that the restricted occurrence of *heed* is due to the semantic difference between *attention* and *heed*: for them, we attend to things which we do not heed. The co-occurrence restrictions on *heed* thus do not need to be specified; they follow from its semantics. (However, Nunberg et al. do not specify what the semantic difference between *attention* and *heed* is which accounts for the restrictions.) This approach quite naturally accounts for the existence of idiom families – closely related sets of idioms, such as those in (4):

(4) a. +hit the hay, +hit the sack

b. ~pack a punch, ~pack a wallop

c. ~keep one's cool, ~lose one's cool

Not all idiom chunks will have such specific selectional restrictions that they can combine only with one element. For example, *cool* in the sense of *keep one's cool* refers to something one can keep, so it is not surprising that *cool* is also something one can lose, and therefore *lose one's cool* is grammatical as well.

Though this approach to co-occurrence restrictions is promising, I believe that it still runs into serious difficulties. It is difficult to see how the meanings of idiom chunks can be specified in such a way as to account for all their co-occurrence restrictions. Consider the decomposable idioms in (5):

(5) a. +open a can of worms

b. +bury the hatchet

c. +break the ice

In each case, Nunberg et al. would presumably say that the literal meaning is conventionally associated with the idiomatic meaning, in line with their analysis of *spill the beans*. Yet the roughly synonymous phrases in (6) do not have idiomatic readings.

(6) a. –unseal a can of worms

b. –bury the axe

c. –crack the ice

If it is the literal *meaning* of the phrases in (5) that is conventionally associated with the idiomatic meaning, then the phrases in (6) should have the same idiomatic meanings. The alternative is to say that, for example, *bury the axe* has a different meaning from *bury the hatchet* such that only the latter licenses the idiomatic reading. But it is hard to see what the relevant difference in meaning could possibly be, and in the absence of a specification of the meaning difference, this approach amounts to simply restating the facts. Though it could be argued that there is no such thing as a perfect synonym, a hypothetical perfect synonym of *hatchet* (or even a definition of *hatchet*) would presumably not suffice to license the idiom. The inescapable conclusion seems to be that it is the form, not just the meaning, of the phrases in (5) that licenses

the idiomatic reading, and therefore a purely semantic approach to co-occurrence cannot account for the relevant facts.

More recent work by Sag and others has also continued in the tradition of Nunberg et al. Kay, Sag and Flickinger (ms.), for example, pursue the idea that "meaningful idiom words can be modified and can appear in syntactic contexts that meaningless ones cannot" (4). They do this in the framework of Sign-Based Construction Grammar (SBCG), which is based on signs, which are lexical item-like objects containing information about the form, syntax and semantics of lexemes and other items. In SBCG, co-occurrence restrictions can be accounted for by the valence (VAL) feature of a sign, which lists the arguments it takes. Kay et al.'s representations for *spill*, for example, are given below:

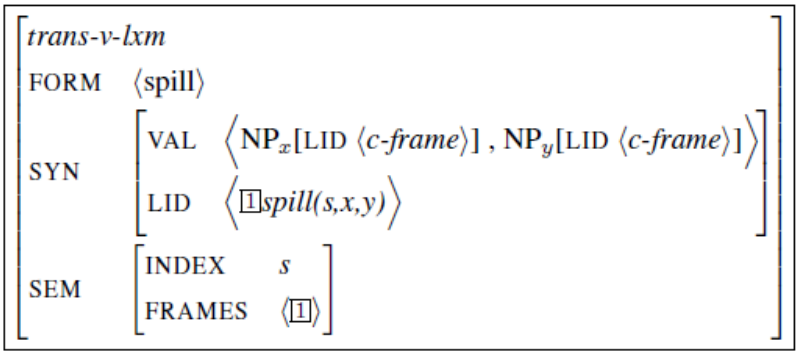


Figure 3.1: Sign for spill *(non-idiomatic)*

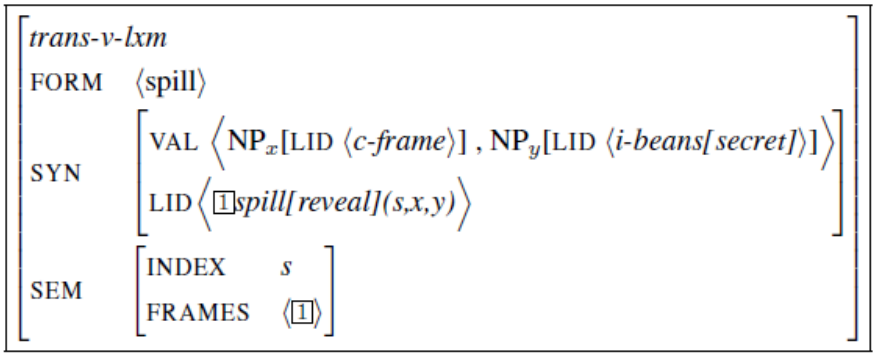


Figure 3.2: Sign for spill *(idiomatic)*

There are two signs for *spill*. Aside from the VAL feature, most of the details of the signs are not important for present purposes. The first sign (Figure 3.1) takes two arguments which are c-

frames (which stands for *canonical frames*, and refers to non-idiomatic elements). The second one (Figure 3.2) also takes two arguments, but the internal argument is an i-frame, or an idiomatic frame. Hence *spill* can only mean 'reveal' if it takes *beans* (meaning 'secret') as its internal argument. Conversely, *beans* can only mean 'secret' if an i-frame containing it has been selected by *spill*. For idioms like *kick the bucket*, Kay et al. posit an i-frame for *bucket* which specifies that it has a null meaning, and it is selected by *kick* (meaning 'die').

In contrast to Nunberg et al., then, Kay et al. employ a notion of syntactic selection (instead of purely semantic selection) in order to account for co-occurrence restrictions. This can account for the data more successfully than the purely semantic approach, though it amounts to essentially lexically specifying the co-occurrence restrictions (in the sense of specifying the phonological form of the element(s) that must co-occur, not just their semantics); I will argue that lexical specification of co-occurrence restrictions is necessary to account for the facts. Kay et al.'s system does avoid one criticism that has been levied at the solution of lexically specifying co-occurrence restrictions. Jackendoff (1997) points out that lexically specifying co-occurrence restrictions leads to a redundancy: one must both specify in the lexical entry for *spill* that it can only mean 'reveal' in the context of *beans*, and specify in the lexical entry for *beans* that it can only mean 'secret' in the context of *spill*; this becomes very unwieldy with more complex idioms, like *let the cat out of the bag*, since every lexical item in such an idiom must specify its co-occurrence restrictions. But in SBCG, it suffices to specify co-occurrence restrictions on the head of the idiom. The sign for *beans* does not need to specify that it can only mean 'secret' in the context of *spill*, because no other verb will have a VAL feature which selects for the same i-frame.

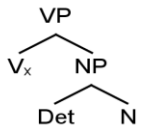
Kay et al. do not give detailed syntactic analyses, but suggest that the fact that objects in non-decomposable idioms cannot be passive subjects or be modified by adjectives is due to the fact that their objects are meaningless. As mentioned, this is the approach I will develop in detail in Chapter 4, though within a Minimalist framework.

3.3. Jackendoff (1997, 2002, 2011)

The most prominent recent version of the idea that idioms are lexically stored comes from Jackendoff (1997, 2002, 2011), whose analysis of idioms is couched in his framework of parallel architecture. According to Jackendoff, lexical entries are associations of phonological

structure, syntactic structure and conceptual structure (analogous to phonological, syntactic and semantic features in Minimalism). However, it is not just words that are stored in the lexicon – there are also idiomatic structures with different layers of complexity. Conceptual structure may map to syntactic structure in different ways. Consider a non-decomposable idiom such as *kick the bucket*. Jackendoff proposes that the lexical entry for *kick the bucket* should be as in (7), ignoring the phonological structure. It includes a treelet, as well as a Lexical Conceptual Structure representing its meaning (the bracketed structure below the tree).

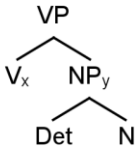
(7) Lexical entry for *kick the bucket*



$[\text{DIE } ([\ ]_A\ )]_x$

The subscript *x* on the entire Lexical Conceptual Structure (LCS) maps to the verb, since the idiom has a verbal meaning. The subscript *A* maps to the external argument. Crucially, since the meaning is intransitive, the NP does not map to any argument in the LCS. This contrasts with the lexical entry for a decomposable idiom such as *bury the hatchet*, which is shown in (8), again ignoring the phonological structure.

(8) Lexical entry for *bury the hatchet*



$[\text{RECONCILE } ([\ ]_A, [\text{DISAGREEMENT}]_y\ )]_x$

Here again, the subscript *x* on the entire LCS maps to the verb. In this case, though, the subscript *y* on the argument ('disagreement') maps to the NP.

Lexical entries can also contain variables, to account for idioms like *take NP for granted* and structures like *How about X?* (which Jackendoff treats as constructions). Consider the sentence *Bill belched his way down the street* (Jackendoff 2011:610). According to Jackendoff, this sentence contains an entry like the following:

(9) Bill belched his way down the street.
[$_{VP}$ V [*pro*'s way] PP] = 'go PP while/by V-ing'

There is a syntactic structure with open variables (V, *pro*, PP) and a conceptual structure linked to that structure. But Jackendoff argues that the linking is unpredictable in the sense that there are aspects of the conceptual structure not realized in the syntactic or phonological structure – in this case, the sense of motion. (Though it might be argued instead that the sense of motion is conveyed by *way*.) According to Jackendoff, a sentence such as (9) cannot be built by Merge as in standard minimalism; Jackendoff treats it as a construction, in that it consists of a pairing of syntactic form and meaning. All sorts of syntactic structures can be expressed using the same formalism – for example, in his approach, a transitive VP structure is a construction, [$_{VP}$ V NP] consisting only of variables.

Unlike in Minimalism, lexical entries are composed by means of an operation called Unification, which satisfies the syntactic, phonological and conceptual requirements of the lexical entries being combined. For example (Jackendoff 2011:601):

(10) Unification of [$_{VP}$ V NP], [$_{NP}$ Det N], and [$_{VP}$ $_{V}$kick [$_{NP}$ $_{Det}$the $_{N}$bucket]] =
[$_{VP}$ $_{V}$kick [$_{NP}$ $_{Det}$the bucket]]

In this case, the VP and NP structures are licensed redundantly, by the VP and NP constructions and the idiom with which they are unified.

Jackendoff's approach solves some of the classical problems with idioms. As he points out, meaning can only be stored on lexical items in standard Minimalism, so a standard assumption is that the meaning of *kick the bucket* is stored on *kick*, while *the* and *bucket* have a null meaning in the context of the idiom. But this contradicts the intuition that the idiom is really the whole VP, and it also runs into trouble with idioms like *cut and dried*, where it is not clear which lexical item, if any, carries the meaning of the idiom. Storing idioms as lexical entries

avoids this issue, and solves the problem of co-occurrence restrictions by simply lexically specifying what counts as an idiom. The issue of apparent differences in syntactic flexibility can be dealt with in a similar way to Nunberg et al.: the fact that e.g. *hatchet*, unlike *bucket*, maps to an argument of the verb can be used to explain apparent differences in flexibility between decomposable and non-decomposable idioms. I will adopt Jackendoff's assumption that idioms are stored wholesale in the lexicon as well as his assumption that the distinction between decomposable and non-decomposable idioms can be captured in terms of how meaning is lexically associated with either chunks of those idioms or the idioms as a whole. However, my analysis will be formalized in a derivational framework, rather than a constraint-based framework, and one which makes use of Merge, rather than Unification, for structure-building. See Section 5.2.1 for arguments in favor of my approach over Jackendoff's.

3.4. Distributed Morphology

Idioms have also been analyzed in non-lexicalist frameworks. As discussed in Chapter 2, non-lexicalist frameworks such as DM are, in a sense, naturally suited for the analysis of idioms, since they make no syntactic distinction between words and phrases. The fact that there exist phrases whose meaning is idiosyncratic, like the meaning of words, is then not surprising. As detailed by Marantz (1997), the meanings of phrasal idioms can be analyzed as instances of contextual allosemy, in which items get special meanings in particular contexts. Crucially, the same is true beneath the word level: a category-neutral root, say *transmit*, takes on a particular meaning when it is merged with *v*, and a different meaning when it is merged with *n*. Similarly, *kick* can take on a particular meaning in the context of *the bucket*. The standard approach in DM is to say that *kick* takes on the meaning 'die' in the context of *the bucket*, and that *the* and *bucket* take on a null meaning in the context of *kick*. (Notice that this approach is subject to Jackendoff's criticism mentioned in Section 3.2, namely that there is a redundancy in specifying the idiomatic context individually on each lexical item.)

In this approach, what is required is a formal characterization of what counts as the proper context. Since terminal nodes are spelled out post-syntactically in DM, the context must also be evaluated post-syntactically. There are then two possible approaches to explaining facts about the syntactic flexibility of idioms (though in general, there is very little in the way of detailed analyses of the syntactic flexibility of idioms in DM, just as in Minimalism). One is to

say that the unavailability of the idiomatic interpretation is a result of the proper context not obtaining. For example, one could explain the unavailability of the idiomatic interpretation in *the bucket was kicked* by saying that, although passivization is possible in the syntax, *kick* is not in the context of *the bucket* in the structure that results from passivization. We can think of this as another aspect of the problem of co-occurrence restrictions: in this case, it is not the identity of the idiom chunks which poses a problem, but their syntactic configuration. In other words, this approach would require a theoretical characterization of when an idiom chunk is in the context of another idiom chunk, in terms of their syntactic configuration (e.g. within the same phase, as I will argue in this dissertation). The second approach is to say that the proper context does obtain, but that the idiomatic interpretation is unavailable for independent reasons. Generally speaking, the latter approach (which is the general approach taken by e.g. Stone 2016) seems more tractable – the analyses I will give in Chapter 4 regarding the apparent differences in the syntactic flexibility of idioms, though couched in a lexicalist Minimalist framework, are also compatible with a DM framework, as I will discuss in Section 4.2.2.

There are also DM approaches in which the idiomatic meaning is associated with the entire structure. Kelly (2013), for example, proposes that the Encyclopedia contains both special meanings and regular denotations, which compete for insertion at the syntax-semantics interface. A structure like *kick the bucket* can be interpreted either by inserting the regular denotations of the components and composing them, or by inserting the special (i.e. idiomatic) meaning of the entire structure. This approach is similar to the approach I will end up proposing, in that I argue that a structure like *kick the bucket* can either be interpreted compositionally or idiomatically. But I will argue in Section 5.1 that Kelly's approach faces significant difficulties that are not faced by my approach – specifically, that it cannot explain the range of possible syntactic variation of idioms without simply lexically stipulating it.

One argument that has been made in support of the DM approach to idioms concerns aspect. Marantz (1997) points out that *kick the bucket* does not quite mean 'die'; rather, it has the aspectual properties of a transitive VP with a definite direct object. Hence the contrast in (11).

(11) a. She was dying for weeks.

b. –She was kicking the bucket for weeks.

This follows from the DM principle that some aspects of the semantics of complex elements are determined by their internal syntactic structure. As Marantz says, *transmission* does not have the same possible range of meanings as *blick* does, because the former contains a verb stem and a nominalizing suffix. Similarly, *kick the bucket* cannot mean *die*, because its aspect is constrained by its verb-object structure. McGinnis (2002) elaborates on this argument, pointing out, for example, that *hang a left* ('turn left') has the aspectual properties of *hang a picture*, while *hang fire* ('delay') has the aspectual properties of *hang laundry* (judgments in (12) are for the idiomatic reading only):

(12) a. Hermione hung a left in/#for five minutes. [telic]
b. Harry hung fire for/#in a week. [atelic]

Indeed, the systematicity of idiomatic aspect is striking. However, it is not universal. The idiom *paint the town red*, for example, is atelic, while its literal counterpart is telic (Glasbey 2007):

(13) a. ~The gang painted the town red for five hours.
b. –The gang painted the town red in five hours.

I return to this issue in more detail in Section 5.9.

3.5. Non-generative approaches

It is worth mentioning some influential approaches to idioms outside of a generative framework. The most prominent proponent of corpus-based research on idioms is Christiane Fellbaum, who argues that corpus data shows that idioms admit of wider variation than has usually been supposed. Fellbaum (2015), for example, argues that even very canonical cases of ungrammatical idiom variations are attested in corpora – even *The bucket was kicked* is attested with an idiomatic reading. She finds the following variations of *kick the bucket* attested on the Web:

(14) a. There is a certain comfort in that. The bucket will be kicked. Then you can go about discovering what happens to a guy after he buys the farm. Heaven? Hell?
b. Live life to the fullest, you never know when the bucket will be kicked.
c. No, no kicking of the bucket… not anytime soon.
d. The paper in question looks at the economic inequalities that result from one person's

untimely kicking of the bucket and another one's living.

e. I am young but have experienced more bucket kicking within my immediate family and circle of family friends than I can shake a fist at.

f. Here's a short list of things I hope to continue to avoid from now on until bucket kicking time.

g. Our little brother Willie has kicked the pail.

h. I ain't yet kicked the pail.

Fellbaum argues that idioms should be defined in terms of collocations, as a statistically frequent and salient co-occurrence of two or more lexemes. A variation on the canonical form of the idiom is acceptable as long as the co-occurrence of the lexemes is able to evoke the meaning of the idiom in the listener – importantly, the syntactic configuration does not matter, unless part of the meaning is carried by the syntactic configuration. Note that the last two examples in (14) are instances of lexical variation – even the identity of the lexemes appears to be subject to limited variation.

These arguments have been criticized by generativists on familiar grounds. First, the fact that a form is attested in a corpus does not mean that it is grammatical, in a cognitive sense. Second, and relatedly, the variations in (14) can be characterized as "playful" uses of the idiom. Playfulness is a difficult notion to pin down, but the phenomenon of using ungrammatical forms in a playful manner is widespread, and not limited to idioms. The playful use of ungrammatical forms is particularly associated with the internet, as in the following examples:

(15) a. Because reasons. ('For reasons I don't care to specify.')

b. It me. ('I can relate to this.')

In these examples, humor arises from the deliberate flouting of grammatical principles of English; they are widely used by speakers who would nonetheless judge them to be ungrammatical. Idioms are particularly susceptible to this sort of language play, because they can be analyzed on both a literal and an idiomatic level, and the literal interpretation often admits of grammatical variations which the idiomatic interpretation does not.

What is important is that we cannot rely on attested uses alone to determine what is grammatical for native speakers – we must rely on judgments and other psycholinguistic evidence, and it seems clear, based partly on a survey of native English speakers that we carried

out (presented in Chapter 6), that there is a robust distinction in terms of speaker judgments between most of the examples in (14) and canonical forms of the idiom *kick the bucket*. One exception is noun incorporation, as in (14e-f), which has been argued in the generativist literature to be compatible with non-decomposable idioms (see Stone 2016). If noun incorporation is an instance of head movement, as argued by Baker (1988), then it is not surprising that it would be compatible with non-decomposable idioms, as we will see in the discussion of head movement in Section 4.2.5.

A somewhat similar approach is taken by Egan (2008). Egan puts forth what he calls a pretense theory of idioms, under which the parts of idioms have their literal semantic values, which are composed normally, but the resulting sentence is interpreted under a pretense. A pretense is a set of principles that interlocutors pretend to be true. As an analogy, Egan gives the example of children playing the "buffalo game," in which they pretend that cars are buffaloes. The basic principle of this game is *wherever there's a car, pretend that there's a buffalo*. It follows that if a child runs out into traffic, then they risk being stampeded by buffalo (according to the pretense). Idioms behave similarly: we might have a principle that says *if somebody dies, pretend that there's some salient bucket that they kicked*. Then *Richie kicked the bucket* is true (under the pretense) iff Richie died.

Under this account, pretenses can be extended. In principle, any sentence containing the same literal content as *Richie kicked the bucket* should be subject to the same pretense, and thus be acceptable with an idiomatic meaning. This explains why idioms are not completely inflexible.

Why, then, can *kick the bucket* not be passivized, if the passive sentence has the same literal content as the active sentence? Egan argues that, for pragmatic reasons, speakers should try to clearly signal whether or not an utterance should be interpreted under a pretense (since most idioms have both an idiomatic and a literal interpretation). The canonical form of the idiom is the clearest way to signal that a pretense is being used, and gratuitous deviations from the canonical form are non-cooperative, because they do not clearly signal that the pretense is being used. In the case of non-decomposable idioms, the verbal cue to the pretense (namely the canonical form of the idiom) is particularly important, because those idioms tend to be unpredictable, in the sense that a speaker who had never heard the idiom before would have trouble guessing what it meant. In contrast, decomposable idioms tend to be predictable – given

a discourse context, a speaker could likely guess what an idiom like *spill the beans* means (i.e. what pretense it should be interpreted under). This is how Egan explains apparent differences in flexibility between decomposable and non-decomposable idioms.

This account predicts that ungrammatical variations on non-decomposable idioms are in fact just pragmatically infelicitous, and should therefore be ameliorated given the proper discourse context. We might expect, for example, that (16) should be reasonably felicitous with an idiomatic reading, because the meaning of the idiom is easily inferred from the context. Moreover, the literal meaning of *shoot the breeze* is so implausible that it is presumably reasonable for a listener to assume, in the absence of evidence to the contrary, that it is always being used idiomatically.

(16) Everyone in the department is extremely loquacious. –The breeze is shot for hours whenever they meet.

But in fact (16) is completely unacceptable with an idiomatic reading, and it is no better than *The breeze was shot* in the absence of a discourse context, contra the predictions of a pretense theory.

3.6. Summary

In this chapter, we have reviewed a variety of approaches to the syntax and semantics of idioms, differing along a number of dimensions, including the following:

- whether idioms are lexically stored or built in the syntax (or their syntactic status depends on their decomposability, as in Nunberg et al.'s proposal),
- whether facts about apparent differences in the syntactic flexibility of idioms are explained derivationally or in terms of constraints.

I will end up building upon aspects of several of these approaches. In particular, I will explore Chafe's and Nunberg et al.'s idea that facts about the apparent differences in the syntactic flexibility of idioms can be explained in terms of the distinction between semantically decomposable and semantically non-decomposable idioms. However, I adopt a Y-model framework in which the syntax feeds the semantics and the phonology, rather than a generative semantic framework in Chafe's sense. I also do not adopt Nunberg et al.'s notion that there is a syntactic bifurcation between decomposable and non-decomposable idioms in which the former, but not the latter, is built in the syntax. Rather, I will modify Jackendoff's idea that all idioms are

stored wholesale in the lexicon, and that the relationship between the lexically stored structure and the lexically stored meaning can be leveraged to account for the difference between decomposable and non-decomposable idioms. Unlike Jackendoff, I will be adopting a derivational framework, in which idioms, despite being lexically stored, are nonetheless built by iterative application of Merge, and facts about idioms can be explained in terms of construction-independent semantic restrictions on particular syntactic configurations, in concert with semantic properties of those idioms.

Chapter 4

Syntactic Structure and Syntactic Flexibility of Idioms

4.1. Internal syntactic structure of idioms

In Chapter 1, it was noted that idioms cannot be treated as atomic lexical items, because they have some internal syntactic structure. This is widely accepted in the literature – approaches which treat idioms similar to lexical items not generated in the syntax (such as Jackendoff 1997, 2002, 2011) typically assume that they have an articulated syntactic structure. For the sake of completeness, this section outlines the main evidence that idioms have internal syntactic structure.

I have already mentioned one piece of evidence that idioms have internal syntactic structure: the fact that idiom chunks inflect normally. Some examples for verbal idioms are given in (1). The verb inflects normally whether the idiom is semantically non-decomposable, as in (1a-b), or decomposable, as in (1c-d). These examples show that these idioms are not stored as unanalyzable units, since morphological inflection attaches to an idiom-internal verb, rather than the idiom as a whole.

(1) a. +John *kicked* the bucket.
b. +Mary *shot* the breeze.
c. +Catherine *kept* tabs on Bill.
d. +Ken *opened* a can of worms.

The same is true of nominal idioms. Left-headed nominal idioms are relatively rare in English, but nonetheless examples can be found:

(2) ~*notaries* public / ~*notary publics*

In some cases, plural inflection can attach either to the head noun or to the entire idiom, as in (2). In such cases, I simply assume that the idiom is ambiguous between an unanalyzed lexical

item and an idiom with internal syntactic structure. In other cases, as in (2b), plural inflection can only attach to the head noun.

A second piece of evidence that idioms have internal structure is the existence of idiom families, such as those in (3). If idioms have no internal structure, then the members of idiom families must simply be listed separately in the lexicon, which misses out on a generalization. We would like to capture the fact, for example, that *punch* and *wallop*, which are rough synonyms, can be substituted for each other following *pack a*. This fact can be most easily captured if idioms have internal structure. If idioms are unanalyzed, then they simply have to be listed separately.

(3) a. +hit the hay, +hit the sack
b. ~pack a punch, ~pack a wallop
c. ~keep one's cool, ~lose one's cool

Closely related to idiom families is the presence of causative alternations with idioms. As Binnick (1971) observes, there are a number of pairs of idioms with *come* and *bring*:

(4) a. ~come to blows, ~bring to blows
b. ~come to pass, ~bring to pass
c. ~come forth, ~bring forth
d. ~come about, ~bring about

The existence of these pairs is quite naturally explained under Binnick's analysis of *bring* as CAUSE plus *come*, but only under the assumption that the first members of the idiom pairs in (4) syntactically contain *come*, which implies that they have internal syntactic structure.

Finally, the apparent differences in the syntactic flexibility of some idioms are further evidence of their internal syntactic structure. Semantically decomposable idioms tend to appear more syntactically flexible than non-decomposable idioms, for reasons that I will explain in the next sections, so *spill the beans* for instance appears very flexible:

(5) a. Passivization: +The beans were spilled.
b. Pronominalization: +John spilled the beans, and Jane had to clean them up.
c. Topicalization: +Those beans, Sarah would never spill.

d. Nominalization: +Wanda's spilling of the beans upset Max.

e. Adjectival modification: +Linda spilled the political beans.

These examples clearly indicate that *spill the beans* has internal syntactic structure. Non-decomposable idioms, however, have been argued to be less flexible than decomposable ones, so their internal structure is more difficult to establish. Nonetheless, it is difficult to find idioms which appear completely inflexible. For example, though *kick the bucket* typically resists adjectival modification, it can be modified with *proverbial*:

(6) ~Naomi kicked the proverbial bucket.

(Naturally, an idiom modified with *proverbial* can only have an idiomatic interpretation – (6) means something like "Naomi kicked the bucket, and I don't mean that literally.") As we will discuss later, *proverbial* does not semantically modify *bucket*; rather, it semantically modifies the entire idiom. Syntactically, however, there is no reason to believe that it does not modify *bucket* (in the sense of being adjoined to it), which again indicates that *kick the bucket* has internal syntactic structure.

In the case of syntactically idiosyncratic idioms, it is more difficult to establish how much internal structure they have. We know that, for example, *trip the light fantastic* can be inflected normally:

(7) They tripped the light fantastic.

So we know that *trip the light fantastic* includes a verb. But does *the light fantastic* have the structure of a DP? Do other syntactically idiosyncratic idioms, like *easy does it*, have internal syntactic structure? I will set this issue aside until Chapter 5, in which I propose an overall syntactic architecture for the different types of idioms under investigation; I will end up arguing that syntactically idiosyncratic idioms also have internal syntactic structure.

4.2. Apparent differences in the syntactic flexibility of idioms

We have now seen that idioms have internal syntactic structure, just like their non-idiomatic counterparts. This suggests that idioms are not syntactically "special" (with the possible exception of syntactically idiosyncratic idioms, which will be discussed in Chapter 5). If that is the case, then we would expect them to appear just as syntactically flexible as their non-

idiomatic counterparts, all else being equal. Of course, this is not the case, so we need to explain the apparent restrictions on the syntactic flexibility of idioms.

In fact, I will argue that there are no syntactic restrictions on the flexibility of idioms *per se*. Instead I will argue that Merge (both internal and external) is free to apply to idiomatic structures, just as it is free to apply to non-idiomatic structures. However, the semantics of particular idioms will sometimes result in ill-formedness, because the LF will not be able to be interpreted successfully by the semantic component. This can be thought of as an extension of Nunberg et al.'s (1994) argument that the semantics of idioms is the key to explaining their apparent syntactic (in)flexibility. The semantic decomposability of idioms correlates quite well (though not perfectly) with their flexibility. Unlike Nunberg et al., though, I do not assume that there are two separate classes of idioms (decomposable and non-decomposable) which are treated differently by the syntax. Rather, I will propose that all multi-word idioms are built in the syntax by iterative application of Merge.

It is important to note that, although the discussion in this chapter will be framed in terms of phenomena like "topicalization" and "passivization," I do not assume that specific constructions are primary syntactic operations. Rather, in line with standard Minimalist assumptions, I assume that passives and topics are the result of general structure-building operations (Internal and External Merge) and their interaction with interface conditions on the interpretation of features. In the following, therefore, the use of terms like "topicalization" and "passivization" should be understood as shorthand, and not an endorsement of construction-specific rules.

4.2.1. Topicalization

My approach is best illustrated using examples, so let us first consider topicalization. Generally speaking, chunks of non-decomposable idioms cannot be topicalized, while chunks of decomposable idioms can be:

(8) a. –The bucket, John kicked.

b. +Those beans, Sarah would never spill.

There are strong constraints on the sorts of DP constituents which can be topicalized, which have been formulated in various ways. Fellbaum (1980) claims that a topic constituent must be either definite or generic, while Kuno (1972) claims that it must be either anaphoric or

generic. É. Kiss (2002) claims that a topic constituent must be both referential and specific, but that non-referential phrases (including generics) can assume the features [+referential] and [+specific] in contrastive contexts. It seems that the following empirical generalization holds in English: topicalized DP constituents must be either referential (referring to a particular individual or set of individuals; see Fodor and Sag 1982) or generic (referring to either a whole class of individuals, or an individual in that class taken as representative of the class as a whole). Hence (9c-d) are ungrammatical, because the topicalized DPs are quantificational, not referential or generic. (9a) is grammatical because the topicalized DP is referential, while (9b) is grammatical because the topicalized DP is generic.

(9) a. Mary I like.
b. Dogs I like.
c. *A boy I like.
d. *Nobody I like.

I take the topicalized constituents in examples like (10a) to be generic, as suggested by the fact that *people like that* cannot be replaced with *everybody* or *anybody*.

(10) a. People like that you have no sympathy for. (Ward 1988)
b. *Everybody/Anybody like that you have no sympathy for.

Given these facts, the data in (8) are easily explained. In a non-decomposable idiom such as *kick the bucket*, the chunk *the bucket* receives no independent interpretation, so it cannot be referential or generic.[7] In contrast, *the beans* in *spill the beans* can be interpreted as 'the secret',

[7] It has been argued, for example by Longobardi (1994), that the definite determiner is inherently referential, which would predict that *the bucket* is referential even in an idiomatic context. However, Giusti (2002) shows that there are non-referential definite DPs, as in the following Italian example, where the subjunctive mood of the relative clause shows that the DP *la segretaria* is non-referential:

(i) *Scommetto che non troverai mai la segretaria di un onorevole che sia disposta a*
bet.1SG that not find.FUT.2SG the secretary of a deputee that be.SUBJ.3SG disposed to
testimoniare contro di lui.
testify against of him
'I bet you'll never find the secretary of a deputee who is willing to testify against him.'

The sentence becomes ungrammatical if the definite determiner is replaced by a demonstrative (e.g. *questa segretaria*), which suggests that demonstratives, not definite determiners, necessarily impart referentiality. Indeed, as far as I am aware, there are no non-decomposable idiom chunks with demonstratives in English, which follows if chunks of non-decomposable idioms are necessarily non-referential. See Fellbaum (1993) for arguments that

which is referential, so it can be topicalized. In other words, we do not need to posit special rules to explain the data in (8); the data follow from independent properties of topicalization. Importantly, decomposable and non-decomposable idioms do not need to be represented differently in the syntax, since the distinction is entirely semantic. (The fact that chunks of decomposable idioms can be referential but chunks of non-decomposable idioms cannot will also be important in the discussion of pronominalization below.)

At first glance, there seem to be some exceptions to the generalization that chunks of decomposable idioms can be topicalized.

(11) –The ice, Sally broke.

Despite the fact that *break the ice* is decomposable, it appears unable to undergo topicalization. But note that its literal counterpart also cannot undergo topicalization:

(12) *Tension, Sally relieved.

I assume this is because topics must typically have a contrastive interpretation in English. (8b), for example, implicitly contrasts a secret which Sarah would never divulge with some other secret which Sarah would divulge. In other words, the spilling of some beans can be contrasted with the spilling of some other beans. But *the ice* in *break the ice* has the semantics of a count noun – it cannot be separated into discrete, contrastable instances of tension. However, Ezra Keshet (p.c.) points out that in order to alleviate the ungrammaticality of (12), tension itself can be contrasted, as seen in (13a). Nonetheless, the idiomatic equivalent is still not possible, as seen in (13b).

(13) a. Everything else, Sally made immeasurably worse. However, the social tension, she relieved as soon as she arrived.
b. #Everything else, Sally made immeasurably worse. However, the ice, she broke as soon as she arrived.

Given that *break* and *ice* both have independent meanings under the idiomatic interpretation, we would expect (13b) to be possible. Interestingly, examples of idiomatic topicalizations like (8b)

determiners in non-decomposable idiom chunks are fixed because the DPs are non-denoting, whereas determiners in decomposable idioms are denoting, and therefore typically variable.

in which the contrast is between different instances of whatever the object refers to (e.g. *those strings* versus *these connections*) are generally more felicitous than examples in which the contrast is similar to that in (13) (e.g. *the strings* versus *the money*, in which the contrasting DP refers to something other than connections). There seems to be no purely semantic reason why that pattern would obtain, so it seems likely that pragmatic factors are at work here. For example, the infelicity of (13b) may be due to the fact that the contrast is more difficult to identify when neither 'tension' nor 'relieve' has been mentioned in the discourse, since the contrast between 'make immeasurably worse' and 'break' is only apparent if one realizes that *break the ice* is being used in its idiomatic sense. This predicts that it should be possible to ameliorate (13b) given the proper context. A context in which the concept of relieving tension has been previously introduced in the discourse is given in (6); according to my judgments, it does ameliorate the topicalization of *the ice*, lending some support to a pragmatic account.

(6) Sally had not met her new boss, and everyone had told her he was a jerk, so she knew it would be hard to avoid the tension of their first meeting. But Sally found out the guy loved opera, and she was an opera singer in college! So she knew how to break the ice. By bringing up *The Barber of Seville* during their first meeting she knew she didn't turn the guy into a charmer, but the ice indeed she broke right away.

Note also that the compatibility of some idioms with topicalization has consequences for theories of topicalization. Theories which assume topics are base-generated in their topic position (e.g. Cinque 1990, Frascarelli 2000) will have difficulty accounting for the possibility of (8b). If topics are base-generated, then (8b) is not syntactically derived from the base form of the idiom *spill the beans*, but it nonetheless apparently counts as an instance of the idiom. We then run into the problem of co-occurrence restrictions: it is necessary to explain how the relationship between *spill* and *the beans* in (8b) is sufficient to license the idiomatic interpretation. The natural approach would be a thematic one: even though *the beans* is not syntactically generated as the object complement of *spill*, it is still thematically its patient.

This argument is reminiscent of the familiar argument from idioms for the raising analysis of relative clauses, first given in Schachter (1973) but attributed to Brame (1968). The relevant data is given in (14):

(14) a. +Lip service was paid to civil liberties at the trial.

b. –I was offended at (the) lip service.

c. +I was offended by the lip service that was paid to civil liberties at the trial.

Under the raising analysis of relative clauses, the head of the relative clause originates inside the relative clause CP, such that the pre-raising structure of (14c) is, schematically: *I was offended by the that was paid lip service to civil liberties at the trial*. The standard form of the idiom is present, so the idiomatic interpretation is licensed and the grammaticality of (14c) is expected. Under a base-generation analysis of relative clauses, in which the relative clause is adjoined to the head noun and *lip service* never appears in the object position of *paid*, it is not clear how the idiomatic interpretation is licensed.

In any case, the idea that topics must be referential or generic predicts that no chunk of a non-decomposable idiom should be able to be topicalized. However, Nunberg et al. (1994) cite an apparent counterexample in German, due to Ackerman and Webelhuth (1993). Ackerman and Webelhuth point out that chunks of non-decomposable idioms in German can undergo what looks like topicalization, as in (15).

(15) a. +*ins* *Gras beissen*
into.the grass bite
'to bite the dust'

b. +*Ins* *Gras hat* *er gebissen.*
into.the grass AUX he bitten
'He has bitten the dust.'

Nunberg et al. argue that (15b) is not a true example of topicalization, and that the fronted element has no special role attached to it. The subsequent literature on this subject complicates the matter, however. This sort of fronting, in which an element moves to the clause-initial position preceding a finite verb, is usually referred to as Vorfeld fronting. There are various roles assigned to the Vorfeld constituent; examples like that in (15b) are typically analyzed, following Fanselow (2004), as pars-pro-toto fronting. In pars-pro-toto fronting, an entire constituent has a discourse function (topic or focus), but only part of it is fronted. Fanselow argues that Vorfeld fronting should be analyzed as pars-pro-toto fronting largely because the fronted element itself has no discourse-semantic function. In (15b), the entire VP idiom is focalized or topicalized even

though only the PP is fronted. Note that since pars-pro-toto fronting imposes a discourse role on the entire idiom, but not on any chunk thereof, it is predicted to be compatible with non-decomposable idioms.

The more general point of this example is the somewhat obvious but important point that we do not have to assume that different syntactic phenomena, such as fronting (or passivization, as we will soon see), impose the same restrictions on constituents in different languages. This is also because what appears pre-theoretically to be a unified phenomenon, such as the passive, may in fact be quite heterogeneous in terms of their underlying grammatical properties cross-linguistically. We therefore can in principle explain apparent cross-linguistic variation in idiom flexibility in terms of the different properties of syntactic phenomena cross-linguistically, while maintaining a uniform analysis regarding the syntactic structure-building properties needed to derive idioms.

In this section, we have seen how the impossibility of DP chunks of non-decomposable idioms serving as topics in English follows from an independent semantic condition on English DP topics: namely, that they must be either referential or generic. Using the example of Vorfeld fronting, we have also seen that topic-like constituents in other languages may be subject to different semantic requirements, and therefore be compatible with a different set of idioms.

4.2.2. Passivization

Now let us consider passivization. In English, the behavior of idioms with respect to passivization is similar to their behavior with respect to topicalization; decomposable idioms can (at least potentially) be passivized, while non-decomposable idioms cannot:

(16) a. –The bucket was kicked.
b. +The beans were spilled.

It is tempting, therefore, to explain the passivization data in relation to topicalization. Informally, the English passive is often described as "promoting" the direct object to subject. Several authors (e.g. Givón 1979, Kuno and Takami 2004, Keenan and Dryer 2007) have observed that the use of the passive in English allows the object to be foregrounded, similar to the use of topics.

Nevertheless, there are important differences between passivization and topicalization. Compare (9) to (17):

(17) a. A boy is liked by John.
b. A boy is liked by every girl.
c. Somebody was killed.

(17) shows that indefinite DPs can be passive subjects, even though they cannot be topicalized. Note that although *a boy* in (17a) must have a referential, as opposed to a quantificational, interpretation, in the sense of Fodor and Sag (1982), the subject of (17b) can be quantificational, similar to the subject of (17c). Therefore, the passive subject cannot simply be analyzed as a topic.

Ward and Birner (2004) argues that in passives with *by*-phrases, the passive subject must be at least as discourse-old as the logical subject. So for example, the passive in (18a) is felicitous because the referent of *he*, the mayor, is discourse-old, while Ivan Allen Jr. is discourse-new. In contrast, in (18b), the mayor is discourse-new and Ivan Allen Jr. is discourse-old.

(18) a. The mayor's present term of office expires January 1. He will be succeeded by Ivan Allen Jr.… (Brown Corpus)
b. Ivan Allen Jr. will take office January 1. # The mayor will be succeeded by him.

Ward and Birner apply this restriction only to passives with *by*-phrases, not to so-called agentless passives. (The term is a misnomer, since the logical subject is not necessarily an agent; I will use the term "actor" instead.) But we may generalize it to passives in which the *by*-phrase is not overtly expressed. Note that there is still an implicit actor in these passives, even though it is "demoted" by the use of the passive. We may contrast this with anticausatives, such as (19), in which the action is conceptualized as occurring spontaneously (see e.g. Kulikov 2011), even if it is an action which can be initiated by an actor.

(19) The door opened.

We may formulate a similar restriction on passives without *by*-phrases: the passive subject must be at least as discourse-old as the implicit actor. This explains why the data in (20) follows the same pattern as the data in (18), despite the absence of an overt actor.

(20) a. A thief was prowling about yesterday. She stole my car!
b. A thief was prowling about yesterday. # My car was stolen!

This restriction does not apply to quantificational subjects, however:

(21) a. A hurricane passed through. Three people were killed (by it).
b. The crew searched the old building. To everyone's surprise, somebody was found.

(22) John Doe was awarded the Pulitzer Prize.

The possibility of uttering passives out of the blue, as in (22), is compatible with this restriction. In this case, both the passive subject (*John Doe*) and the implicit actor (*the Pulitzer committee*) are equally discourse-new, so the passive subject is at least as discourse-old as the implicit actor.

We can explain the impossibility of passivizing non-decomposable idioms in terms of this restriction. In order to be discourse-old, a passive subject must refer to something previously mentioned (possibly implicitly) in the discourse; a non-referring idiom chunk, such as *the bucket*, cannot do so. A chunk of a non-decomposable idiom also cannot be quantificational, since that would require it to have a meaning independent of the rest of the idiom. Hence the ungrammaticality of (16a). In contrast, chunks of decomposable idioms can in principle be discourse-old, hence the grammaticality of (16b).

Given the restriction outlined above, the fact that expletives can serve as passive subjects, as in (23), needs explaining.

(23) It was rumored that the opposition was planning to stage a coup.

Bargmann and Sailer (2016) make the reasonable assumption that the expletive subject is co-indexed with a postverbal constituent (in this case, the *that*-clause). In this case, the *that*-clause is discourse-new, but the implicit actor is equally discourse-new, so the constraint is satisfied.

Bargmann and Sailer themselves adopt a slightly different analysis of the passive, in tandem with different assumptions about the semantics of non-decomposable idioms. They adopt a redundancy-based semantic analysis of non-decomposable idioms, in which rather than being assigned to the idiom as a whole (or to a single component of the idiom), the meaning is redundantly specified on the idiom's individual lexical items. Here is their semantic analysis of *kick the bucket*, which uses the formalism of Lexical Resource Semantics (Richter and Sailer 2004):

(24) a. kick$_{id}$: ‹s, **die$_{id}$**, **die$_{id}$**(s,α), $\exists s(\beta)$›

b. the$_{id}$: ‹s, $\exists s(\beta)$›

c. bucket$_{id}$: ‹s, **die$_{id}$**, **die$_{id}$**(s,α)›

The semantic contribution of *kick* includes a situation *s*, a predicate **die$_{id}$**, and a formula combining the predicate with its two arguments. α and β represent meta-variables over expressions in the meta-language, indicating that the subject and the scope of the existential quantifier over the situational variable, respectively, are underspecified. Notably, the semantic contributions of *the* and *bucket* are contained in the semantic contribution of *kick*.

For Bargmann and Sailer, the facts about topicalization are explained as follows. A topicalized constituent must make an independent semantic contribution within its clause; in Lexical Resource Semantics terms, its semantic contribution must not be properly included in the semantic contribution of the rest of the clause. Since *the bucket*'s semantic contribution is properly included in the semantic contribution of *kick*, it cannot serve as a topic. However, the restriction on passive subjects is different: a passive subject must be relatively discourse-old. But the semantic contribution of the passive subject may be included in the semantic contribution of the rest of the clause; this is seen, for example, with expletive subjects like (23). So nothing prevents *the bucket* from serving as a passive subject, provided the discourse conditions are met. This makes quite strikingly different predictions from my analysis, in which *the bucket* makes no semantic contributions, and cannot serve as a passive subject. Bargmann and Sailer argue that there are attested examples of non-decomposable idioms being passivized, such as (25).

(25) When you are dead, you don't have to worry about death anymore. … The bucket will be kicked.

Since the concept of death has been previously mentioned in the discourse, *the bucket* is discourse-old, and can therefore serve as a passive subject. However, as discussed in Section 3.5, I take the attested examples of passivized non-decomposable idioms to be linguistically playful, and not genuine reflections of linguistic competence (though they are certainly constrained by linguistic competence, e.g. whether the speaker has actually knowledge of the grammatical mechanisms allowing topicalization). Rather, I follow standard grammaticality judgments about the passivization of idioms like *kick the bucket*, which take such passivization to be impossible. Bargmann and Sailer's analysis makes the wrong prediction about such judgments.

As mentioned, my analysis of passivization predicts that non-decomposable idioms should not be passivizable in English-type languages – or, put another way, if we find that non-decomposable idioms in a given language are passivizable, then that language must not have discourse conditions on the passive which require the subject to make an independent semantic contribution. But we must be careful with the data. Abeillé (1995), for example, claims that there are non-decomposable idioms in French which are highly flexible, including the ability to be passivized. One such idiom is *prendre une veste* ('to come a cropper', literally 'to take a jacket'); Abeillé's examples of its flexibility (with relative clauses and *wh*-movement, respectively) are given in (26), but she also claims that it can be passivized:

(26) a. *+C'est une sacrée veste que Paul a prise hier.*
it-is a real jacket that Paul AUX took yesterday
'+Paul really came a cropper yesterday.'
b. *+Combien de vestes a-t-il prises hier?*
how.many of jackets AUX-*t*-he took yesterday
'+How many times did Paul come a cropper yesterday?'

However, it is not clear that *prendre une veste* is truly non-decomposable. Abeillé's translation of it into English as 'to come a cropper' is perhaps misleading, as it can also be paraphrased as 'to suffer a failure', making it plausible that *prendre* means 'to suffer' and *veste* means 'failure'. And indeed, the fact that the same idiomatic reading is possible with other verbs suggests that *veste* does have its own meaning:

(27) a. *+ramasser une veste*
gather a jacket
'to suffer a failure'
b. *+remporter une veste*
win a jacket
'to suffer a failure'

In other words, we have what looks like an idiom family, similar to those in (3), in which *veste* means 'failure'. Similarly, Abeillé categorizes the idiom *prendre le taureau par les cornes* 'to take the bull by the horns' as non-decomposable and claims that it is passivizable. But it seems to me that it is clearly decomposable: just as in the equivalent English idiom, *prendre* means

'tackle', *le taureau* means 'the problem', and *par les cornes* means 'directly'. (On this paraphrase, the chunk *par les cornes* is not itself decomposable, since no paraphrase can be given for *les cornes* itself, so *les cornes* does not have any independent meaning – but for the purposes of passivization, it only matters that the direct object, *le taureau*, has an independent meaning.) We thus expect it to be passivizable, so it is not a counterexample. This same argument is also made by Langlotz (2006) and Horn (2003), the latter of whom points out that many of Abeillé's examples are, similarly, arguably decomposable. Finally, Horn argues that some of Abeillé's examples, while they are indeed non-decomposable, actually cannot be passivized, according to the judgments of his French-speaking informants. These include the following:

(28) a. +*jeter l'éponge*
throw the-sponge
'to throw in the towel'
b. +*mettre de l'huile dans les rouages*
put of the-grease in the cogs
'to facilitate something'
c. +*mettre la main à la pâte*
put the hand to the dough
'to participate actively in a task'
d. +*(re)serrer les boulons*
tighten the bolts
'to be harder'

There are three more examples given by Abeillé which are not dealt with by Horn:

(29) a. +*mettre les bémols*
put the flat.notes
'to attenuate'
b. +*apporter de l'eau au moulin*
bring some the-water to.the mill
'to be grist for the mill'
c. +*faire un carton*

make a card

'be successful'

However, my informants judge the passive versions of the idioms in (29) to be marginal at best. Therefore, none of the idioms listed by Abeillé provide clear evidence for the claim that there are decomposable idioms in French which can be passivized.

Nonetheless, it is well known that passives have different properties in different languages, and so we might expect to find languages in which non-decomposable idioms can be passivized. This turns out to be the case.

Many languages have so-called impersonal passives, whose function is often described as "demoting" the subject, rather than "promoting" the object. In German, for example, the impersonal passive suppresses the subject of an intransitive verb, resulting in an existential reading; an example is given in (30) (Bargmann and Sailer 2015):

(30) *Gestorben wird immer.*

died is always

'There is always someone dying.'

An intransitive, non-decomposable idiom like *kick the bucket* should be able to participate in the impersonal passive, since there are no particular semantic constraints on subparts of the intransitive verb. Bargmann and Sailer show that this is the case:

(31) a. *+den Löffel abgeben*

the spoon hand.in

'to die'

b. *~Hier wurde der Löffel abgegeben.*

here was the spoon handed.in

'Someone died here.'

Naturally, the idiomatic reading is the only possible reading for (31b), since the literal reading is transitive. We predict that non-decomposable idioms with intransitive meanings should be compatible with the impersonal passive in any language with a German-type impersonal passive. Muischnek and Kaalep (2010) point out that this is the case for Estonian, for example. An Estonian example is given in Bargmann and Sailer (2016):

(32) +*Kas massiliselt heideti hinge ja inimised olid kordades haigemad?*
Q massively threw-IMPERS soul-PART and man-PL were several-times sicker
'Did they die massively or were they several times sicker?'

Another language in which non-decomposable idioms have been argued to be passivizable is Japanese. Honda (2011) claims that non-decomposable idioms can be passivized if the moved idiom chunk is not the first element (first constituent in the clause). For example, the idiom *X-ni goma-o sur(u)*, meaning 'to flatter X' (literally 'to grind sesame for X') cannot normally be passivized, as shown in (33):

(33) a. +*Taroo-ga sensei-ni goma-o sur-ta*.
Taro-NOM teacher-DAT sesame-ACC grind-PAST
'Taro flattered the teacher.'
b. –*Goma-ga Taroo-niyotte sensei-ni sur-are-ta*.
sesame-ACC Taro-by teacher-DAT grind-PASS-PAST
'Sesame was ground for the teacher by Taro.'

However, the acceptability of the passive improves if another element is in sentence-initial position:

(34) a. +?*Yamada sensei-ni-mo, goma-ga Taroo-niyotte sur-are-ta.*
Yamada teacher-DAT-also, sesame-NOM Taro-by grind-PASS-PAST
'Professor Yamada is one of the people who Taro flattered.'
b. +?[*Dono sensei*]*-ni goma-ga Taroo-niyotte sur-are-ta no?*
which teacher-DAT sesame-NOM Taro-by grind-PASS-PAST Q
'Which teacher did Taro flatter?'

In order to explain the data in (33) and (34), Honda adopts Miyagawa's (2005, 2007, 2010) analysis of Japanese as a focus-prominent language, in contrast to an agreement-prominent language like English. According to Miyagawa, C's topic/focus feature percolates down to T in Japanese, while φ-features percolate down to T in English. Thus, whatever agrees with the topic/focus feature in Japanese raises to Spec-T due to an EPP feature, so it is not always the nominative subject which is in Spec-T. Miyagawa argues that *mo*-phrases, as in (34a), and *wh*-phrases, as in (34b), are raised to Spec-T and receive a focus interpretation. He also assumes that

the default value for the topic/focus feature is [-focus], which is interpreted as topic. Thus, in the absence of focus, whatever raises to T receives a topic interpretation.

Honda proposes that idiom chunks like *goma* receive an imaginary theta role, which he calls *i*, on the basis of Chomsky's (2008) assumption that external merge is due to theta roles, so even meaningless idiom chunks must be assigned some theta role.[8] Then he proposes what he calls the Condition on Imaginary Theta Role, given in (35).

(35) Condition on Imaginary Theta Role (CIT)
The argument that is assigned the θ-role *i* cannot be topic or focus.

In (33), the idiom chunk *goma* must be either topic or focus, since it has raised to Spec-T, which violates the CIT. In (34), it is either the *mo*-phrase or the *wh*-phrase which has raised to Spec-T and receives topic or focus, so the CIT is not violated.

The notion of an imaginary theta role is a non-standard one, and an unusual one. An imaginary theta role would be a purely syntactic object, unlike standard theta roles, which are connected to semantic argument roles (semantic thematic roles). This raises the question of why imaginary theta roles would exist in the first place, if they are not semantically motivated. Fortunately, we can explain the data without appealing to imaginary theta roles. We have already seen that DP topics must be either referential or generic in English. A similar restriction seems to apply to DP topics in Japanese – Kuno (1973) argues that DP topics in Japanese must be either anaphoric or generic, a similar but stronger restriction. Thus, since *goma* is a chunk of a non-decomposable idiom, it cannot be a topic.

For similar reasons, *goma* also cannot be focused. I will adopt Rooth's (1992) theory of focus interpretation, but similar reasoning should apply by invoking other theories of focus interpretation as well. Rooth's theory introduces the notion of focus semantic value, which is a way of formalizing the contrast set introduced by the use of focus. Intuitively, the function of focus is to contrast the proposition containing the focus with a set of related propositions. For example, *John kicked the BUCKET* (under the literal interpretation) is contrasted with *John kicked the ball*, *John kicked the can*, and so forth. Formally, its focus semantic value is represented in (36):

[8] I do not adopt this assumption. Rather, I will argue that Merge can freely apply.

(36) {kick(John,*x*)|*x*∈*E*}, where *E* is the domain of individuals

In prose, the focus semantic value is the set of propositions of the form "John kicked *x*," where *x* is an individual. The focus semantic value is derived by replacing the focused constituent with a variable over the domain to which it belongs. Of course, a meaningless idiom chunk does not belong to a semantic domain, so the focus semantic value cannot be computed. Thus, chunks of non-decomposable idioms cannot be focused.

If chunks of non-decomposable idioms cannot be topics or be focused, then they cannot be raised to Spec-T in Japanese, adopting Miyagawa's analysis. Thus, (33) is ungrammatical, but (34a-b) are not, because in the latter case, another element has been raised to Spec-T instead. Honda adopts Matsuoka's (2003) analysis of the syntax of the Japanese *niyotte*-passive, given in (37).

(37) $[_{TP}\ [_{vP}\ DP_j\ [_{v'}\ DP_i\text{-niyotte}\ [_{v'}\ v\ [_{VP}\ V\ t_j\ ]]]]]$

Following Chomsky (2001), Matsuoka proposes that *v* has an EPP feature triggering the movement of an internal argument to Spec-*v*. In (34), the raised internal argument stays in Spec-*v* (a non-topic/focus position), because the EPP feature of T is satisfied by the *mo*-phrase and the *wh*-phrase, respectively. In (33), *goma* is raised further from Spec-*v* to Spec-T, a topic/focus position. The key point is that the possibility of passivizing non-decomposable idioms in Japanese arises from the fact that the syntax of the Japanese passive is different from that of the English passive such that there are different semantic restrictions on the passive subject in the two languages. We can explain this in terms of independently motivated syntactic assumptions, without having to assume the CIT.[9]

In this section, we have applied the same general line of argumentation which we applied to topics in Section 4.2.1 to passives. The incompatibility of non-decomposable idioms with the passive in English is explained in terms of discourse-semantic constraints on passive subjects: a passive subject must be at least as discourse-old as the implicit actor. As with topicalization, we saw that cross-linguistic variation in the discourse-semantic constraints imposed on passive

[9] I do not discuss here another form of passive in Japanese, the so-called *ni*-passive, whose syntax and semantics have been argued to differ from the *niyotte*-passive, for example by Hoshi (1994). Hoshi argues that the subject of a *ni*-passive must be affected, and that therefore an idiom like *tyuui-o haraw* 'pay heed' is incompatible with the *ni*-passive, because *tyuui-o* 'heed' is not affected by being paid.

subjects leads to variation in what sorts of idioms are compatible with the passive, using the example of the *niyotte*-passive in Japanese.

I will note in passing that the current proposal also deals quite naturally with idioms which can only appear in the passive form and not in the active, such as *taken aback* and *cast in stone*. These idioms are simply stored in their passive form, so if passivization does not take place, the lexically stored structure is never built. See Section 5.4 for details of how these cases are dealt with.

4.2.3. Pronominalization

Next, let us consider pronominalization. While early work sometimes denied the possibility of idiom chunks serving as antecedents for pronouns (e.g. Bresnan 1982), it is now widely agreed that at least some idiom chunks can serve as antecedents for pronouns. Bresnan (1982:49) gives some examples of idiom chunks serving as antecedents for pronouns which she actually claims are ungrammatical, including the following:

(38) a. +Although the FBI kept tabs on Jane Fonda, the CIA kept them on Vanessa Redgrave.
b. +Tabs were kept on Jane Fonda by the FBI, but they weren't kept on Vanessa Redgrave.

Though Bresnan considers them ungrammatical with the idiomatic reading, I mark them with a "+" because more recent authors, including Nunberg et al. (1994), judge them to be grammatical, and I agree with those judgments. Nunberg et al. (1994) give a number of other examples of pronominalized idiom chunks, including the following:

(39) a. +We thought tabs were being kept on us, but they weren't.
b. +Pat tried to break the ice, but it was Chris who succeeded in breaking it.
c. +Once someone lets the cat out of the bag, it's out of the bag for good.[10]

[10] The availability of an idiomatic reading for *it's out of the bag* (with *the cat* as an antecedent) or *the cat's out of the bag* suggests that the structure of the idiom may be something like *the cat BE out of the bag*, where *BE* is underspecified for tense, mood and aspect. Under this assumption, *let the cat out of the bag* could be analyzed as having an unpronounced copula, perhaps along the lines of *cause the cat to BE out of the bag*, and hence *let* would not actually be part of the idiom. A second possibility is that *the cat BE out of the bag* (with no causative structure) is a separate idiom, related to the idiom *let the cat out of the bag*.

All of the examples given by Nunberg et al. involve decomposable idioms. Chunks of non-decomposable idioms cannot be pronominalized:

(40) –John kicked the bucket, and Mary kicked it too.

The explanation for this is quite intuitive – pronouns, by definition (setting aside expletives), must refer to something implicit or explicit in the discourse. A pronoun may refer to a simple referential DP, as in (41a), it may be a variable bound by a quantifier phrase, as in (41b), or it may be an E-type pronoun (an unbound anaphoric pronoun) with a quantifier phrase antecedent which does not bind it, as in (41c).

(41) a. Diana saw the cow. Jim saw it too.
b. Every cow loves its mother.
c. Few cows live on Old Macdonald's farm, but they are all well fed.

In each case, the pronoun gets its reference from the DP antecedent. There are various ways to formalize this notion which are equivalent for current purposes (e.g. Centering Theory, Grosz, Joshi and Weinstein 1995), but for concreteness I use Heim and Kratzer's (1998) system. Broadly speaking, Heim and Kratzer's system treats pronouns using the Traces and Pronouns Rule, given below.

(42) *Traces and Pronouns Rule*
If α is a pronoun or a trace, a is a variable assignment, and i ∈ dom(a),
then $[[\alpha_i]]^a = a(i)$.

In other words, pronouns are given an index i, and interpreted according to a variable assignment, which maps indices to individuals.

In (41a), if we treat *it* as a free pronoun, then it is given an index (say 1). The utterance is felicitous if the context provides a variable assignment *g* whose domain includes 1 – in other words, if the context maps the index 1 to a particular cow. In this case, the discourse context maps 1 to the cow referred to in the first sentence, so that *it* refers to the same cow. So, if *the cow* does not refer, then the utterance of the second sentence will be infelicitous. (There are of course also deictic pronouns, in which the extra-linguistic context provides the variable assignment, but in these cases there is no antecedent DP in the syntax, so they are irrelevant for our purposes.) In (41b), *it* gets a bound variable reading – the quantifier phrase *every cow* undergoes Quantifier

Raising, and the index on its trace matches the index on the pronoun. The pronoun is therefore semantically bound by *every cow*, and cannot be interpreted if *cow* does not refer (in which case *every cow* also does not refer). In (41c), *they* is treated as a definite description with an unpronounced predicate – *they* may be paraphrased as *the cows who live on Old Macdonald's farm*. The predicate combines with a pro DP whose index is a pair of a number and a semantic type – in this case, say <1,e>. Again, the index ensures that the utterance of the pronoun will be infelicitous if the context does not map 1 to the cows referred to in the first sentence – so again *cow* must refer in order for the utterance of the pronoun to be felicitous.

In all cases, the key point is that only NPs which make individual contributions to the meaning of an utterance license anaphoric pronouns, so it is predicted that chunks of non-decomposable idioms cannot be pronominalized. All else being equal, chunks of decomposable idioms should be pronominalizable.

Cinque (1990) claims that, in fact, idiom chunks in general cannot be resumed by object clitics in Italian, since object clitics must normally be referential. His evidence is given in (43):

(43) a. Speaker A: *Io peso 70 chili* 'I weigh 70 kilos'.
Speaker B: **Anch'io li peso* 'Even I weigh them'.
b. Speaker A: *Farà giustizia* 'He will do justice'.
Speaker B: **Anch'io la faro* 'I will do it too'.

However, he also argues that idiom chunks can be antecedents for object clitics in clitic left-dislocation (CLLD), arguing that clitics in CLLD need not be referential because they simply act as placeholders for object position. His evidence is given in (44):

(44) a. *70 chili, non li pesa* '70 kilos, he does not weigh them'.
b. *Giustizia, non la farà mai* 'Justice, he will never do it'.

As we have seen, though, chunks of decomposable idioms can be referential. So a referentiality restriction on clitics should not predict that idiom chunks can never be cliticized, just that non-decomposable ones can never be cliticized. Nunberg et al. (1994:503) dispute Cinque's data, showing that this is in fact the case:

(45) a. *Se Andreotti non farà giustizia, Craxi la farà.*
if Andreotti not do.FUT.3SG justice Craxi CL do.FUT.3SG

'If Andreotti will not do justice, Craxi will do it.'

b. *Maria non ha mai pesato 70 chili, ed anche suo figlio non li ha mai pesato*
Maria not AUX ever weighed 70 kilos and even her son not CL AUX ever weighed
'Maria has never weighed 70 kilos, and even her son has never weighed them.'

This is to be expected, since both of the relevant idioms are decomposable, so the relevant chunks are referential.[11] The data in (44) is also expected, under the more natural assumption that clitics must be referential even in CLLD. The prediction of that assumption is that chunks of non-decomposable idioms should not be able to participate in CLLD, a prediction which is borne out according to Nunberg et al.:

(46) a. *+mangiare la foglia*
eat the leaf
'to catch on to the deception'

b. *–La foglia, l'ha mangiata Gianni.*
the leaf CL-AUX eaten Gianni
'The leaf, Gianni ate it.'

Thus cliticization of Italian idiom chunks behaves just as we would expect it to, given Nunberg et al.'s data. However, this leaves open the question of why there is a grammaticality distinction between the cases in (43) and those in (45). One possibility is that the clitics in (45) have syntactically realized antecedents in the same utterance, while those in (43) only have discourse antecedents. Nunberg et al. also note that there is variability in native speaker judgments of the cases in (43); the important point is that the data in (43) do not license the generalization that Italian clitics cannot have idiom chunks as antecedents.

There are, incidentally, non-decomposable idioms which contain clitics in their base form. As pointed out by Villalba and Espinal (2015), for instance, Catalan has a number of idioms incorporating definite feminine clitics, e.g.;

[11] One might argue that these examples do not even involve idioms, but that *fare giustizia* is a light verb structure and that *pesare X chili* is similarly a non-idiomatic structure. In this case, the data are orthogonal to the current question.

(47) *La Carme la balla*.
the Carme CL dances
'Carme is suffering.'

Like idioms which can only appear in the passive, these idioms are easily dealt with in the current proposal. The base form is stored along with semantic information associated with the idiom as a whole, so the clitic itself need not receive an interpretation.

What would pose a problem for the current proposal are pronouns which are incompatible with idiom chunks of any kind, referential or not. Bantu verbal morphology provides a potential example of a type of pronoun with that property. Consider the system of subject and object markers in Bantu languages. Generally, subject markers (SM) are obligatory in finite clauses, while object markers (OM) are not. For Chichewa, Bresnan and Mchombo (1987) argue that object markers and full NPs are in complementary distribution in verb phrases: either an object marker or a full object NP, but not both, can appear in the VP.

(48) a. *Njûchi zi-ná-lúm-a alenje.*
10.bees 10.SM-PAST-bite-IND 2.hunters
'The bees bit the hunters.'
b. *Njûchi zi-na-wa-lum-a.*
10.bees 10.SM-PAST-2.OM-bite-IND
'The bees bit them.'

When an OM and a full object NP (*alenje* 'hunters') co-occur, as in (49), Bresnan and Mchombo argue that the full object NP is a VP-external topic.

(49) *Njûchi zi-na-wa-lum-a alenje*.
10.bees 10.SM-PAST-2.OM-bite-IND 2.hunters
'The bees bit them, the hunters.'

Thus, Bresnan and Mchombo conclude that, while the SM may behave as an agreement marker, the OM can only behave as a true pronoun, which has been incorporated into the verb. If Bantu object markers are semantically like English pronouns and Italian object clitics, then we would expect chunks of non-decomposable idioms to be incompatible with them. This prediction is borne out, according to Bresnan and Mchombo:

(50) a. +*Chifukwá chá mwáno wâke Mavútó tsópáno a-ku-nóng'ónez-a bôndo.*
because of rudeness his Mavuto now SM-PRES-whisper.to-IND 5.knee
'Because of his rudeness, Mavuto is now feeling remorse.'

b. –*Chifukwá chá mwáno wâke Mavútó tsópáno a-ku-lí-nóng'oněz-a bôndo.*
because of rudeness his Mavuto now SM-PRES-5.OM-whisper.to-IND 5.knee
'Because of his rudeness, Mavuto is now whispering to his knee.'

The presence of the OM in (50b) is incompatible with the idiomatic reading, which is available in (50a). Puzzlingly, at least for Kiswahili, the same is true for decomposable idioms, which is unexpected. Ngonyani (1998) shows that the OM is incompatible with chunks of decomposable idioms in Kiswahili:

(51) a. +*Mumbi a-li-kul-a ki-apo.*
Mumbi 1.SM-PAST-eat-FV 7-oath
'Mumbi took the oath.'

b. –*Mumbi a-li-ki-l-a.*
Mumbi 1.SM-PAST-7.OM-eat-FV
'Mumbi ate it.'

Similarly, although the only example given by Bresnan and Mchombo uses a non-decomposable idiom, they claim that idiom chunks in general are incompatible with object markers in Chichewa.

There are two possible conclusions one could draw from this. The first is that there are syntactic constraints on the pronominalization of idioms in Bantu, which weakens the analysis I am proposing. The second is that there are constraints on the Bantu object marker which are independent of idioms. I believe that the latter conclusion is the correct one, but to explain why requires a digression about cognate objects.

Verbs which are normally intransitive can sometimes take objects which are cognate to the verbs, as in (52).

(52) a. Jane died a heroic death.

b. Mark smiled a knowing smile.

These cognate objects pattern similarly to idiom chunks. As argued by Matsumoto (1996), the syntactic flexibility of a cognate object structure depends on the referentiality of the object. Consider the contrasts in (53):

(53) a. Mary smiled a beautiful / mysterious smile.
b. Mary smiled a never-ending / sudden smile.
c. ?A beautiful / mysterious smile was smiled.
b. *A never-ending / sudden smile was smiled.

Matsumoto notes that the adjectives in (53a) contribute to a result reading – i.e. they modify a smile, which is the result of the action of smiling. In contrast, the adjectives in (53b) contribute to an action reading – they modify the action of smiling itself. Matsumoto argues that the cognate object in (53a) is referential (referring to a smile), while the cognate object in (53b) is non-referential. The former can be passivized, but the latter cannot. Matsumoto also argues that non-referential cognate objects cannot serve as antecedents for pronouns, explaining the contrast in (54).

(54) a. Mary smiled a mysterious smile and it was attractive.
b. Mary smiled a sudden smile and it was attractive.

In (54a), the pronoun can refer to the whole sentence *Mary smiled a mysterious smile* or to the object *a mysterious smile*. In (54b), the pronoun can only refer to the whole sentence *Mary smiled a sudden smile*, but not to the object *a sudden smile*, since the object is non-referential. Matsumoto also argues that non-referential cognate objects cannot be topicalized. Similar arguments are made by Kim and Lim (2012). Overall, there is a striking similarity between non-referential cognate objects and chunks of non-decomposable idioms – neither can undergo passivization, pronominalization, or topicalization in English.

Now let us consider the behavior of cognate objects in Chichewa. Bresnan and Mchombo note that the verb *–lota* ‘dream’ has the cognate object *malôto* ‘dreams’, seen in (55). This is an example of a referential cognate object, where the adjective modifies the result of the action of dreaming, not the action of dreaming itself.

(55) *Mlenje a-na-lót-á malótó ówôpsya usîku.*
hunter SM-REC.PAST-dream-IND dreams frightening night
'The hunter dreamed frightening dreams last night.'

However, the acceptability of the cognate object is strongly degraded by the presence of an OM, even though the cognate object itself is referential:

(56) ??*Mlenje a-na-wá-lót-á málótó ówôpsya usîku*
hunter SM-REC.PAST-OM-dream-IND frightening night
'The hunter dreamed them last night, frightening dreams.'

This is precisely the pattern we saw with idiom chunks (Bresnan and Mchombo also marked (50b) with two question marks.) So, the problem is not unique to idioms: Chichewa object markers are incompatible with both idiom chunks and cognate objects, even when they are referential. In other words, the incompatibility of object markers and idiom chunks is due to an independent property of object markers, rather than a property of idioms. (Though the precise nature of that property is thus far unclear.)

In this section, I have argued that chunks of decomposable idioms, but not chunks of non-decomposable idioms, can serve as antecedents for pronouns, for straightforward semantic reasons. The English and Italian data discussed in this section are argued to follow directly from this claim. The Bantu data are more complicated; chunks of decomposable idioms in Bantu cannot serve as antecedents for object markers. However, object markers are also incompatible with referential cognate objects, despite the fact that referential cognate objects can typically serve as antecedents for pronouns. I argued, therefore, that the Bantu facts are due to an independent property of object markers, not an idiom-specific restriction.

4.2.4. Adjectival modification

Next, let us look at adjectival modification. Nouns in decomposable idioms can generally undergo adjectival modification:

(57) +Linda spilled the political beans.

This is to be expected: if *secret* can be modified by *political*, then *beans* in the idiom *spill the beans* should be able to be modified by *political* as well. But in fact not any adjective which can modify *secret* can also modify *beans*:

(58) –Linda spilled the big beans.

(58) cannot mean *Linda revealed the big secret*, at least in my idiolect. On the other hand, (59) can retain its idiomatic interpretation:

(59) +Linda opened a big can of worms.

How do we explain this contrast? Consider the relationship between the relevant idioms and their literal interpretations. If spilling beans is metaphorically associated with revealing a secret, one possible metaphorical association is between the number of beans and the magnitude of the secret, as opposed to an association between the size of the beans and the magnitude of the secret. Note that, at least in my judgment, (60) loses its idiomatic reading, just like (58). But I assume this is because it is not a case of adjectival modification. As I will argue in Section 5.2, adjectival modification is possible in idioms because adjectives can be introduced counter-cyclically, but this is not the case for *tons of*.

(60) –Linda spilled tons of (the) beans.

On the other hand, if opening a can of worms is metaphorically associated with causing a difficult situation, it is reasonable to suppose that the size of the can of worms is associated with the magnitude of the difficulty – the larger the can, the more worms.

For some speakers, (58) is in fact acceptable. I suggest that, for those speakers, there is in fact a metaphorical association between the size of the beans and the magnitude of the secret, and that the way that a speaker metaphorically conceptualizes an idiom correlates with which sorts of adjectival modification they will allow.

I suggest that, for speakers that reject (58), it is ruled out not semantically, but pragmatically. In a metaphorically transparent idiom like *spill the beans*, an adjectival modification which is possible in principle but which disrupts the metaphorical connection between the literal and idiomatic reading will be ruled out for pragmatic reasons. This is the case with *big*, assuming that one conceptualizes the number of beans, not the size of the beans, as correlating with the magnitude of a secret. On the other hand, *political* has no plausible

application to beans on the literal reading, so there is no possibility of a disruption between the literal and idiomatic readings with an adjective like *political*. Given the difficulty of finding a principled syntactic or semantic distinction between (58) and (59), it seems plausible that the explanation for the unacceptability of (58) is, in fact, pragmatic.[12] However, I leave the details of this analysis as an open question.

So the behavior of decomposable idioms with respect to adjectival modification is somewhat complex – but the current proposal still seems to predict that non-decomposable idioms should not be able to be semantically modified by adjectives at all. If a nominal idiom chunk does not refer, then it cannot be modified by an adjective, since it does not denote a set which the set denoted by the adjective can intersect with. This applies to intersective adjectives – but in the case of non-intersective adjectives, there seems to be a similar pattern of data:

(61) a. –John kicked the alleged bucket

b. +John opened an alleged can of worms.

Though adjectives like *alleged* are not intersective, semantic analyses of such adjectives nonetheless generally treat them as functions that take the noun as an argument, necessitating that the noun have an independent meaning – so they are correctly predicted to be incompatible with non-decomposable idioms.

So, non-decomposable idioms should be incompatible with adjectival modification. At first blush, it seems that this prediction is not entirely borne out, since chunks of non-decomposable idioms can be syntactically modified by adjectives:

(62) a. +John kicked the social bucket.

b. ~John kicked the proverbial bucket.

But it is easy to see that these are not true counterexamples. As early as Ernst (1981), it was pointed out that the adjective *social* in (62a) does not semantically modify *bucket*, even though syntactically it does. Note that (62a) can be paraphrased as *Socially, John kicked the bucket*.

[12] One possible semantic line of explanation is to say that, although *beans* can be roughly paraphrased as 'secret', it does not really mean the same thing as 'secret', but has some similar meaning, referring to something of which it is not possible to predicate bigness. This line of explanation is reminiscent of Nunberg et al.'s semantic selectional account of co-occurrence restrictions, and hence it runs the risk of simply restating the facts without giving a principled explanation. However, I will not explore this line of explanation in enough detail here to evaluate it.

(62a) is an example of what Ernst calls semantically external modification – it modifies the idiom as a whole, not the chunk *bucket*. Hence it is compatible with non-decomposable idioms, since it requires only that the idiom as a whole be meaningful, not the nominal chunk.

Similarly, *proverbial* is a sort of metalinguistic modifier, commenting on the status of *kick the bucket*. (62b) can be paraphrased as *Figuratively, John kicked the bucket* (which is why it is marked "~"). Again, *proverbial* is compatible with non-decomposable idioms, since it does not require the idiom chunk it syntactically modifies to have an independent interpretation. See Nicolas (1995) and McClure (2011), among others, for more argumentation along these lines.

This presents a compositional puzzle which has yet to be tackled directly in the literature. How do adjectives which syntactically modify a noun get the interpretation of a domain adverb like *socially*? Indeed, with what does the adjective compose, if the noun with which it combines has no independent interpretation? Since the adjective appears to semantically modify the entire proposition in the manner of a domain adverb, a natural suggestion is that it undergoes some sort of QR-like operation. An analogy can be found in the analysis of other instances of external modification, such as (63):

(63) An occasional sailor passed by.

As pointed out by Bolinger (1967), (63) has two readings: an internal reading ("Someone who sails occasionally passed by") and an external reading ("Occasionally, a sailor passed by"). The external reading is puzzling because the adjective appears to syntactically, but not semantically, modify *sailor*; rather, it does something like quantify over events. One solution to this puzzle is due to Larson (1999) and Zimmermann (2003). This analysis posits that the adjective incorporates into the determiner, forming a complex quantificational determiner, *an+occasional*. The result, being a quantifier, then has access to the VP via QR.

Given that adjectives modifying chunks of non-decomposable idioms have the interpretation of a domain adverb, one might expect them to be amenable to a similar analysis, in that domain adverbs appear to have some sort of quantificational force. For example, Bellert (1977) argues that domain adverbs have the semantics of restrictive universal quantifiers, indicating that a proposition is true in the domain denoted by the adverb, but adding nothing to the proposition itself. In other words, they function to identify something like Kratzer's (1981) notion of a conversational background: they indicate that a proposition is true *in view of* some

domain restriction. This notion is operationalized by Rawlins (2004), who analyzes domain adverbs as modal operators which quantify over possible worlds. Specifically, a domain adverb like *legally* restricts us to the closest possible world to the evaluation world in which the extensions of the relevant predicates coincide with the extensions specified by the law. Rawlins' denotation for domain adverbs like *legally* can be extended to those like *socially*, as in (64):

(64) $[[\text{socially}]]^w = \lambda p \in D_{<s,t>} . \forall w'$ in D_s s.t. $w' \in \cap b_c(w) \wedge$ there is no closer $w'' \in \cap b_c(w)$ to w according to o_c, $p(w') = 1$
where b_c is the conversational background provided by *socially* and o_c is an ordering source

Informally, (64) says that, when *socially* takes as its argument a proposition p, p is evaluated as true in a world (specifically, the closest such world to the evaluation world, according to some plausible ordering source) in which propositions are interpreted in the social domain. Let us see how this denotation applies to (65), the paraphrase of our idiom modification example.

(65) Socially, John kicked the bucket.

First, we must note that *kick the bucket* can mean either 'die' or, by metaphorical extension, 'fail', and that we are clearly dealing with the metaphorically extended meaning here. The conversational background serves to specify that we are restricted to worlds in which the notion of 'failure' is defined in terms of the social domain – so worlds in which, e.g., John failed politically but not socially are excluded. (64) also specifies that we should only consider the closest such world to the evaluation world, according to some reasonable ordering source. (65) then means that the proposition 'John failed' is true in the closest world to the actual world in which failure is defined in terms of the social domain.

Now what remains is to explain how an adjective adjoined to the NP complement of an idiom gets this sort of external interpretation. I assume that the adjective undergoes QR so as to modify the entire proposition. There are two potential ways to make this possible. One is to assume that adjectives display a systematic ambiguity between typical adjectival readings and domain adverb readings, perhaps via some complex type-shifting operation. The other is to assume that the adjective incorporates into the determiner, forming a complex quantificational determiner. But given that the domain adverb composes with an entire proposition, it is not clear how the latter analysis would work, since the determiner remains part of the proposition with

which the domain adverb composes. I therefore assume that adjectives in the relevant class are systematically ambiguous between a typical adjectival reading and a domain adverb reading. Under the domain adverb reading, the adverb composes directly with the proposition expressed by the rest of the sentence after undergoing QR (similar to Larson 1999 and Zimmerman's 2003 accounts, but without incorporation into the determiner).

Proverbial is an interestingly different case from *social*. 'John died' and 'John kicked the [literal] bucket' are distinct propositions, so we cannot simply say that *proverbial* restricts the evaluation of a single proposition to a particular world. Rather, what it does is specify that 'John died' is the relevant proposition. It seems to behave more like a speaker-oriented speech act adverb (*frankly, confidentially, figuratively*) than a domain adverb. But the fact that it is purely meta-linguistic – whereas even adverbs like *frankly* and *confidentially* have non-speaker-oriented counterparts – suggests that it may not be amenable to a compositional analysis at all. I leave this question open.

In this section, we have seen that the availability of adjectival modification does not correspond cleanly to a distinction between decomposable and non-decomposable idioms. We have cases in which chunks of decomposable idioms resist adjectival modification, which I suggested is amenable to a pragmatic explanation. On the other hand, we also have cases in which chunks of non-decomposable idioms allow adjectival modification, which I proposed are not true cases of semantic modification. In both types of cases, we can explain the relevant data in terms of semantic/pragmatic properties.

4.2.5. Head movement

Most of the syntactic phenomena we have discussed so far in Section 4.2 have been (generally) incompatible with non-decomposable idioms and compatible with decomposable idioms, for semantic reasons. But I have argued that all idioms are syntactically free, so both types of idioms should be compatible with syntactic structures which do not have semantic restrictions (at least not below the level of the entire idiom). This turns out to be the case.

A number of instances of head movement are compatible with both decomposable and non-decomposable idioms. One example is V2 word order in German. As Schenk (1992) shows, non-decomposable idioms participate fully in German V2:

(66) a. *+Er beisst ins Gras.*
he bites into.the grass
'He bites the dust.'
b. *+Morgen beisst er ins Gras.*
tomorrow bites he into.the grass.
'Tomorrow he bites the dust.'

Idiom chunks which are finite verbs undergo V2 movement in German, like finite verbs in clauses without overt complementizers in general. According to the standard analysis of German V2 (den Besten 1983), V2 word order is a result of the finite verb moving to C, when C is not filled with a complementizer. Since Spec-C is the only position to the left of C (i.e. c-commanding C) in the matrix clause, there can only be one constituent to the left of the fronted verb (under the assumption that there is no further adjunction to that position). The constituent in Spec-C has been described as a topic (although it cannot be a topic in precisely the sense discussed above, because Spec-C can be filled by an expletive), but the verb itself does not receive a topic interpretation in C. The most detailed study of the semantics of German V-to-C movement is by Truckenbrodt (2006), who argues that the only semantic consequence of the movement is that the clause has an epistemic illocutionary force, while clauses without V-to-C movement have deontic illocutionary force. For Truckenbrodt, declaratives and interrogatives have epistemic illocutionary force, since they are concerned with updating the common ground; other clause types, including directives, exclamatives and desideratives, have deontic illocutionary force. If Truckenbrodt is correct, then we correctly predict V-to-C movement to be possible with all idiom chunks, since its only semantic effect concerns the illocutionary force of the entire clause, which is not fine-grained enough to distinguish between decomposable and non-decomposable idioms.

French V-to-T movement is a similar case. As described by Pollock (1989), the fact that French verbs appear before adverbs like *souvent* 'often' is one piece of evidence that they raise to T (or Infl, in Pollock's terms). The difference between French and English in this regard is illustrated in (67):

(67) a. John often kisses Mary.
b. *John kisses often Mary.

c. **Jean souvent embrasse Marie.*
Jean often kisses Marie
d. *Jean embrasse souvent Marie.*
Jean kisses often Marie

(68) shows on the basis of adverb placement that verbs in non-decomposable idioms in French also undergo V-to-T movement. (68c) shows a second diagnostic for V-to-T movement, namely the placement of negation, which also shows that non-decomposable idioms in French undergo V-to-T movement. In addition, note that in (68c) the indefinite article is spelled out as its partitive form, *de*, as occurs in the context of negation with non-idiomatic sentences as well. I therefore assume that the lexically stored idiom does not include an indefinite article with the phonological form of *un*, but rather a phonologically underspecified article which is spelled out as *de* in the context of negation and as *un* otherwise (just as in non-idiomatic contexts). Finally, (68d) shows that *poser un lapin* is compatible with a third diagnostic for V-to-T movement, quantifier floating, as expected.[13]

(68) a. *+poser un lapin à quelqu'un*
place a rabbit to someone
'to stand someone up'
b. *+Il me pose souvent un lapin.*
he to.me places often a rabbit
'He often stands me up.'
c. *+ne poser pas de lapin à personne*
NEG place not PART rabbit to nobody
'to not stand anybody up'
d. *+Ils me posent tous des lapins.*
they to.me place all PART rabbits
'They all stand me up.'

Analyses of French V-to-T movement typically assume that it is triggered by a purely formal feature – Roberts (2010), for example, argues that French V-to-T movement takes place to check

[13] Thanks to Marlyse Baptista (p.c.) for pointing out the examples in (68c-d).

a [*u*V] feature on T. Under this type of analysis, the semantics of the verb do not matter, since all that matters is that the verbal head has a feature which can discharge T's [*u*V] feature. Again, it is correctly predicted that both decomposable and non-decomposable idioms are compatible with V-to-T movement in French.

Under the alternative assumption that head movement is a purely phonological phenomenon (e.g. Chomsky 2001b), all kinds of head movement are even more straightforwardly predicted to be compatible with decomposable idioms. However, I make no strong claims about head movement in general. If indeed there are instances of head movement which take place in the narrow syntax, then we must examine their syntactic properties to determine whether or not they are predicted to be compatible with non-decomposable idioms.

4.3. Summary

In this chapter, we have seen that idioms have internal syntactic structure and examined some of their syntactic properties. The generalization that emerges is that we can explain the syntactic behavior of idioms without having to posit special syntactic principles applying only to idioms. Instead, we see that idioms are subject to the same sorts of syntactic variation as non-idiomatic phrases. In Chapter 5, I will argue that this follows from a theory in which idioms and non-idiomatic phrases are built by the same structure-building operation, Merge, such as the theory I propose. But in addition, all syntactic configurations are subject to interpretive restrictions at the interfaces, and some idiom chunks may not satisfy those restrictions. Thus, for instance, topics in English must be referential or generic, and chunks of non-decomposable idioms are neither, so they are not licit topics. Chunks of decomposable idioms can serve as topics, so long as they satisfy the syntactic, semantic and pragmatic requirements of English topics.

Crucially, we need not assume the distinction between decomposable and non-decomposable idioms as a primitive. All idioms are subject, in principle, to syntactic variation, but some idioms are less hospitable to such variation due to their semantics – Merge can take place freely in all cases (as long as it satisfies the Extension Condition), but the output of Merge is subject to interface conditions. Instances of syntactic variation which do not impose interpretive restrictions on idiom chunks, such as verbal inflection and the examples of head movement discussed in Section 4.2.5, never cause ungrammaticality when applied to idioms. We

also discussed how non-decomposable idioms are largely, but crucially not universally, incompatible with adjectival modification and the passive. Conversely, we saw instances in which the flexibility of decomposable idioms is limited – for example, the impossibility of *the ice* in *break the ice* serving as a topic. The use of the terms *decomposable* and *non-decomposable* should therefore be taken as purely descriptive. (And even as descriptive terms, *decomposable* and *non-decomposable* are not quite adequate – the idiom *take the bull by the horns*, in which *bull* has an interpretation but *horns* does not, cannot be described as being fully decomposable or fully non-decomposable.)

The ill-formedness of the ungrammatical examples we have seen is, then, not purely syntactic. Nor is it purely semantic, in the sense that Chomsky's (1957) famous example in (69) is ill-formed.

(69) #Colorless green ideas sleep furiously.

The reason (69) is odd has to do with the lexical semantics of its components – the types of the lexical items allow them to compose normally, as we would expect from a syntactically well-formed sentence. A useful distinction here is the distinction between aspects of meaning which are determined by syntactic structure, and aspects of meaning which are independent of syntax. (This distinction, which is frequently invoked in the DM literature, was briefly alluded to in Section 3.4; DM predicts that different aspects of the meaning of idioms are predictable from their syntactic structure. However, I will argue in Section 5.6 that the DM prediction is too strong regarding specific phenomena, namely mismatches in lexical aspect between idioms and their literal counterparts.) The ungrammatical examples we have seen are semantically ill-formed, but that ill-formedness involves aspects of meaning which are dependent on syntax. Consider, for example, (33b). I have argued that it is ungrammatical because non-decomposable idiom chunks cannot receive a topic or focus interpretation – but the reason that matters is because the syntactic position of the chunk *goma-ga* (namely Spec-T) is one that requires a topic or focus interpretation in Japanese. The ill-formedness arises post-syntactically, in the semantic component, but as a result of both syntactic and semantic properties.

With this in mind, Chapter 5 will introduce the syntactic and semantic architecture I propose on the basis of the idiom data discussed in the preceding sections.

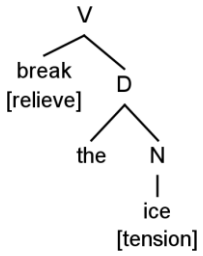
Chapter 5
The Architecture of the Language Faculty

5.1. Lexical storage of idioms

In the previous chapter, I argued that the facts about the syntactic behavior of idioms can be accounted for derivationally – that is, idioms are built up in the syntax just like non-idiomatic structures. However, I also argued in Chapter 3 that co-occurrence restrictions on idiom chunks are arbitrary, suggesting that idioms are stored wholesale in the lexicon. In this chapter, I present a syntactic architecture for idioms which combines syntactic derivation with lexical storage above the word level. The essential idea is that the non-literal interpretation of an idiom is licensed by the lexically stored structure of the idiom; if that structure is built up in the course of the derivation, it can either be interpreted literally, if a literal interpretation can obtain compositionally from the derivation, or using the non-literal (idiom) interpretation which is specified as a lexical entry.

Detailed sample derivations will be given in Section 5.4, after details about how matching and Spell-Out work have been introduced, but I will begin with some basic examples without some of the details to illustrate how the approach works in general. I will first illustrate the syntactic approach I propose using the example of a decomposable idiom, *break the ice.* As I have argued, the idiom must be stored as a whole to account for the fact that *break* and *the ice* must co-occur in a particular syntactic configuration for the idiomatic interpretation to be licensed. (1) shows the lexical entry I propose for *break the ice* (phonological features are omitted for the sake of exposition, though of course they must be included in the lexical entry); semantic representations are given in square brackets. I assume *the* has the same interpretation it has in non-idiomatic contexts.

(1) Lexical entry for *break the ice*



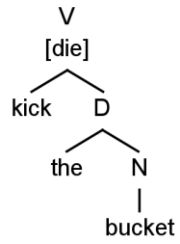
Now consider a derivation in which the syntactic structure in (1) is built up by iterative application of Merge in the usual way, as seen in (2).

(2) a. {the, ice}
b. {break, {the, ice}}
c. {v, {break, {the, ice}}}
d. {Voice, {v, {break, {the, ice}}}}

After the structure has been built up, it may optionally be interpreted (specifically at the phase level, as I will argue below) according to the lexical entry in (1) – if not, the derivation proceeds as usual and the literal reading obtains. If the lexically specified conventionalized idiomatic interpretation is chosen, then *break* will be interpreted as 'relieve' and *ice* will be interpreted as 'tension', as shown. The derivation then proceeds as usual. The derivation might, for example, result in a passive structure. Since *ice* has an independent interpretation, namely 'tension', the DP *the ice* also has an independent interpretation, namely 'the tension', because the D and N are able to semantically compose normally. The passive structure can therefore be interpreted.

Now let us consider the lexical entry for a non-decomposable idiom, *kick the bucket*, given in (3).

(3) Lexical entry for *kick the bucket*



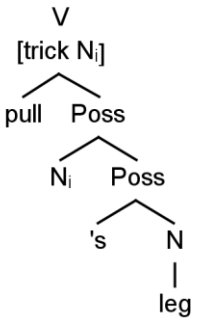
The lexical entry is similar to (1), with one important difference. There is a semantic representation for the entire idiom, rather than its parts, since it is non-decomposable. Nevertheless, precisely the same derivational steps apply. If the structure in (3) has been built up, at the phase level it may optionally be given the semantic representation in the lexical entry. Then the derivation proceeds as usual. We might derive a passive structure, which is perfectly possible in the syntax. However, the DP *the bucket* has no independent interpretation, and thus semantic interpretation fails for the reasons discussed in Chapter 4: passive subjects must be relatively discourse-old, but non-referring idiom chunks, such as *the bucket*, cannot have a discourse-old status. In contrast, referring idiom chunks, such as *the ice*, can be discourse-old.

As mentioned in Section 3.4, the architecture I propose, in which structures built in the syntax can be interpreted compositionally or via the idiomatic interpretation if the necessary structure is present, is reminiscent of Kelly's (2013) DM proposal. Nevertheless, Kelly proposes that, after a structure like *spill the beans* has been built up, it is interpreted via information in the Encyclopedia; for Kelly, the Encyclopedia contains both special (i.e. idiomatic) meanings and non-idiomatic meanings, which compete for insertion at Spell-Out (at the end of the derivation, Kelly's approach). The structure may thus either be interpreted literally and compositionally, or it may be interpreted via an idiomatic meaning associated with the structure for *spill the beans* in the Encyclopedia. However, Kelly's approach runs into a significant problem: since interpretation takes place post-syntactically, it is necessary to ensure that the idiomatic interpretation is still available at the end of the syntactic derivation. For example, if *spill the beans* ends up in the passive (*the beans were spilled*), the idiomatic interpretation is still available – but it no longer has the structure *spill the beans*. So if idiomatic meanings are

associated with syntactic structures in the Encyclopedia, then it would seem that all possible syntactic variations would have to be stored redundantly, contrary to reasonable assumptions about economy and parsimony. Note that my approach does not face this problem, because the idiomatic interpretation is accessed at the phase level, not at the end of the derivation only.

At this point, the question naturally arises as to why idioms need to be built by Merge in the first place, if they are also stored in the lexicon. There seems to be a redundancy in the approach I develop in this chapter, given that a potential alternative is that the structures in (1) and (3) could be inserted into the derivation just like regular lexical items, and the derivation could proceed from there. There are two main reasons why I do not adopt this alternative possibility. First, the architecture I adopt allows for more uniformity: idioms are built by Merge just like non-idiomatic phrases, and the only lexical items which participate in External Merge are atomic lexical items (i.e. ones with no internal syntactic structure). In other words, Merge is maintained as the only structure-building mechanism in the syntax. Second, there are empirical reasons to assume that idioms are in fact built by Merge. Consider an idiom like *pull X's leg* 'trick X', where *X* can be any NP referring to someone whose leg can be pulled. In order to deal with this sort of idiom variability, I assume that lexical entries for idioms can contain variables. The lexical entry for *pull X's leg* would be as in (4):

(4) Lexical entry for *pull X's leg*



If (4) were to be directly inserted into the derivation, then the possessor would have to be introduced (merged) at some later point in the derivation. But under standard assumptions, Merge is subject to the Extension Condition, so counter-cyclic Merge of the possessor is

impossible. On the other hand, if the idiom is built up by iterative Merge, then whichever NP happens to be merged (cyclically) in the possessor position, the resulting structure will satisfy (4), which has an open variable position which can be filled by any NP.

Svenonius (2005) gives an alternative solution to the Extension Condition problem. He assumes a form of sideways movement, whereby a node which has already participated in Merge can be merged with an element taken directly from the lexicon. This has the effect of creating multi-dominance structures which Svenonius calls banyan trees; the structure for *pull X's leg* is shown below.

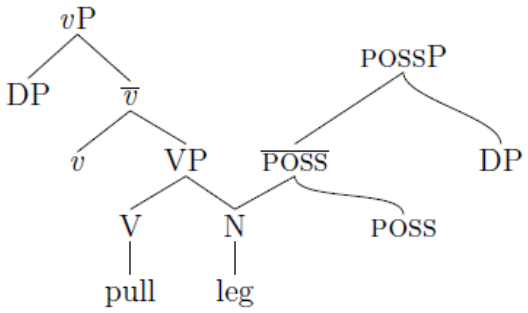


Figure 5.1: Banyan tree for pull X's leg

However, my solution does not require non-standard assumptions about structure-building. Instead, I assume that possessors are merged cyclically without creating multi-dominance structures. Thus, I assume that even though idiomatic structures are lexically stored, the corresponding syntactic structures are built derivationally rather than being directly inserted into the derivation. Hence there is a distinction within the lexicon between atomic lexical items, which can serve as input to Merge, and idiomatic lexical items, which cannot.

An alternative possibility within my framework is to say that Merge can freely operate on both atomic and idiomatic lexical items. In the case of idioms like *pull X's leg*, the derivation will only succeed if the idiom is built from atomic lexical items, rather than having the idiomatic lexical item serve as input to Merge, because if *pull X's leg* itself serves as input to Merge, the variable cannot be filled with a possessor without violating the Extension Condition.

In other cases (in which there is no variable which would have to be counter-cyclically inserted, such as *kick the bucket*), either strategy will be successful. The two possibilities are empirically indistinguishable in such cases, and each has its conceptual advantages. The possibility I adopt, in which idiomatic lexical items cannot participate in Merge, has the

conceptual advantage of ensuring that all syntactic structure is built by Merge, and the conceptual disadvantage of introducing a distinction between different kinds of lexical items. The alternative possibility has the conceptual advantage of treating all lexical items uniformly, and the conceptual disadvantage of introducing a distinction between structures that have been built derivationally by Merge and structures which have not.

5.2. Matching

So far, I have glossed over what it means for a lexically stored idiom to be built up in the course of the derivation. How does the system reach the point at which an idiom is built and can have its idiom meaning accessed, or in other words the point at which part of the structure built in the derivation matches the lexically stored structure? This section attempts to formalize the notion of matching.

The lexical entry for an idiom, like any lexical entry, includes syntactic, semantic and phonological information. Clearly, the idiom is only present if the requisite lexical items are used: *crack the ice* does not match the structure in (1). But not all of the lexical information matters. In particular, the semantic information does not have to match in order for the derived structure to match the stored structure, because the derived structure is generated by merger of lexical items, which have only a literal meaning (*ice* does not mean 'tension' except as part of the idiom *break the ice*). Indeed, idioms by definition do not have the same semantics as their literal counterparts. So only the syntax and phonology are relevant for matching.

A further complication is the possibility of variables, as in *pull X's leg*. I will treat variables as representing the set of elements which can satisfy them. In the case of *pull X's leg*, the variable X represents the set of all possible NPs. (The result is only sensical if the NP is animate, but I assume that this fact is due to world-knowledge, and nothing in the linguistic system itself rules out *pull the book's leg*.) Variables can also be much more restricted. If we wish to treat *pack a punch* and *pack a wallop* as instances of the same idiom, then the idiom will be stored as *pack a Y*, where the variable Y represents a rather restricted set of elements, containing *punch*, *wallop*, and perhaps a few others. An alternative possibility is to treat *pack a punch* and *pack a wallop* as two separate idioms, but this would miss out on a generalization. Indeed, families of related idioms, like *pack a punch* and *pack a wallop*, are very widespread – see Nunberg et al. (1994) for examples.

We can also, following standard Minimalist assumptions, think of syntactic structures as sets, though these sets can only have up to two members (not considering members of members), since Merge is binary. With the above in mind, we can now venture a definition of matching:

(5) *Matching*

i. Two lexical items match iff they are identical, ignoring semantics

ii. An object matches a variable iff it is a member of the set represented by the variable

iia. If a variable can be null, it can be matched by the lack of any element in its position

iii. Two sets match iff all of their members match, ignoring semantics

Here, an object is defined as either a lexical item or a set (i.e. a syntactic structure). (5i) of the definition covers lexical items: as long as they differ at most in their semantics, two lexical items are said to match. (5ii) and (5iia) cover variables: for instance, *John* matches the variable X in *pull X's leg* since it is a member of the set of all possible NPs. The definition also accounts for variables which can be null, which we will see an example of in the discussion of McCawley's paradox below. With variables which can be null, matching obtains even if there is no element which matches the variable. Finally, (5iii) ensures that matching of lexical items and/or variables occurs for syntactic structures of any size. Both the structure created in the derivation and the lexically stored idiomatic structure can be represented as sets; if the two sets match at a given point in the derivation, then we say that the lexically stored idiomatic structure has been built up.

As an illustration, consider the stored structure for *pull X's leg* in (4). Assume that Merge builds a syntactic structure identical to that in (4), but with *John* in place of the variable. By part (i) of the definition of matching, the three lexical items *pull*, *'s*, and *leg* in the derived structure will match those in the lexically stored structure, because they have the same syntactic and phonological features. (They differ in their semantics, since there are no stored semantic representations for the idiomatic lexical items themselves.) *John* matches the variable by part (ii) of the definition, since it is a member of the set represented by the variable, namely the set of all NPs. Note that phonological matching does not matter for the purposes of variable matching: the set represented by the variable in this case contains a set of phonologically and semantically distinct objects – {John, my aunt, the American president…} – but all that matters is that the merged element is a member of said set. Finally, the entire derived structure matches the stored structure by part (iii) of the definition. The derived set represented by the lower Poss projection

matches the stored set, because its members (*'s* and *leg*) both match; the derived set represented by the higher Poss projection matches the stored set, because its members (*John* and the lower Poss projection) both match; and so forth, all the way up the tree for the idiom in (4).

This notion of matching has consequences for adjectival modification. We have seen that both chunks of decomposable and non-decomposable idioms can be modified by adjectives, but their lexical entries do not include adjective nodes, since adjectival modification is optional. If adjectives were inserted cyclically, then matching would not take place – e.g. the structure for *spill the political beans* would not match the stored structure for *spill the beans*. Therefore, I adopt Chomsky's (1995) assumption that the Extension Condition does not apply to adjunction. This implies that adjectives can be introduced counter-cyclically, after the lexically stored structure has been built. The same applies to other kinds of adjunction (e.g. *make absolutely certain*). If Merge in general is subject to the Extension Condition, then the question arises as to why adjunction is not. A common assumption is that adjunction takes place via a different operation than other structure-building, such as Pair-Merge for Chomsky, or Adjoin for Gärtner and Michaelis (2008). As Gärtner and Michaelis point out, allowing counter-cyclic adjunction via an operation like Adjoin does not increase the weak or strong generative capacity of a Minimalist grammar, since there is no difference between early and late adjunction in terms of the trees which result. However, it does result in a disjunction, in that it allows for two different structure-building operations, contra Minimalist desiderata. (Nonetheless, Pair-Merge is also a highly minimalistic operation – it also combines only two elements, though it forms an ordered pair instead of a set.) Given that the assumption that adjunction does not take place via regular Merge has been argued (for example by Chomsky 1995) to be necessary for reasons independent of idioms, I adopt it, though from a conceptual point of view a unification of adjunction and other structure-building is desirable.

Though introducing a matching algorithm may seem at odds with Minimalist assumptions, the grammar arguably must already make use of structural matching in order to deal with ellipsis phenomena, since ellipsis is standardly thought of as a form of deletion under identity. Whether that identity is semantic, syntactic, or some combination of the two is a matter of debate. A number of recent authors (e.g. Aelbrecht 2010, van Craenenbroeck 2010) have proposed that semantic identity is at issue, while others (e.g. Fiengo and May 1994, Kehler 2002) have proposed that syntactic identity is at issue. As discussed by Merchant (in press), there are

two major sets of data that suggest that a notion of syntactic identity is required. The first is the fact that voice mismatches are disallowed under sluicing, as in (6a-b), but allowed under VP ellipsis, as (6c-d):

(6) a. *Joe was murdered, but we don't know who <*murdered Joe*>.
b. *Someone murdered Joe, but we don't know who by <*Joe was murdered*>.
c. This problem was to have been looked into, but obviously nobody did <*look into this problem*>.
d. The janitor should remove the trash whenever it is apparent that it needs to be <*removed*>.

If ellipsis required syntactic identity, this pattern can be accounted for by assuming that sluicing targets a node that includes Voice, while VP ellipsis targets a lower node.

Another set of data involves the observation that most verbs do not require morphological identity under ellipsis, but the verb *be* does:

(7) a. Emily played beautifully at the recital and her sister will, too.
b. Emily will be beautiful at the recital and her sister will, too.
c. *Emily was beautiful at the recital and her sister will, too.

Lasnik (1995) explains this pattern by proposing that forms of the verb *be* are inserted into the derivation fully inflected, unlike other verbs. In any case, whether one thinks that ellipsis requires syntactic identity, semantic identity (as argued by Aelbrecht 2010 and van Craenenbroeck 2010, for example), or some combination of the two, the notion of structural matching is necessary independently of the analysis of idioms.

Note that the syntax is not affected by matching, since matching takes place as part of Spell-Out. On the first phase has been built and Spell-Out takes place, the syntactic derivation continues as usual, and it can proceed (in the case of literal meanings) without the effects of matching, which are purely interpretive.

5.2.1. Matching vs. Unification and late insertion

At this point, it is useful to step back and consider the complexity of a Minimalist grammar supplemented by matching – is such a grammar truly simpler than, say, parallel architecture? Recall that Unification, the basic operation of parallel architecture (Jackendoff

1997, 2002, 2011), is an operation which takes the union of the feature/value pairs of two structures, as long as those feature/value pairs are compatible. Matching, in the sense of comparing structures to ensure that they are compatible in relevant ways, is therefore one of the functions which can be performed by Unification – so why not adopt a Unification-based grammar in which matching comes for free? However, Jackendoff (2011) points out that something like Merge is necessary in parallel architecture. This is because constructions themselves must somehow be structurally built. Jackendoff argues for a part-whole schema {x, y} with variables x and y as parts, which can be unified with specific lexical elements A and B to form a set {A, B}; he argues that this is essentially equivalent to Merge. But notice that Unification cannot itself build the set {x, y} – though Jackendoff posits that the part-whole schema is "richly present in cognition" (Jackendoff 2011:603), he provides no mechanism by which it is constructed. In that sense, parallel architecture strictly speaking must make use of both Merge and Unification as separate structure-building procedures.

There is little formal research on the relative simplicity (in computational or theoretical terms) of Merge and Unification. But Watumull (2012) gives arguments that binary Merge is computationally tractable, in addition to minimizing abstract representations while maximizing the strong generation of syntactic structures, properties which are not shared by Unification. Specifically, he argues that binary Merge can be implemented by polynomially bounded procedures, while Unification can only be implemented by exponentially bounded procedures, which are less efficient. This is primarily because Unification violates the No-Tampering Condition (Chomsky 2005), which states that merging two syntactic objects X and Y leaves X and Y unchanged.

Now, matching also violates the No-Tampering Condition, because it can replace the semantic features of syntactic objects. But it does so in a more constrained way than Unification, since it can *only* replace semantic features, and only at the phase-level. As Jackendoff (2011) points out, Unification leads to widespread violations of the No-Tampering Condition, with the result that two constituents that have been unified can often not clearly be separated in the output. For example, Unification of [$_{VP}$ V NP] with [$_{VP}$ $_{V}$kick $_{NP}$Fred] results in [$_{VP}$ $_{V}$kick $_{NP}$Fred], tampering with [$_{VP}$ V NP] in the sense that [$_{VP}$ V NP] is no longer present in the structure. From a Minimalist perspective, then, the question is how much complexity on top of Merge is

necessary to yield descriptive and explanatory adequacy regarding idioms. I argued in this chapter that matching is necessary for this purpose.

Are there reasons independent of idioms to adopt Unification wholesale? Jackendoff's primary empirical motivation for adopting a complex operation like Unification over a simpler operation like Merge is his argument that language is pervaded by "noncanonical utterance types," which he argues cannot be captured in mainstream generative grammar. And indeed, the existence of utterance types which cannot be captured via mainstream Minimalist theories would necessitate extensions to those theories. In this dissertation, I have argued that idioms are one such phenomenon, and that standard Minimalism needs to be supplemented by matching to account for them. But crucially, we need not adopt Unification wholesale unless indeed there are other sorts of utterance types which cannot be accounted for in mainstream Minimalism supplemented by matching. It is orthogonal to the analysis of idioms whether there is the need to adopt Unification wholesale in other domains, so I will set it aside for now. However, see Boeckx and Piattelli-Palmarini (2007), who argue that the phenomena argued by Jackendoff to be problematic for "mainstream generative grammar" have in fact received satisfactory treatments in Minimalism – these include, for example, Taylor's (2013) study of comparative correlatives (but see also Den Dikken 2005), or Grohmann and Nevins' (2004) analysis of syntactic reduplication.

Finally, I argue that even within the domain of idioms, there are reasons to believe that Jackendoff's system is too powerful. In the following section, I will argue that idioms cannot span phase boundaries. However, parallel architecture pointedly does not include phases or similar locality constraints, and hence predicts that phases should be able to span phase boundaries. If my arguments are correct, then parallel architecture is not equipped to fully explain the properties of idioms.

It is also useful to compare the architecture I am proposing to Distributed Morphology. Again, there are relevant similarities. In this case, matching allows for late insertion of semantic material, since the lexical items which serve as input to the syntactic derivation do not include idiomatic semantic representations. In that sense, matching is similar to the insertion of Encyclopedic information in DM. The difference between my architecture and that of DM is that DM allows for late insertion of phonological material as well (via Vocabulary Items), while my system does not. Again, my proposed grammar is less powerful but more constrained, and I have

argued that only late insertion of semantic material is necessary to account for the properties of idioms, but it may be the case that late insertion of phonological material is also necessary for independent reasons, in which case the adoption of a more powerful DM-like architecture would be motivated, regarding the types of features that can be inserted at a later point. However, the analysis I develop here shows that late insertion of phonological material is not necessary to account for the properties of idioms.

5.3. Spell-Out

We now return to the issue, introduced in Chapter 2, of the timing of Spell-Out, in which the syntactically derived structure is divided into two representations, LF and PF, which are sent to the semantics and phonology, respectively, to be interpreted (equivalent to what Chomsky, in recent work, has called Transfer). In Section 2.3, I outlined two instantiations of the Minimalist Y-model which differ in terms of the timing of Spell-Out: Spell-Out may happen at the phase level, or after every step of the derivation (or equivalently, at the phase level if one assumes that each instance of Merge completes a phase).

Idioms may appear to pose a challenge for a strongly derivational model, such as that of Epstein and Seely (2006), in which semantic composition takes place after every instance of Merge. This is because the idiomatic interpretation is only available when all the necessary components are present, so there is no way to determine without lookahead that *the beans*, for example, will end up being part of the idiom *spill the beans*. Hence interpretation of idioms cannot happen until the entire idiom has been built. A strongly derivational model does not face a problem then if it can allow interpretation to happen only when the lexical items that yield the relevant idiom meaning have been merged.

Under the approach I propose in this dissertation, idiomatic interpretations will be available if interpretation is delayed until the entire idiom has been built, and only literal interpretations will be available if interpretation happens not to be delayed. This approach avoids positing that literal interpretations are always composed in concert with the derivation, and then later overridden when an idiomatic interpretation is chosen. Instead, there are separate derivations (without lookahead), one in which interpretation is delayed, and one in which it is not delayed.

In this section, I will argue that the empirical evidence suggests that idiomatic interpretations are calculated at the phase level. For the sake of simplicity, I will adopt a weakly derivational system, in which literal interpretations are also calculated at the phase level, and not before. However, as mentioned above, the data are also compatible with a system in which semantic composition is (optionally) strongly derivational. Note also that syntax and phonology remain strongly derivational in the system I propose.

If idioms are lexically stored, then it is natural to expect that they cannot cross phase boundaries, given the notion that the phase sets limits on what can be lexically stored (as suggested by Marantz 2001, and perhaps implicit in Chomsky's 1998 notion of a lexical subarray). And indeed, the evidence discussed below seems to support the claim that idioms cannot cross phase boundaries.

I take C and Voice to be the two phase heads in a clause. In particular, I assume that D is not a phase head. If D is a phase head, then it is difficult to claim that idioms cannot cross phase boundaries, since there are many V+DP idioms. However, see Svenonius (2005) for a suggestion of a possible way of reconciling those two claims. Svenonius argues that the DP phase spells out when its features are checked, which typically happens when material in the K domain is merged. Svenonius assumes that the idiom *bury the hatchet* is in fact stored as *bury hatchet*, and the determiner is introduced later, so the idiom does not cross a phase boundary. But as with the analysis of *pull X's leg*, Svenonius' treatment requires some non-standard assumptions, and I do not adopt it.

Svenonius (2005), Stone (2009), Harley and Stone (2013), Harwood (2013) and others argue that there are no idioms which cross phase boundaries. If Voice introduces an agent, then the notion that idioms are phase-bound accounts for the three generalizations about the domain for idiomatic meaning mentioned in Marantz (1997). First, idioms cannot have fixed agents. Second, idioms whose base form is passive can only be stative, not eventive. This is because stative passives are formed with a functional head merging below the Voice head projecting agents, while eventive passives are formed with a functional head merging above or as the Voice head projecting agents. Ruwet (1991) gives some examples of stative passive idioms in French, and claims that no eventive passive idioms exist in French:

(8) a. *+Chaque chose à sa place, et les vaches seront bien gardées.*
each thing in its place and the cows will.be well kept

‘Each thing in its place and everything will be OK.’

b. *+Cet argument est tiré par les cheveux.*
this argument is pulled by the hairs
‘This argument is far-fetched.’

Finally, causative structure can only be idiomatic if the lower verb is non-agentive, because otherwise they would cross the agent-introducing boundary. Ruwet (1991) points out *make X swim* cannot be an idiom, because its lower predicate is agentive, whereas *make ends meet* can be, because its lower predicate is non-agentive.

Similar arguments are given by Kim (2015), who finds that, in Russian and Blackfoot, elements in VP can be part of verbal idioms, but similar elements outside of VP cannot. In Russian, the relevant distinction is between two types of prefixes: lexical prefixes, which are argued to be VP-internal, and superlexical prefixes, which are argued to be VP-external. Kim points out that only lexical prefixes, such as *za* in (9), can be included in verbal idioms.

(9) *~David sovsem za-brosil futbol.*
David completely into-threw soccer
‘David completely gave up soccer.’

Superlexical prefixes, such as *pere* in (10), can only have transparent meanings.

(10) a. *pere-kidatj*
DISTR-throw
‘throw one by one’

b. *pere-kusatj*
DISTR-bite
‘bite one by one’

c. *pere-bitj*
DISTR-beat
‘beat one by one’

In Blackfoot, the distinction is between functional and lexical prepositions, which both surface as prefixes on the verb, but only lexical prepositions are VP-internal. Again, only lexical prepositions can be included in verbal idioms.

In general, then, it seems that there are no verbal idioms which also contain VP-external material. Nonetheless, Harwood (2013) points out that there is at least one apparent exception to this generalization: *something's eating X*, which requires progressive aspect:

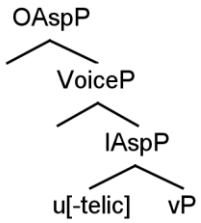
(11) a. +Something's eating Nancy.
b. –Something eats/ate/will eat Nancy.

Prima facie, then the idiom *something's eating X* appears to cross the VoiceP phase boundary. Punske and Stone (2015) argue that appearances are deceiving in this case. First, they note that the idiom has a non-specific subject requirement in addition to the progressive aspect requirement, as shown in (12a). But addition of the conative particle *at* cancels the subject requirement (O'Grady 1998), as well as the progressive aspect requirement, as shown in (12b-c).

(12) a. –The issue is eating Nancy.
b. ~The issue is eating at Nancy.
c. ~The issue eats/ate/will eat at Nancy.

Punske and Stone suggest that the idiom *something's eating X* includes an uninterpretable [-telic] inner aspect (i.e. lexical aspect) feature. The inner aspect projection is above vP and below VoiceP, which they take to be the relevant phase boundary. They also adopt a notion of relativized phases, whereby a phase-head complement cannot be spelled out if it has any unchecked uninterpretable features. Now, there are two ways the uninterpretable inner aspect feature of *something's eating X* can be checked: by the conative particle *at* or by progressive outer/grammatical aspect. If the conative particle is not present, then the VoiceP phase cannot be spelled out until progressive outer aspect is introduced. Hence, *something's eating X* does not cross the VoiceP phase boundary. The relevant structure is represented schematically in (13):

(13) Structure for *something's eating (at) X*



In the absence of the conative particle, Spell-Out of the phase-head complement VoiceP would result in an illegible LF with an uninterpretable [-telic] feature being sent to the semantics; the only way the derivation can be rescued is if Spell-Out is delayed until merger of the outer aspect projection.

Punske and Stone also argue that their analysis provides an avenue for explaining the subject restriction. When Spell-Out is delayed until merger of outer aspect, the phase-head complement which is spelled out is the VoiceP, which by hypothesis includes the subject as its specifier. So, the subject can have idiomatic restrictions, shown in (11), since it is part of the spelled-out material. When Spell-Out is not delayed (i.e. when the conative particle is present), the phase-head complement which is spelled out is the Inner Aspect Phrase, which does not include the subject. So when *at* is present, there is no subject restriction, shown in (12b,c). This gives an empirical motivation for delayed Spell-Out: it links the presence of the progressive requirement with the presence of the subject requirement.

While the notion of delayed Spell-Out is non-standard, it is arguably in the spirit of the Strong Minimalist Thesis. Recall the discussion in Chapter 2 of Chomsky's (1998) notion that phases are defined as the syntactic counterpart of propositions. Recall also Citko's (2014) criticism of that notion: Chomsky takes unaccusative and passive vPs not to be phases because they lack external arguments, but those arguments are not selected, so unaccusative and passive vPs should still represent complete propositions. Similarly, recall Epstein's (2007) criticism: it is the phase-head complement which is spelled out, not the vP or CP. An alternative motivation for phasehood might be in terms of feature interpretability: only a phrase whose uninterpretable features have all been discharged can be spelled out, because uninterpretable features are

illegible in the semantics. This motivation is consistent with the Strong Minimalist Thesis, since it is defined in terms of satisfaction of interface conditions. This leaves open the question of why Voice and C are typically the phase heads in a clause, but it does provide a potential direction for an explanatory account of phasehood.

Harwood (2013:161-163) gives some other examples of idioms which appear to require the progressive aspect:

(14) a. +Bob is dying to meet you.
b. +Bob is pushing up daisies.
c. +They were chomping at the bit.
d. +He is cruising for a bruising.

However, Punske and Stone (2015) list some attested examples of the first three idioms in (14) without progressive aspect:

(15) a. +10 companies people would *die to work for*.
b. +Ned would be free to enjoy Sally and her newly acquired saloon while me and Bart *pushed up daisies* east of camp.
c. +Hillary Clinton engaged four Iowans on Tuesday in a roundtable discussion about small businesses and community banks while camera shutters clicked and reporters *chomped at the bit* to ask her questions.

These examples are all perfectly grammatical for me, suggesting that the idioms do not require progressive aspect (though the progressive is certainly preferred). Note that none of these idioms display a subject requirement, so there is also no indication that they extend beyond VoiceP. Finally, I suspect that the idiom in (14d) requires the progressive for extragrammatical reasons – namely, the fact that it rhymes. Significantly, it is degraded if there is a mismatch between the pronunciation of *cruising* and *bruising* (i.e. if one ends with a velar and the other ends with an alveolar):

(16) a. ??He is cruisin' for a bruising.
b. ??He is cruising for a bruisin'.
c. ~He is cruisin' for a bruisin'.

Thus, none of the idioms listed by Harwood provide clear counterexamples to the generalization that idioms are phase-bound. I conclude that Spell-Out of idiomatic material happens at the phase level, just as is commonly assumed for non-idiomatic material.

For reasons of parsimony, I assume that it is at the phase level at which matching also takes place. After the completion of a phase, the syntactic structure is examined, and any subtree which matches a lexically stored idiom may optionally be interpreted according to the corresponding lexical entry.

In this section, I have explored the timing and nature of Spell-Out. I assume that Spell-Out takes place at the phase level, typically VoiceP and CP in a given clause, and that matching also takes place at the phase level. Therefore, idioms must be phase-bound. I have presented some evidence that idioms indeed cannot cross phase boundaries, and that apparent counterexamples to that generalization, such as idioms which appear to require progressive aspect, can be accounted for in a phase-based syntax.

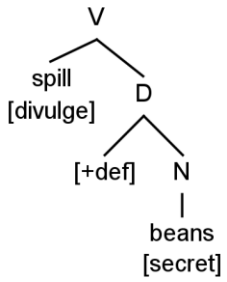
5.4. Sample derivations

For concreteness, let us now consider step by step how the derivation takes place for some core examples. I will begin with the derivation of the sentences in (17).

(17) a. John spilled the beans.
b. The beans were spilled by John.

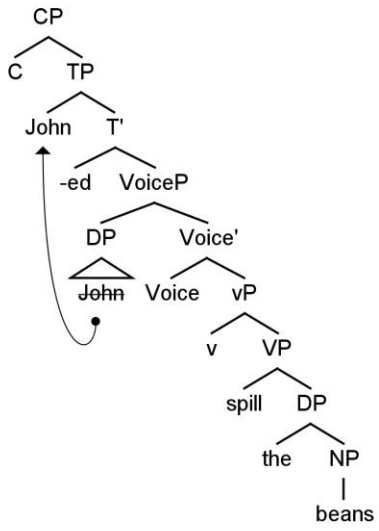
These sentences involve the idiom *spill the beans*, whose lexical entry is shown in (18). Note that the lexical entry contains a variable; this is because (at least in my idiolect) the determiner does not have to be *the*, as long as it is definite – e.g. *spill those beans* is possible.

(18) Lexical entry for *spill the beans*



We will begin with a simple declarative sentence, (17a). I assume the structure in (19):

(19) Structure for *John spilled the beans*



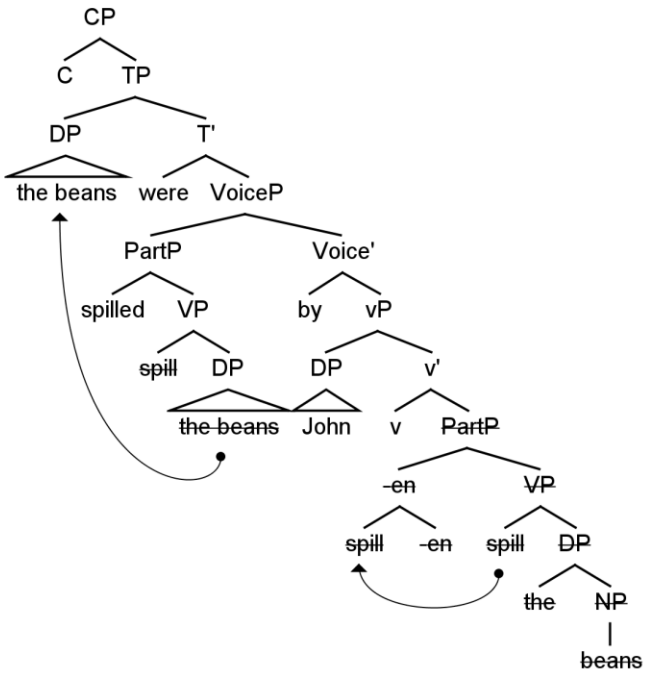
The derivation of (19) proceeds via iterated application of Merge. At the point in the derivation at which the Voice head is introduced, the lower phase is completed, and the phase-head complement, vP, is separated into LF and PF representations which undergo Spell-Out. At the point of Spell-Out, the matching algorithm also applies: it will find that the VP matches the lexically stored structure for the idiom *spill the beans*, since the determiner *the* is a member of the set represented by the variable in the lexical entry for the idiom. Hence the representation that is sent to the semantics may optionally use the semantic representations of *spill* and *beans*

which are lexically stored with the idiom (otherwise the literal interpretation is spelled out). Since this is the representation sent to the semantics, it cannot be modified over the course of the derivation – if the idiomatic reading is chosen, it cannot be overridden by the literal reading. The derivation then proceeds as normal; once the C head is introduced, the matrix phase is completed, and the rest of the structure undergoes Spell-Out.

I assume there must be some sort of unification process whereby spelled out phases are recombined for the purposes of generating complete phonological and semantic representations of the sentence, though I remain agnostic as to its details. One detail which is important, however, is the fact that the tense morpheme (in this case, the past tense morpheme *–ed*) must end up pronounced as an affix on the verb. This cannot be due to a syntactic movement operation taking place before the point of matching, because if it did, matching would not obtain in the absence of a postverbal tense variable in the lexically stored idiom. I assume there is a PF operation, akin to Morphological Merger, which ensures the correct pronunciation.

Now consider the derivation of the passive example, (17b). Note that not just any theory of the passive will work here. In particular, the standard principles and parameters treatment of the passive (e.g. Jaeggli 1986) assumes that the passive suffix *–en* functions as an argument which is assigned accusative Case and receives the external theta-role. In this analysis, the verb is a sister not to the object DP, but to the passive suffix *–en*. So in the derivation of the passive, the lexically stored idiomatic structure would not be built, predicting that idioms should never be passivizable. I instead adopt the analysis of Collins (2005). In this analysis, *–en* heads a PartP which merges with the VP, and the V raises to adjoin to *–en*, forming the participle. Unlike in the traditional analysis of the passive, *–en* does not absorb Case or the external theta-role – it is simply a participle, like the past participle. (Note that there is no morphological difference between the passive and past participle in English, except for irregular verbs, e.g. *took, taken*.) The external argument is merged in Spec,v, similar to the active clause, after which the vP merges with *by*, which heads a VoiceP. *By* checks the accusative case of the DP in Spec,v, similar to *for* in sentences like *For John to win would be nice*. The structure for (17b) is given in (20):

(20) Structure for *The beans were spilled by John*



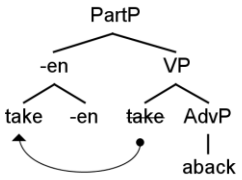
After the VP *spill the beans* is built, it merges with *–en*, forming a PartP; *spill* then raises to adjoin to *–en*. Then v is merged, followed by the external argument, forming a vP; the Voice head *by* then merges. Collins suggests that Voice is a phase head in passives, just as I assume for actives. If that is the case, then *the beans* must move to the phase edge in order to be able to end up in the matrix Spec,T. Collins argues that in fact the entire PartP must first raise, for locality reasons: the external argument DP *John* intervenes between Spec,T and *the beans*, so the beans itself cannot raise; instead, the PartP raises, "smuggling" the internal argument past *John* so it can further raise to Spec,T. Once the lower phase (VoiceP) is complete, matching and Transfer take place. Notice that, under the copy theory of movement, *spill* is still present in the VP, despite having adjoined to *–en*. Hence matching successfully takes place at phase level, and *spill* and *beans* may be interpreted idiomatically. The rest of the derivation proceeds as in (20).

Now consider the equivalent derivations for a non-decomposable idiom, *kick the bucket*. In the active case, the derivation is exactly the same as in (19), aside from the particular lexical items involved. The lexical item for *kick the bucket* does not provide semantic representations for

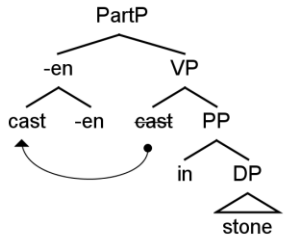
its individual components, so if the idiomatic meaning is chosen upon matching, then the only semantic representation is associated with the idiom as a whole. In the passive case, the syntactic derivation also proceeds in the same way as (20). Matching takes place and the rest of the syntactic derivation proceeds as normal. However, the resultant structure will be ruled out for semantic reasons: since *bucket* has no independent meaning if the idiomatic meaning is chosen, the passive subject *the bucket* will not be relatively discourse-old.

Now recall from Section 4.2.2 that there are idioms which can appear only in the passive form, not in the active, such as *taken aback* and *cast in stone*. These idioms will be stored as PartP structures, which are built only in the passive derivation, and not in the active. Thus, their availability in only the passive form follows straightforwardly. The lexical entries for *taken aback* and *cast in stone* are given in (21) and (22), respectively.

(21) Lexical entry for *taken aback*



(22) Lexical entry for *cast in stone*



5.5. Semantic interpretation

The next question is how interpretations are calculated at Spell-Out. In most cases it is quite straightforward. If matching takes place, then there are two possibilities: the literal

interpretation or the idiomatic interpretation may be chosen. (Note that unlike in cases of structural ambiguity, the assumption is that both interpretations apply to the same syntactic structure resulting from iterative merge, with the same phonological and syntactic features involved: there is true optionality only regarding the meaning that is going to obtain). If the literal interpretation is chosen, the individual lexical items are composed in the familiar way. If the idiomatic interpretation is chosen, the semantic representation(s) included in the lexically stored idiom are used instead. In the case of non-decomposable idioms, no composition takes place internal to the idiom: the semantic representation stored on the idiom composes with whichever element the idiom combines with. In the case of decomposable idioms, those semantic representations are stored on subcomponents of the idiom, and those subcomponents compose as expected. For example, *beans* has the meaning of 'secret', which composes with (e.g.) *the*, resulting in the same denotation as the non-idiomatic phrase *the secret*.

But recall that *spill the beans* is compatible with other determiners, including *those*. If *beans* means 'secret', we have to ensure that the plural demonstrative *those* can semantically compose with a noun meaning 'secret', since *those beans* can mean 'that secret' We must also rule out (23), which is compatible with the lexical entry for *spill the beans*, since it has a definite determiner.

(23) *He spilled that beans.

It is striking that nouns in decomposable idioms tend to have invariable number marking, even when they are semantically compatible with either a singular or plural reading:

(24) a. +Both pairs of feuding families buried the hatchet.
b. –Both pairs of feuding families buried the hatchets.
c. +Both of the new pieces of legislation open a can of worms.
d. –Both of the new pieces of legislation open cans of worms.

In other words, it appears that these idiom chunks are semantically underspecified for number, but have a fixed phonological form, setting aside variability in determiner realization in some idioms. This is to be expected, since phonological form is relevant for matching. A chunk with singular morphology, like *hatchet*, is compatible with either a singular or plural interpretation, under the idiomatic reading, as seen in (24a). I therefore assume that these idiomatic nouns have an uninterpretable but intrinsically valued number feature (contra Chomsky 2000, 2001, who

assumes that a feature is uninterpretable iff it is unvalued). The number feature on the determiner is also uninterpretable (since *those*, for example, is compatible with a singular interpretation – *those beans* means 'that secret'), but intrinsically unvalued. The number feature on the determiner thus probes into its c-command domain and finds the number feature on the noun, and Agree takes place, valuing the former. (23) is thus ruled out because Agree has not taken place and an unvalued uninterpretable feature remains on the determiner. This is precisely parallel to the mechanism for Bantu gender agreement assumed by Carstens (2011), among others. Carstens assumes that gender on nouns is uninterpretable (since it is a purely formal feature, not based on semantics) and intrinsically valued (since it is unpredictable, hence lexically specified). She also argues that Bantu nouns raise to D, placing them on the left edge of the DP, so they are available as goals for clause-level agreement probes. T has unvalued uninterpretable phi-features, including gender, and probes to agree with the DP. This is how we get subject agreement in the following Swahili example, for instance:

(25) *Juma a-li-kuwa a-me-pika chakula.*
Juma 1SA-PST-be 1SA-PERF-cook 7food
'Juma had cooked food.'

If both the determiner and the noun in these idioms have uninterpretable number features, how are the DPs interpreted? In order to compositionally interpret DPs like *the beans* and *those beans*, we may adopt a system like that of Link (1983), in which singular nouns denote sets of atomic individuals, while plural nouns denote sets that include plural individuals. A plural individual is an individual formed by summing atomic individuals; for instance, we may consider *John and Mary* to be a plural individual, formed by summing the atomic individuals *John* and *Mary*. This notion is useful for dealing with several phenomena, especially instances of collective predication, in which something is predicated collectively of a group of individuals:

(26) a. The Egyptians built the pyramids.
b. John and Mary carried the piano downstairs.

(26b), under the interpretation in which John and Mary carried the piano together, can be analyzed by saying that 'carried the piano downstairs' is predicated of the plural individual *John and Mary*, even though it may not be true of John and Mary separately. A set of atomic individuals can be turned into a set including plural individuals by the sum closure operator '*',

defined in (27), where '$\vee$' is a binary operation combining two atomic individuals to form a plural individual.

(27) $*X$ is the smallest set such that:

$*X \supseteq X$ and

$\forall x, y \in *X : x \vee y \in *X$

Informally, the * operator takes a set of atomic individuals and creates a set including all of those atomic individuals as well as all plural individuals which can be generated by summing any subset of those atomic individuals. If X is the set of all individuals, then $*X$ will contain, for example, the plural individual *John and Mary*, allowing us to predicate 'carried the piano downstairs' of *John and Mary*. To deal with a case like *spill the beans*, we may say that *beans* is ambiguous, denoting either the set of all secrets (call it S) or the larger set $*S$, generated by applying the sum closure operator to S. Then we only need a single denotation for the determiner *the*, which picks out the unique salient member of the set denoted by the noun. In the case of the set S, that member will be an atomic individual (a single secret). In the case of the set $*S$, that member may be a plural individual, consisting of the summation of multiple secrets. Hence *the beans* is ambiguous between a singular and plural interpretation. I assume that *those* behaves similarly to *the*, except with an added demonstrative flavor, the details of which are irrelevant for current purposes.

A slight complication in the calculation of idiomatic interpretations involves the possibility of variables, as in *pull X's leg*. In (4), I represented the meaning of the idiom as [trick N_i], where N is co-indexed with the occurrence of N in the tree. Of course, N is a syntactic object, not a semantic one, so it cannot literally be the case that N is directly represented in the meaning of the idiom. Rather, when N appears in a meaning representation, it should be read as "the denotation of N." The meaning of the idiom *pull X's leg*, then, can be written in lambda notation as (28):

(28) $[\lambda x \in D . [\lambda y \in D . y \text{ tricks } x]](N_i)$

The first input to the function is the denotation of N, which must be calculated separately. When the semantics encounters such a variable, it finds the syntactic object co-indexed with it, and calculates its denotation via the usual compositional processes. Once that denotation is calculated, it can serve as the first input to the function. Consider (29):

(29) +Frank pulls his sister's leg.

In cases like this, there is an additional complication, in that *his* gets its denotation from *Frank*. But ignoring the details of how pronominal reference works, *his sister* ends up denoting a particular individual, namely Frank's sister. Now if matching takes place and the idiomatic meaning is chosen, the meaning of the idiom as a whole is (28); the semantics finds the element co-indexed with N_i, and plugs it into the denotation in (28), resulting in (30):

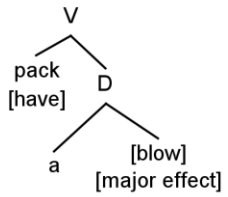
(30) $\lambda y \in D$. y tricks Frank's sister

Then (30) composes with *Frank* in the usual way.

Pull X's leg, incidentally, further illustrates the point (introduced in Section 4.3 with the example of *take the bull by the horns*) that there is no simple binary division between decomposable and non-decomposable idioms. While *pull* and *leg* do not have independent interpretations in the idiom, the possessor noun phrase is fully internally compositional.

There may also be idiomatically specified variables which are not semantically variable. Recall from Section 5.2 that we are treating *pack a punch* and *pack a wallop* as instances of an idiom with a variable, *pack a Y*. In this case, the idiom has the same interpretation no matter what noun fills the variable spot. This type of variation is easily accommodated; I assume the lexical entry for *pack a Y* is as in (31):

(31) Lexical entry for *pack a Y*



The variable here is more specific than just a categorial variable like N – only a N roughly meaning 'blow' can fill the variable spot. Note that this is consistent with the definition of matching in (5): though semantics generally does not matter for matching, nothing prevents a variable from being semantically constrained. No matter how the variable is constrained, it will

represent a set – {*punch*, *wallop*, …} – and any member of that set suffices for the purpose of matching.

5.6. Syntactically idiosyncratic idioms

The approach I propose raises interesting questions about syntactically idiosyncratic idioms, such as *trip the light fantastic*. Nunberg et al.'s (1994:515) list is worth reproducing in full:

(32) by and large, no can do, trip the light fantastic, kingdom come, battle royal, handsome is as handsome does, would that it were, every which way, easy does it, be that as it may, believe you me, in short, happy go lucky, make believe, do away with, make certain

These idioms pose a *prima facie* problem for approaches which assume that idioms are built in the syntactic derivation, because they seem at first glance not to be syntactically well-formed. A common approach, taken for example by Nunberg et al., has been to assume that these idioms are stored in the lexicon and not built in the syntactic derivation (even if other sorts of idioms are built derivationally). Another approach is to argue that they in fact are syntactically well-formed. Svenonius (2005), for example, proposes that no idiom can have a structure that cannot be built by normal syntactic rules, and assumes that *by and large* (for instance) has the structure of two coordinated adjectives – *by* being an idiomatically listed adjective which only appears in the idiom *by and large*, just as *petard* only appears in the idiom *hoist by one's own petard*.

In order to decide between these two approaches, we would like to determine if the idioms in (32) have internal syntactic structure. This turns out to be difficult to ascertain, since they tend to appear highly inflexible. *Make certain* can be modified with an adverb (*make absolutely certain*), which suggests that it has internal structure. *Battle royal* can be pluralized as either *battles royal* or *battle royals*, which suggests that it is ambiguous between a noun phrase and an unanalyzed noun. Some cases, such as *be that as it may*, seem to have internal structure found elsewhere in non-idiomatic structures. But for the other cases, there is little evidence one way or the other.

One potential source of evidence is expletive insertion. If the idioms in (32) lack internal structure, then they should follow the usual expletive insertion rule: the infix should be placed before the syllable with primary stress, as long as it is not the first syllable. Morphological structure is known to be able to override this rule, hence the possibility of (33):

(33) un-fucking-believable

In many of the above idioms, expletive placement cannot adjudicate between a purely stress-based rule and a structure-based rule, since the most natural placement of the expletive between words also happens to fall before the syllable with primary stress. In the case of *every which way*, though, the stress rule predicts that the expletive should fall before *way*, but it is possible to place the expletive before *which*:

(34) ~every fucking which way

Similarly, in the case of *trip the light fantastic*, the expletive can be placed before *light*. In fact, placing the expletive before the syllable with primary stress is decidedly odd:

(35) a. ~trip the fucking light fantastic
b. ??trip the light fan-fucking-tastic
c. *trip the light fucking fantastic

This suggests that *the light fantastic* has the structure of a DP. Crucially, the ungrammaticality of (34c) shows that the expletive cannot be inserted at any morpheme boundary, suggesting that its placement is conditioned by the DP-internal syntax.

However, it still seems likely that syntactically idiosyncratic idioms differ with regards to how much internal structure they have. Ones with no internal structure pose no problem, since they can simply be stored as unanalyzable units in the lexicon, similar to words. For speakers who only have *battle royals*, for example, *battle royal* is presumably treated like any other simple noun. But for speakers who have *battles royal*, things are more complicated. If idioms are built in the syntax the same way as non-idiomatic phrases, then syntactically idiosyncratic idioms with internal structure should in principle be ungenerable if they are truly syntactically ill-formed. But the existence of syntactically idiosyncratic idioms with internal syntactic structure puts us in the apparently contradictory position that syntactically idiosyncratic idioms are formed in the syntax.

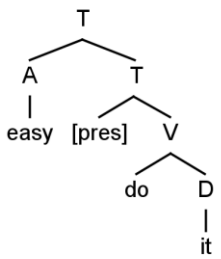
The easy way out is to assume that idioms like *trip the light fantastic* have lexical entries similar to idioms like *spill the beans* or *kick the bucket*, but that they are directly inserted into the derivation, instead of being built by Merge. This solution is unsatisfying for two reasons. First, it results in a disunification, since syntactically idiosyncratic idioms are treated differently from

other idioms. Second, it seems implausible that it is possible to store syntactic structures which it is not possible to build syntactically.

Fortunately, our position is not as contradictory as it seems. In a Minimalist conception of syntax, in which Merge freely generates structures which are filtered out if they violate interface conditions, it is possible to generate structures that are ill-formed earlier in the derivation, before evaluation by the interfaces takes place. Consider how this applies to syntactically idiosyncratic idioms. Recall that I am assuming that, aside from the Extension Condition, Merge, as defined in Chapter 1:(2), is completely unconstrained – the syntax is therefore free to generate structures like *every which way* or *make certain*. Typically, these structures are ruled out independently. For instance, under the literal interpretation, *every which way* is semantically uninterpretable, since *which* is standardly analyzed as being of type <<e,t>,<<e,t>,t>> and therefore *which way* is of type <<e,t>,t>, but *every* takes an argument of type <e,t>, since it is also of type <<e,t>,<<e,t>,t>>. Hence *every* is unable to compose with *which way*. But the syntactic structure of *every which way* is lexically stored as an idiom, and its idiomatic meaning is associated with the entire structure, much like the lexical entry for *kick the bucket* in (3). Thus the idiomatic meaning is available even though the idiom is not internally compositional, but there is no non-idiomatic interpretation available. Similar arguments can be made for some of the other syntactically idiosyncratic idioms in (32). A type-theoretic mismatch explains the unavailability of non-idiomatic *in short*, for example; *in* is of type <e,<e,t>>, and *short* is of type <e,t>, so they are unable to compose.

For another concrete example, consider *easy does it*. One plausible syntactic analysis for *easy does it* is as in (36):

(36) Lexical entry for *easy does it*



(The meaning of *easy does it* is difficult to concisely paraphrase, so it is not represented in (36), but it would be associated with the entire structure, since *easy does it* is non-decomposable. A rough paraphrase would be 'You should approach this task calmly and slowly'.) The structure in (36) can be built in the syntax, given free Merge. However, if the lexically stored idiomatic meaning is not chosen, then the derivation will end up crashing in the semantics, since an adjective phrase like *easy* cannot receive the interpretation of a subject. Thus, *easy does it* has no non-idiomatic equivalent, but is well-formed as an idiom.

Idioms with post-nominal adjectives, like *battle royal*, pose an additional difficulty. In these idioms, word order matters – *royal battle* does not have the same meaning as *battle royal* – but the lexical entries for idioms cannot contain information about word order, because they are syntactic objects and linearization is post-syntactic. In other words, if *battle royal* has the same syntactic structure as *royal battle*, then we have no way of ensuring that the adjective is linearized post-nominally.

We must therefore assume that post-nominal adjectives, at least in idioms, have a different syntax from pre-nominal adjectives. Fortunately, there is ample reason to believe that this is the case, independently from idioms. It has frequently been observed (e.g. Bolinger 1967, Sadler and Arnold 1994, Cinque 1993) that there are systematic syntactic and interpretive differences between pre-nominal and post-nominal nouns in English. For example, pre-nominal adjectives generally cannot have complements or other modifiers:

(37) a. a proud mother
b. *a proud of her son mother
c. *a mother proud
d. a mother proud of her son
e. a polite man
f. *a polite in manner man
g. *a man polite
h. a man polite in manner

As pointed out by Bolinger (1967), there is a systematic correspondence between pre-nominal adjectives and individual-level predicates on the one hand, and post-nominal adjectives and stage-level predicates on the other hand:

(38) a. the responsible person [individual-level]
b. the person responsible (for the mixup) [stage-level]
c. the visible stars [individual-level]
d. the stars visible (at this time of year) [stage-level]

Adjectives which cannot appear predicatively also cannot appear post-nominally:

(39) a. a former model
b. *a model (who is) former
c. a mere farmer
d. *a farmer (who is) mere

These differences, among others, have led many researchers to propose that pre-nominal and post-nominal adjectives have different syntax. A popular approach, adopted recently by Cinque (2010), is to treat post-nominal adjectives as reduced relative clauses. This approach is attractive because it explains the correspondence between the ability of an adjective to appear predicatively and the ability to appear post-nominally. If post-nominal adjectives are reduced relative clauses, then the ungrammaticality of **a model former* follows directly from the ungrammaticality of **a model who is former*. Under this approach, it is necessary to explain why ordinary pre-nominal adjectives cannot also appear post-nominally, since they can usually appear in relative clauses: why is **a man polite* not possible, given the possibility of *a man who is polite*? Cinque argues that only adjectives with complements can remain in the post-nominal position. Stage-level adjectives like those in (38b) and (38d), for example, have complements (which may be unpronounced – Cinque takes *at this time of year* in (38d) to be an unpronounced complement). This also explains why *proud of her son* is post-nominal, while *proud* by itself is pre-nominal. Cinque analyzes adjectives which are necessarily post-nominal, like *abroad* and *asleep*, as consisting of a morpheme *a* plus a complement (such as *broad* or *sleep*).

Unfortunately, Cinque's analysis does not apply straightforwardly to cases like *battle royal*. The adjective in *battle royal* represents an individual-level predicate, and we have no reason to expect that it would have an unpronounced complement, meaning that it would still be pronounced as *royal battle* under Cinque's analysis without further stipulations. This serves as a nice illustration of the crux of the issue with idioms like *battle royal*: they contain post-nominal adjectives, but those adjectives do not display the typical properties of post-nominal adjectives.

Put another way, they must have the syntax of post-nominal adjectives (in order to be linearized properly) but do not have the semantic properties normally associated with post-nominal adjectives. Of course, this is just an instantiation of the more general problem with idioms: there is a mismatch between their meaning and the meaning we would expect. As we have seen, we can deal with this by specifying the idiomatic meaning as part of a lexically stored structure. With Cinque's analysis, the additional problem is that *battle royal* doesn't seem to have the requisite syntax for *royal* to be post-nominal. In principle, we could solve this problem by including an unpronounced complement in the lexically stored structure, but there is no independent reason to believe there is a complement there, and positing one would amount to an unsupported stipulation (whereas specifying the idiomatic meaning is necessary for any idiom, so it is not a stipulation).

The existence of idioms like *battle royal* complicates the picture, because *royal* appears post-nominally, but there is no evidence it has a complement. But we also cannot say that any complementless adjective can be post-nominal, nor can we even say that any complementless adjective that represents a stage-level predicate can be post-nominal (since, for example, *hungry* cannot be post-nominal). Complementless adjectives are normally obligatorily pre-nominal in English, but can be post-nominal in idioms. They can perhaps also be post-nominal when they are lexically ambiguous between a stage-level and an individual-level interpretation, and the post-nominal position can only match the stage-level interpretation, if one does not assume that the adjectives in (38b) and (38d) have unpronounced complements.

I instead adopt the approach of Kayne (1994), who assumes that all adjectives start as reduced relatives, with a small clause structure as in (40a). Post-nominal adjective order results if the DP raises to Spec-C, as in (40b), while pre-nominal order results if the AP instead raises, as in (40c). Kayne argues that adjectives with complements cannot raise to Spec-C due to a version of Emonds' (1976) Surface Recursion Restriction, which bans any material from intervening between a pre-nominal modifier and the phrase which it modifies.

(40) a. $[_{DP}$ D $[_{CP}$ $[_{IP}$ DP AP]]]

b. $[_{DP}$ D $[_{CP}$ DP_j $[_{IP}$ t_j AP]]]

c. $[_{DP}$ D $[_{CP}$ AP_j $[_{IP}$ DP t_j]]]

A key point to notice about *battle royal* is that, even though it refers to a type of battle, it behaves as if it is non-decomposable. If it were decomposable, *battle* would be able to be pronominalized, but it is not:

(41) a. *There was a battle royal, in addition to a regular one.
b. There was a man polite in manner, in addition to a rude one.

Indeed, I have been unable to find any idioms with post-nominal adjectives which behave as if they are decomposable. If *battle royal* and similar idioms are indeed non-decomposable, then neither the DP or the AP should be able to raise – the structures in (40b-c) cannot receive compositional interpretations if the DP and AP do not have independent meaning. So both the DP and AP must remain *in situ*, resulting in the adjective remaining post-nominal. Note that Kayne's analysis requires no further modification to account for the behavior of idioms – given Kayne's analysis, the adjective placement follows from the semantics of the idioms. Note further that this explanation predicts that all English adjective-noun idioms where the adjective is pre-nominal should be decomposable. To the best of my knowledge, this prediction is borne out.[14]

Hence, despite the apparent problems posed by idioms like *easy does it* and *battle royal*, an approach in which idioms are both lexically stored and syntactically derived allows us to account for the behavior of all types of idioms, including syntactically idiosyncratic idioms, in a uniform way, consistent with standard Minimalist assumptions about the nature of Merge.

5.7. Some outstanding issues

5.7.1. McCawley's paradox

Now that we have introduced the basic architecture of the system, we must deal with a problem posed by McCawley (1981) for transformational approaches to idioms, which applies to

[14] A true counterexample to this prediction must clearly have internal syntactic structure, or else it can simply be stored as an unanalyzed lexical item. For example, (i) suggests that *big shot* is not decomposable, but there is no indication that *big shot* has internal syntactic structure, and indeed the fact that it has the stress pattern of a compound suggests that it does not.

(i) –Melissa is a really big shot.

Similarly, it is impossible to adjectivally modify *pretty* in *pretty penny*, suggesting that it is non-decomposable, but it seems more accurate to say that in fact it is completely fixed: we cannot pluralize it, even though even non-decomposable idioms can typically be inflected normally. The same is true of *red cent*. Therefore, I assume that *pretty penny* and *red cent* are stored as fixed units, with no internal syntactic structure.

derivational approaches more generally. The problem, which McCawley attributes to Lloyd Anderson, involves data like the following:

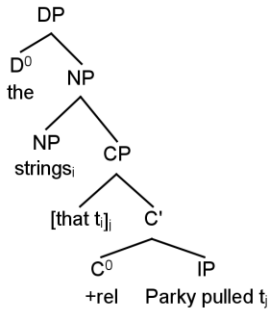
(42) a. +Parky pulled the strings that got me my job.
b. +The strings that Parky pulled got me my job.

As originally formulated, the problem is as follows. According to the raising account of relative clauses (Brame 1968), the idiom chunk *the strings* in (42a) originates as the subject of the embedded clause, whereas the same chunk in (42b) originates as the object of *pulled*. If, as Brame assumed, idioms are inserted at D-structure, then (42a) should be ill-formed, since the full idiom is not present at D-structure. On the other hand, if relative clauses do not involve raising, then the full idiom is not present at D-structure in (42b), so it should be ill-formed. It therefore seems that there is no consistent set of transformational assumptions that can account for the fact that both sentences are grammatical.

The Minimalist approach I have introduced offers a way out of this paradox. Since idioms are not lexically inserted in a single step, but rather subject to matching, we need not assume that matching necessarily takes place early in the derivation, at some point corresponding to the earlier notion of D-structure. In my system, if matching takes place at a phase level, the idiomatic interpretation becomes available.

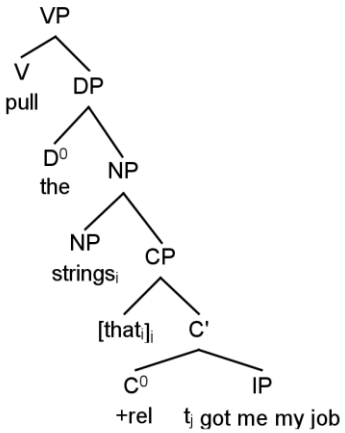
I adopt the raising analysis of relative clauses (see Section 4.2.1 for an idiomatic argument for its adoption). In particular, I adopt the analysis presented in Bhatt (2002), in which determiners originate outside of the relative clause, for reasons related to the non-reconstruction of determiners – the derivation of the relevant portion of (42b) is shown in (43).

(43) Derivation of relative clause structure of (42b)



Under this analysis, the grammaticality of (42b) is straightforwardly explained: *strings* originates as the object of *pull*, so the idiomatically stored structure for *pull strings* is present before raising takes place. (42a) is less straightforward, because the raised N, *strings*, is sister to the relative clause CP, just as in (43). *Pull the strings* will end up as a contiguous unit (the presence of the determiner is not a problem, since we need a variable determiner in the idiom independently to deal with cases like *pull some strings*), but not a constituent. But note that matching is defined in terms of sets, so only constituents that form sets resulting from Merge can match lexically stored idioms; a contiguous word string which is not a constituent does not constitute a set that can satisfy matching. The relevant structure is shown in (44):

(44) Derivation of relative clause structure of (42a)



I therefore assume that *pull strings*, and other decomposable idioms with chunks that can be modified by relative clauses, include a variable which can either be null or be satisfied by a relative clause. This relative clause will in fact consist only of the head and its specifier, since C is a phase head and the phase-head complement, TP (or IP in Bhatt's terminology), will have been spelled out. I assume that spelled-out material is invisible for the purposes of matching, with the consequence that the idiom *pull strings*+C forms a set. This point is crucial, since otherwise we would have to posit a variable which can be satisfied by any member of the set of relative clauses, and it is difficult to see how that variable could be characterized without resorting to construction-specificity. Spell-Out of the phase-head complement allows us to characterize the variable as consisting only of a [+rel] C head and its specifier. Interestingly, under a theory of phasehood in which the entire phase (not just the phase-head complement) is spelled out (e.g. Bošković 2016), we need not even assume a variable: for the purposes of matching, *pull (the) strings* itself will form a set. But this is a speculative possibility, which I will not explore here.

A remaining issue concerns the interpretation of idiom chunks which are modified by relative clauses. Note that at the point at which the relative clause CP is completed and its complement is spelled out in (44), no matching obtains, so *the strings* can only be interpreted literally. It is only when the higher VoiceP phase is completed that matching obtains and *pull the strings* can be interpreted idiomatically. I assume that the idiomatic interpretation of *strings* in the higher clause can (and indeed must) override the literal interpretation of *strings* in its lower position, since the lower copy of *strings* is the same syntactic object as the higher copy.

Importantly, we cannot simply assume that relative clauses are adjuncts which are obligatorily introduced counter-cyclically and therefore do not cause a problem for matching, as we did for adjectives. If that were the case, the idiomatic structure in (42b) would never be built up, because *pull* would originate in the relative clause adjunct (*that Parky pulled*) which would be adjoined counter-cyclically to *strings*. The approach I adopt, in which idioms like *pull strings* have a [+rel] C variable, provides a solution to McCawley's paradox which does not resort to construction-specificity, since the variable consists only of the C head, and not the relative clause itself.

5.7.2. Decomposable but apparently inflexible idioms

A second outstanding problem is the apparent existence of idioms which are decomposable, but appear relatively syntactically inflexible. We have already seen some examples of cases of apparent limitations on the flexibility of decomposable idioms. First, we saw that some decomposable idiom chunks (such as *ice* in *break the ice*) cannot serve as topics, which was explained in terms of the contrastive interpretation characteristic of English topics. Second, we saw that there are some limitations on the adjectival modification of chunks of decomposable idioms – *spill the big beans* does not have an idiomatic interpretation, at least for some speakers, for example. This was explained in terms of a mismatch between the literal meaning and the pretense operative in the figurative meaning, at a pragmatic level.

In fact there are also instances of apparently decomposable idioms which behave more like non-decomposable idioms in terms of their syntactic flexibility in a wider range of cases. One example is *raise hell* 'cause trouble':

(45) a. –Hell was raised (by Jessica).
b. –Hell, Jessica raised.
c. –Jessica raised hell, and Jordan raised it too.

We can explain the incompatibility of (45b) with the idiomatic reading in terms of the contrastive interpretation of topics, as we did with *break the ice*. But if indeed *raise hell* is decomposable, then (45a,c) is surprising. Some other examples of idioms which pattern similarly are given in (46).

(46) a. +hit the sauce ('drink a lot of alcohol')
b. +hit the sack ('go to bed')
c. +play with fire ('get involved in a dangerous situation')
d. +keep one's cool ('maintain one's composure')
e. +pack a punch ('have a strong impact')
f. +pop the question ('propose marriage')
g. +get the picture ('understand a situation')
h. +grasp the nettle ('confront a difficult situation')

One possibility is that these idioms, despite the fact that their individual components can be given paraphrases, are in fact treated by native speakers as non-decomposable. This hypothesis is tested in one of the experiments presented in Chapter 6. The results reported in Chapter 6 show that there was no significant difference between idioms like those in (46) and canonical flexible decomposable idioms in terms of judgments of decomposability, suggesting that native speakers do treat the idioms in (46) as decomposable.

So the behavior of these idioms is in need of explanation. One proposal is due to Horn (2003), who argues that a property he calls thematic composition is necessary for syntactic flexibility. An idiom has thematic composition if the thematic structure of the verb in its literal sense and the thematic structure of the verb in its idiomatic sense are identical. Horn argues, for instance, that *raise* in the literal sense and 'cause' have different thematic structures. But this requires some non-standard notions of thematic structure. Horn argues, for example, that *grasp* in the literal sense of *grasp the nettle* has a different thematic structure than 'confront' does, since they describe different sorts of actions. But in both cases, the subject is an agent and the internal argument is a theme. (One might argue that the internal argument of grasping is physically affected while the internal argument of confronting is not – but in that case, *pull strings* would also lack thematic composition, so it would be predicted to appear inflexible.) Horn does not give a principled theory of thematic structure which characterizes thematic composition in a non-arbitrary way.

From the point of view of the current proposal, a more serious difficulty with Horn's account is that it posits a binary distinction between flexible and inflexible idioms. As we have seen, though, even relatively inflexible idioms display some syntactic flexibility – non-decomposable idioms are inflected normally, for example, and the same is true of the idioms in (46). It is thus difficult to see how Horn's approach would be operationalized in the current framework, unless it could be shown that the particular types of syntactic derivations involved impose particular thematic requirements.

Indeed, the idioms in (46) are not uniformly inflexible. *Pop the question*, for example, is compatible with the passive, but not pronominalization:

(47) a. +Jessica is eagerly waiting for the question to be popped.

b. –Jessica popped the question, and Jordan popped it too.

So it is unlikely that a single explanation will be able to account for the behavior of all the idioms in (46). I assume that a detailed analysis of the properties of each idiom and how they interact with syntax, semantics and pragmatics will be necessary, and that the idioms in (46) do not form a natural class. However, I leave the details of this analysis as an open question.

5.8. The demarcation problem

We have now seen in some detail how the derivation, both syntactic and semantic, proceeds in the case of idioms. An important point which emerges from the preceding sections is that there are very few constraints on idioms – arguably, in fact, no constraints at all that are specific to idioms. In fact, the only constraint which we have proposed so far is that idioms are phase-bound, which does not need to be stipulated, since it follows from independent assumptions – if semantic interpretation is phase-based, then the domain for special meaning must be the phase. But apart from being phase-bound, idioms are otherwise quite unconstrained: they can differ greatly in compositionality, the incorporation of different sorts of variables, and so forth. So the notion of idiom is a rather wide-ranging one. In combination with the assumption of Free Merge, this predicts that, in principle, basically anything smaller than a phase should be able to be an idiom. In other words, nothing in the system prevents *the the the ice* or *under jump as* from being idioms (and indeed, we have seen examples of syntactically idiosyncratic idioms, though nothing quite so idiosyncratic as the examples above). So why do we not find idioms of that sort? It seems likely that the answer is diachronic. Idioms generally are not created whole cloth, but typically start out as metaphors which become frozen. Syntactically idiosyncratic idioms can often be traced back to syntactically non-idiosyncratic uses: *trip the light fantastic*, for instance, derives from a line in Milton's "L'Allegro" about tripping "on the light fantastic toe." But it is quite difficult to imagine a diachronic path via which an idiom like *the the the ice* would have developed. I assume that if such an idiom were to be created, it would be acquirable by children, and that its absence is a matter of historical accident. Similarly, any constituent of an idiom can potentially be a variable as long as it does not span a phase boundary, but the types of variables we observe are quite limited, again for diachronic reasons (perhaps supplemented with independent constraints on what can be a variable in natural language).

This seems like an opportune point, then, to return to the demarcation problem discussed in Chapter 1. Now that we have proposed an architecture for idioms, we can offer a principled

answer to the question of what counts as an idiom. In the proposed architecture, an idiom is a lexically stored, structured phrase with a special meaning.

First, consider conventionalized expressions like *center divider*. These may or may not be lexically stored, but they do not have special meaning, since their meaning is compositional and based on the literal meanings of their components. In that sense, they are similar to collocations like *strong coffee*, which also have compositional meaning based on the literal meanings of their components. In both cases, the choice of lexical items is at least partially arbitrary, but their meaning is not special, so they are not treated as idioms in this approach. Rather, they are built by Merge and their interpretations are determined compositionally based on the literal meanings of the lexical items; no matching need take place.

Second, consider proverbs such as *The early bird gets the worm*. Proverbs have special meanings, and like idioms, their form matters (*The early bird eats the worm* is not a valid variant). Are they lexically stored in the same sense as idioms? In a phase-based syntax, they cannot be, since they frequently span multiple phases. And indeed, there are striking differences between idioms and proverbs. Unlike idioms, proverbs must be decomposable and there must be a tight (synchronic) metaphorical connection between their literal and figurative meanings. For instance, *the early bird gets the worm* could not mean something like 'unfortunate events tend to occur together', just as *when it rains, it pours* could not mean something like 'whoever arrives first has the best chance of success'. Also unlike idioms, proverbs generally do not interact productively with syntax – they typical appear only in their canonical form, and cannot undergo passivization, topicalization, and so on. If proverbs were to be treated as idioms in this approach, we would predict them to behave just like other decomposable idioms – in particular, they would be able to undergo passivization, topicalization, and so forth. Note that proverbs typically cannot even be freely inflected (e.g. *the early bird got the worm* or *when it rained, it poured*), unlike both decomposable and non-decomposable idioms.[15]

But the fact that proverbs have a fixed form is suggestive of lexical storage, and it seems intuitively clear that proverbs have internal syntactic structure. So how can proverbs be treated differently from idioms? I suggest that proverbs are more like other memorized chunks, such as

[15] Some proverb-like phrases can undergo inflection (e.g. *that train has left the station*; *that ship has sailed*; *the chickens have come home to roost*). Given that the subjects of these idioms are not agents, they can be analyzed as idioms rather than proverbs, since they do not span the VoiceP phase boundary.

lines of poetry and song lyrics. Lines of poetry and song lyrics have a fixed form and internal syntactic structure, but it seems implausible to suggest that they are lexically stored (though see Jackendoff 1997 for a claim that all sorts of memorized strings with fixed form are lexically stored in the same way as idioms). If proverbs are simply memorized, then it follows that they will have a fixed form, not admitting of any syntactic flexibility. Though a detailed analysis of proverbs is beyond the scope of this dissertation, I will assume that they are to be treated differently from idioms.

5.9. Aktionsart

An important consequence of the architecture outlined in this chapter is that idioms are largely unconstrained, as long as they do not cross phase boundaries. In other words, any syntactic structure that can be generated by Merge can in principle be stored as an idiom, and any subpart of a lexically stored idiom may have a meaning which is non-compositional (and therefore listed as part of the lexically stored idiom).

This is a point where my proposed architecture differs from DM approaches to idioms. In DM, it is argued that there are two types of meaning: structural meaning, which is predictable and determined by syntactic structure, and idiosyncratic meaning, which is unpredictable and stored in the Encyclopedia (Levin and Rappaport Hovav 1998). Special meanings (i.e. idiomaticity) are restricted to the latter type – the abstract functional morphemes manipulated by the syntax have meanings which compose in systematic ways. Thus, Marantz (1997) argues that the word *transmission* does not have the same range of possible meanings as the monomorphemic nonce word *blick*, because of its internal structure; like similar words such as *ignition* or *administration*, it consists of an aspectual pre-verb, a verbal stem, and a nominalizing suffix (schematically, [[Asp transmit] –ion]), and therefore if it refers to a thing, it must refer to a thing used for accomplishing something.

The same argument applies to phrasal idioms like *kick the bucket*. As is well known, *kick the bucket* does not have the same aspectual properties as *die* (Marantz 1997). Rather, it has the same aspectual properties of its literal counterpart, which is an accomplishment:

(48) a. He was dying for three weeks before the end.
b. –He was kicking the bucket for three weeks before the end.

In DM, this follows from the fact that *kick the bucket* has the same syntactic structure as any other verb phrase with a definite direct object, and its aspectual properties follow from that syntactic structure.

This makes the prediction that idioms should always have the same aspectual properties as their literal counterparts, and McGinnis (2002) argues that this prediction is borne out. However, as pointed out by Glasbey (2007), things are not so clear-cut. Glasbey provides several examples of idioms whose aspect differs from that of their literal counterparts:

(49) a. ~Mary and her friends painted the town red for a few hours.
b. –Mary and her friends painted the town red in a few hours.
c. ~I cried my eyes out for a few hours.
d. –I cried my eyes out in a few hours.
e. ~Fred drove his pigs to market for two hours.
f. –Fred drove his pigs to market in two hours.
g. ~Fred drowned his sorrows for a few hours.
h. –Fred drowned his sorrows in a few hours.

In each case, the idiom interpretation is an activity, while the literal interpretation is an accomplishment. The opposite pattern is also possible, according to Mateu and Espinal (2010), who cite the Catalan idiom *fer llenya* (‘to fall down’ – literally ‘to make wood’), which is an activity on its literal reading, but an accomplishment on its idiomatic reading.

Now, there are two ways in which the data concerning aspectual mismatches in idioms might be reconciled with DM. One strategy is to say that aspect is a component of idiosyncratic meaning, not structural meaning, and therefore should be expected to vary idiomatically. This would be quite unexpected, given that idiosyncratic meaning is typically limited to traditionally “lexical” categories (e.g. V, N, A), so it would weaken the motivation for the distinction between structural and idiosyncratic meaning, even if it were compatible with the DM framework. It would also eliminate the possibility of syntactically explaining observed regularities in the behavior of aspectual classes. The second, more plausible, strategy is to maintain that aspect is a component of structural meaning (as would be expected), but that some idioms have different syntactic structure than their literal counterparts, despite consisting of the same string. On this view, the idiom *drive one’s pigs to market* (‘to snore’) does not actually have a resultative

structure, despite appearances – perhaps *to market* simply has the syntax of an adverbial modifier, for example, and then it is not predicted to share aspectual properties with the non-idiomatic *drive one's pigs to market*, which does have a resultative structure. Similar assumptions would have to be made about the other cases of aspectual mismatch between idioms and the equivalent non-idiomatic strings. However, all else being equal, this strategy predicts that an activity interpretation should be available for the non-idiomatic *drive one's pigs to market* as well, since it is possible to derive that string from a syntactic structure including the functional elements which introduce an activity interpretation. This prediction is not borne out. Hence, though the existence of idiomatic aspectual mismatches may not be entirely incompatible with the DM framework, their existence has yet to be satisfactorily accounted for in a DM framework.

Glasbey makes the generalization that the idioms whose aspect differs from that of their literal counterparts are all non-decomposable. In my system, it makes sense that non-decomposable idioms would be able to differ from their literal counterparts in their aspectual properties; their stored meaning is associated with the idiom as a whole, and their aspect may be derived from that stored meaning. So for example, *paint the town red* means 'celebrate out on the town' and is therefore an activity. *Kick the bucket*, then, presumably has a meaning closer to 'pass away' than 'die', since it is an accomplishment. Crucially, I do not assume that it is an accomplishment because its literal counterpart is an accomplishment, since that would make the wrong prediction about the data in (49). (For the sake of simplicity, I will continue to paraphrase its meaning as 'die', but of course a paraphrase can only approximate an actual semantic representation.)

This is not to deny that aspect can be compositional – indeed, Glasbey adopts Krikfa's (1992) approach to aspectual composition, whereby *paint the town red* is an accomplishment on the literal reading due to semantic properties of the verb and the object, as well as thematic relations between them. The reason *paint the town red* is an accomplishment, according to Krifka, is that the eventuality it describes has the gradual patient property, meaning that it involves a change of state towards a natural endpoint (the point at which the town is completely red). But note that this is a semantic notion of composition. To the extent that these semantic properties are also represented in the syntax, we may say that aspect is based on syntactic structure, as in DM, but this is not necessary – and in fact idioms show that there can be mismatches between syntactic structure and aspect. (Though such mismatches presumably do not

happen with literal meanings, where the aspect of a predicate should be predictable from the semantic properties of its components and perhaps also its syntax.)

In the case of decomposable idioms, aspect is then presumably derived compositionally based on the semantics of the individual parts. *Spill the beans*, on the idiomatic reading, means 'divulge the secret'. In Krifka's terms, 'the secret' is a quantized predicate. A quantized predicate is a predicate which, if it is true of some entity X, then it is not true of proper subparts of that entity. For example, 'pie' is a quantized predicate, because if something is a pie, then its proper subparts are not also pies. In contrast, 'water' is not a quantized predicate, because if something is water, then its proper subparts (at least above the molecular level) are also water. 'The secret' is quantized because if something is a particular secret, then its proper subparts are not also that secret. When a predicate like *divulge* combines with a quantized predicate like *the secret*, it results in an accomplishment, because quantization is associated with telicity. The same applies to the literal reading of *spill the beans*, since 'the beans' is quantized.

But decomposable idioms do pose somewhat of a problem for this account. The prediction of my proposal is that, in principle, there should also be decomposable idioms in which there is an aspectual mismatch between the literal and idiomatic readings. This is because the aspectual composition process is based on the semantics of the predicates involved, and the meanings of the predicates differ between the literal and idiomatic readings. It so happens that, in the case of *spill the beans*, that the relevant semantic properties, such as quantization of the object, are the same in the literal and the idiomatic readings. But nothing in my system prevents the possibility of, for instance, an object which is quantized on the idiomatic reading and cumulative on the literal reading.

As mentioned earlier, Glasbey claims that there are no aspectual mismatches with decomposable idioms. However, consider the idiom *hit the sauce* (46a). On the literal reading, *hit the sauce* is a semelfactive, since it is punctual and atelic. On the idiomatic reading, *hit the sauce* is an activity, since it is durative and atelic. So in fact aspectual mismatches do seem to be possible with decomposable idioms, as predicted. Nonetheless, it is still true that they are strikingly rare. I assume that this is because there is typically a strong metaphorical connection between the literal and idiomatic meanings of decomposable idioms, so the two readings tend to have very similar conceptual structures. It would be very odd for a definite object (on the literal reading) to represent an indefinite object (on the idiomatic reading), or vice versa, for example –

and the distinction between quantized and non-quantized objects correlates quite strongly with the distinction between definite and indefinite objects. Crucially, though, this may be simply a statistical tendency (perhaps with pragmatic and/or diachronic motivations), as it is not a strict consequence of the syntactic approach I develop.

5.10. Summary

In this chapter, I have introduced my proposed syntactic architecture for idioms. Idioms are stored wholesale in the lexicon in the form of syntactic structures with associated semantic and phonological information. The syntactic derivation proceeds via iterated application of Merge, with atomic (non-idiomatic) lexical items as input. If, upon completion of a phase, a constituent in the derived structure matches a lexically stored idiomatic structure (via the definition of matching in Section 5.2), the lexically stored idiomatic interpretation becomes available, and may optionally be used to interpret that constituent. The rest of the derivation proceeds as normal; due to differences in how meanings are stored, some idioms will appear more flexible than others because some subsequent derivations will crash in the semantics. I have argued that this approach applies not just to canonical cases of idioms, like *kick the bucket* and *spill the beans*, but also to idioms containing variables, like *pull X's leg*, and to syntactically idiosyncratic idioms, like *easy does it*.

I have also argued that, aside from the independently-motivated requirement that they must be phase-bound, idioms are largely unconstrained. In particular, I have argued that the aspectual interpretation of idioms can freely differ from the aspectual interpretation of their literal counterparts, contrary to the predictions of DM accounts of idioms.

Chapter 6
A Quantitative Study of Decomposability and Flexibility Judgments

6.1. Background

In the previous chapters, I have developed a proposal linking some aspects of the apparent differences in the syntactic flexibility of idioms to their decomposability (while showing that even non-decomposable idioms display some syntactic flexibility), on the basis of individual native speaker judgments and judgments reported in the literature. But it is worth asking whether those judgments are reliable. In particular, judgments of the decomposability of idioms are difficult to evaluate. In principle, syntactic diagnostics can be used to confirm an idiom's (non-)decomposability, based on the argumentation in the previous chapters. While I have argued that all idioms (with the possible exception of some syntactically idiosyncratic idioms) have accessible internal syntactic structure, I have also showed that non-decomposable idioms tend to resist syntactic modification, due to independent restrictions imposed by the conceptual-intentional interface. However, to the extent that I have used judgments about decomposability to explain the syntactic facts, using syntactic diagnostics to confirm judgments about decomposability runs the risk of circularity. Nor is the potential availability of a paraphrase with the same broad structure as the idiom sufficient to show decomposability. It is possible, for example, to paraphrase *kick the bucket* as 'lose one's life', so in principle *kick* might be paraphrased as 'lose' and *the bucket* might be paraphrased as 'one's life'. Nonetheless, it is generally reported in the literature that *kick the bucket* is non-decomposable. Hence, the first experiment reported in this chapter has the goal of providing additional validation for judgments of decomposability.

There have been a handful of previous studies which collected native speakers' judgments of the decomposability of idioms, with varying results. Gibbs and Nayak (1989) presented 24 native English speakers with forty V + NP idioms along with paraphrases of their idiomatic meaning. The subjects were asked to judge whether the individual components of the

idiom made a unique contribution to the idiomatic paraphrase. For idioms which were judged to be decomposable, subjects were further asked to judge whether they were "normally decomposable" or "abnormally decomposable." Gibbs and Nayak define normally decomposable idioms are those in which the literal meanings of the words relate closely to the figurative meanings. For example, in the idiom *pop the question* ('suddenly propose marriage'), the word *pop* is closely related to the idea of 'suddenly asking', and the word *question* refers to a particular sort of question, namely a marriage proposal. They define abnormally decomposable idioms as those in which there is a more metaphorical relationship between the literal and figurative meanings of the word. An example is *spill the beans*, in which *beans* refers to 'secret' only in an indirect, metaphorical way. Gibbs and Nayak found a high degree of intersubject agreement with respect to judgments. In all but three cases, each idiom was judged to be a member of one particular category (non-decomposable, normally decomposable or abnormally decomposable) by at least 75% of subjects, and the mean proportion of agreement was 88% for non-decomposable idioms, 86% for normally decomposable idioms, and 79% for abnormally decomposable idioms.

A similar study by Tabossi et al. (2011) found contrasting results. In this study, 120 native Italian speakers participated, divided into three groups of 40. Each group was presented with a different list of either 81 or 82 Italian idioms, along with their paraphrases. They were asked to judge the decomposability of the idioms on a 7-point Likert scale, where 1 means not at all decomposable and 7 means completely decomposable. In contrast to Gibbs and Nayak (1989), Tabossi et al. (2011) found a low rate of intersubject agreement. They found that 18% of idioms were consistently rated as decomposable (meaning that at least 67% of subjects rated them at more than 4 on the 7-point scale) and 10% of idioms were consistently rated as non-decomposable (meaning that at least 67% of subjects rated them at 4 or less on the 7-point scale).

Gibbs and Nayak (1989) also investigated the relationship between decomposability and apparent difference in syntactic flexibility. They presented 30 native English speakers with a set of syntactically modified idioms (present participle, adverb insertion, adjective insertion, passive, and action nominalization) and their idiomatic paraphrases, and asked them to judge on a 7-point Likert scale how similar the meaning of the sentence was to its idiomatic paraphrase, as a proxy for a rate of syntactic flexibility. There were 36 idioms, 12 from each of the three categories used in their previous experiment (non-decomposable, abnormally decomposable, normally

decomposable). A two-factor analysis of variance on subjects' ratings found significant main effects of Idiom Type and Syntactic Change, as well as a significant interaction between the two variables. Their findings support the hypothesis of a connection between an idiom's decomposability and its apparent differences in syntactic flexibility. Tabossi et al. (2011) performed a similar study. They presented 200 native Italian speakers (divided into five groups of 40) with sets of sentences containing idioms which had been subjected to syntactic modifications (adverb insertion, adjective insertion, left dislocation, passive, and movement). Each sentence was paired with a paraphrase of its idiomatic meaning, and subjects were asked to judge on a 7-point Likert scale to what extent the meaning of the sentence matched the paraphrase. Interestingly, despite their differing results between the two aforementioned studies in terms of decomposability judgments, Tabossi et al. (2011) also find a significant correlation between decomposability and apparent rate of syntactic flexibility for Italian idioms ($r = 0.28$, $p < .001$).

Thus, although previous studies agree that there is a correlation between decomposability and rate of syntactic flexibility, there is disagreement about how consistent speakers' judgments of decomposability are. Given how important decomposability judgments are for the current proposal, it is worth attempting to replicate Gibbs and Nayak's results with native English speakers. Moreover, as we saw in Section 5.7, there is a class of idioms which are described in the literature as decomposable, but nonetheless appear to have quite limited syntactic flexibility (such as *raise hell* or *hit the sauce*). One possible explanation of their apparently limited syntactic flexibility is that native speakers in fact treat them as non-decomposable idioms. A second purpose of the study presented in this chapter, then, is to establish whether native speakers treat this class of idioms as decomposable (following the traditional description) or as non-decomposable.

The second component of the current study will investigate whether there is a correlation between decomposability and apparent differences in flexibility; we expect our findings to pattern with the findings of Gibbs and Nayak (1989) and Tabossi et al. (2011) on this question.

6.2. Methodology

6.2.1. Experiment 1: Decomposability norming

In the first experiment, 37 University of Michigan undergraduates participated in a decomposability norming task. The methodology of this task was based on that of Tabossi et al. (2011), rather than that of Gibbs and Nayak (1989), since the latter's distinction between normally and abnormally decomposable idioms is not relevant for current purposes. Subjects were presented with a set of idioms paired with possible paraphrases and asked to judge, on a 7-point Likert scale, to what extent the components of the idiom contribute separately to the meaning. In each case, the paraphrase had roughly the same syntax as the idiom, to ensure that it was possible in principle for subjects to link the subcomponents of the idiom to the subcomponents of the paraphrase. That is, a V + NP idiom was always given a V + NP paraphrase, a V + NP + PP idiom was always given a V + NP + PP paraphrase, and a V + NP + P idiom was always given a V + NP + P paraphrase. The instructions they were given were as follows:

Please read the following instructions carefully. You will be given a list of idiomatic expressions, followed by a possible meaning (the idiom meaning). For example, you may be given the idiom *kick the bucket*, paired with the meaning "lose one's life." For each idiom, you will be asked to rate how decomposable it is, considering the given meaning. An idiom is decomposable if its constituent parts contribute separately to the given meaning. For example, the idiom meaning of *spill the beans* is "divulge a secret." *Spill the beans* is considered decomposable if *spill* can be taken to represent "divulge," and *the beans* can be taken to represent "a secret." In contrast, *raise the roof* is not considered decomposable, if there is no intuitive relation between either *raise* or *the roof* and parts of the meaning of "cause a commotion."

For each idiom, you will rate how decomposable you think it is on a scale from 1 (*not at all decomposable*) to 7 (*completely decomposable*). Use your first intuition, and don't think about it too much. If you think an idiom is partly decomposable, you can use the intermediate values on the scale. If you aren't familiar with the idiom, select "I don't know the idiom."

The idioms were divided into three classes. Condition 1 consisted of idioms described in the literature as being both decomposable and apparently flexible (e.g. *break the ice*). Condition 2 consisted of idioms described in the literature as non-decomposable (e.g. *chew the fat*). Condition 3 consisted of idioms described in the literature as decomposable but apparently

inflexible (e.g. *raise hell*). There were 8 idioms per condition, for a total of 24 idioms. There were also 12 filler stimuli (Condition 4), consisting of proverbs (e.g. *all that glitters is not gold*). The idiom stimuli were mixed together with the fillers and presented in random order. A sample stimulus for each condition is given in (1), but see the appendix for a complete list of stimuli.

(1) a. Condition 1, decomposable/flexible: *pull strings* ("exploit personal connections")
b. Condition 2, non-decomposable: *lift a finger* ("make a minimal effort")
c. Condition 3, decomposable/inflexible: *get the picture* ("understand a situation")
d. Condition 4, proverbs: *all that glitters is not gold* ("everything that looks nice is not valuable")

6.2.2. Experiment 2: Flexibility judgment

The same 37 University of Michigan undergraduates who participated in Experiment 1 subsequently participated in Experiment 2, a flexibility judgment task. Subjects were presented with sentences containing idioms which had been syntactically manipulated, and asked to judge how natural the sentence sounded on a 7-point Likert scale. In all cases, the content of the sentence favored the idiomatic interpretation, in cases when a literal interpretation was also in principle available. They were given the following instructions:

You will be given a set of sentences containing an idiom. For each sentence, please rate how natural the sentence sounds on a scale of 1 (*not at all*) to 7 (*completely*). Use your first intuition, and don't think about it too much. If you aren't familiar with the idiom used in the sentence, select "I don't know the idiom."

There were four syntactic conditions. In Condition 1, the idiom was in the base form, with the only syntactic manipulation being inflection for tense. In Condition 2, the idiom was passivized. In Condition 3, the idiom was pronominalized. In Condition 4, the idiom was clefted (topicalization was not used because topics tend to be degraded in the absence of the appropriate discourse context). Twelve idioms were used in each condition (the same set of idioms across conditions), four from each of the three classes used in Experiment 1, for a total of 48 stimuli. There were also 16 filler stimuli, in which idioms such as *paint the town red* and *cry one's eyes out* were combined with adjuncts consistent with either a telic interpretation (e.g. *in three hours*)

or an atelic interpretation (e.g. *for three hours*). A sample stimulus for each condition is given in (2), but see the appendix for a complete list of stimuli.

(2) a. Condition 1, base form: *James tried to keep the secret, but ultimately he let the cat out out of the bag.*

b. Condition 2, passivization: *The secret remained under wraps for months, but in the end the cat was let out of the bag.*

c. Condition 3, pronominalization: *Candace let the cat out of the bag by revealing Mike's affair, but Jake had already let it out of the bag anyway.*

d. Condition 4, clefting: *It was the political cat that Omar let out of the bag when he revealed the candidate's secret.*

e. Filler Condition 1, telic context: *Since it was Jane's birthday, her friends painted the town red with her in three hours.*

f. Filler Condition 2, atelic context: *To celebrate his engagement, Jack and his friends painted the town red for hours.*

6.3. Results and discussion

First, let us consider the results of Experiment 1. For each subject, the mean response on the idioms in each condition was calculated; responses of "I don't know the idiom" were ignored. There were a total of 30 such responses, mostly for the idioms *shoot the breeze* and *chew the fat*. Hence, a total of 1302 responses were considered. The first important comparison to make is between Conditions 1 and 2. We predict the mean decomposability response to be significantly higher for Condition 1 (idioms described in the literature as decomposable and apparently flexible) than for Condition 2 (idioms described in the literature as non-decomposable). This prediction is borne out: a paired samples t-test finds a significant difference in means between Condition 1 and Condition 2 ($t = 3.8515$, $df = 36$, $p = .0005$). However, the difference in means is not terribly stark: the average of the mean responses for Condition 1 is 4.5, while the average of the mean responses in Condition 2 is 3.8. A boxplot of the results is given in Figure 6.1.

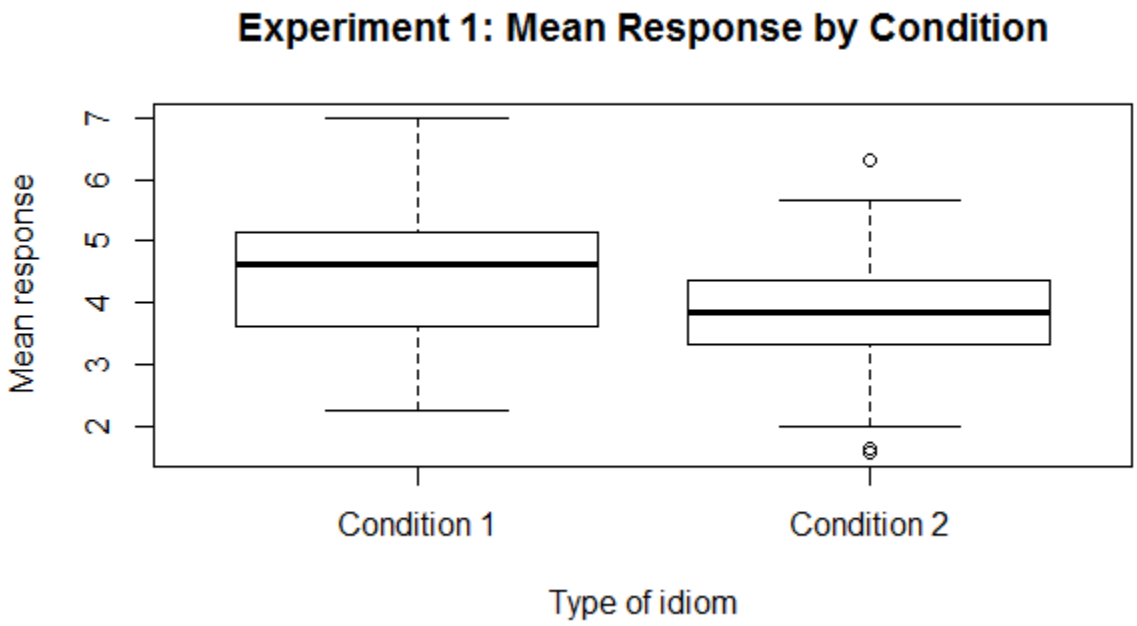


Figure 6.1: Mean response by condition for Experiment 1 (Cond 1: Decomposable/flexible vs Cond 2: Non-decomposable)

Next, we would like to see if the subjects treat Condition 1 (idioms described in the literature as decomposable and apparently flexible) similarly to Condition 3 (idioms described in the literature as decomposable and apparently inflexible). In this case, a paired samples t-test finds no significant difference (t = -1659, df = 36, p = .10). Indeed, the average of the mean responses in Condition 3 is 4.7, slightly higher than for Condition 1 (though the difference is not significant). Figure 6.2 shows a boxplot for this comparison.

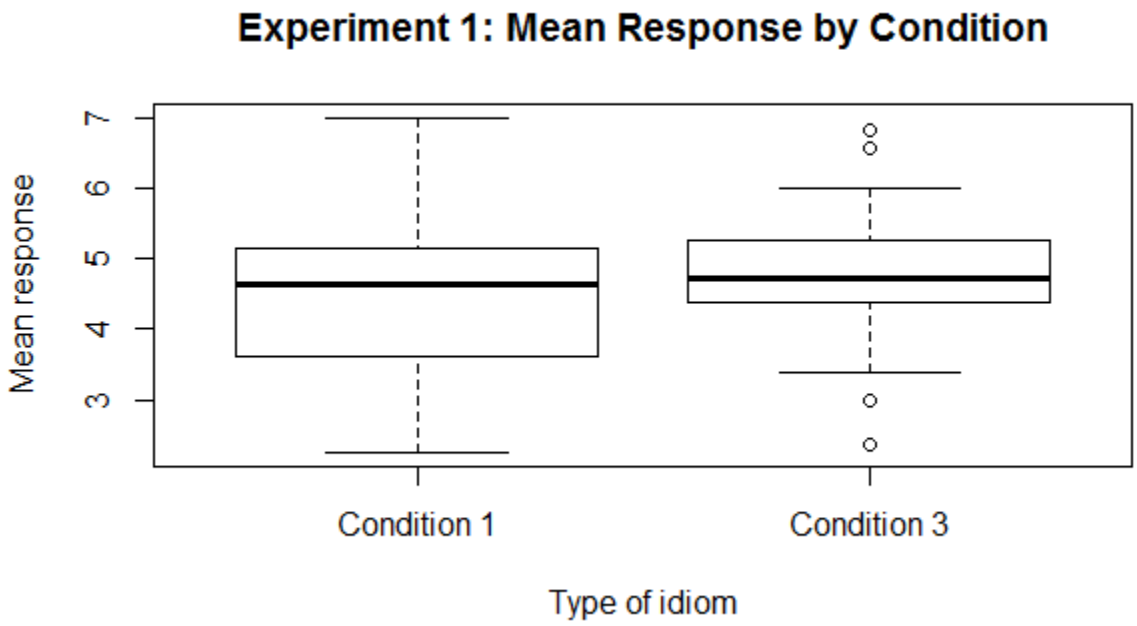


Figure 6.2: Mean response by condition for Experiment 1 (Cond 1: Decomposable/flexible vs Cond 3: Decomposable/inflexible)

In both cases, the results support the judgments which have been reported in the literature. First, idioms reported as being decomposable (and apparently flexible) are rated as significantly more decomposable than idioms reported as being non-decomposable. Second, idioms which are reported as being decomposable but apparently inflexible pattern similarly to idioms which are described as being decomposable and apparently flexible.

Finally, we can consider the comparison between Condition 1 and Condition 4 (proverbs). If, as argued in Chapter 5, proverbs are necessarily decomposable, then there should be no significant difference between Condition 1 and Condition 4. This prediction is borne out by a paired samples t-test, which finds no significant difference between the two conditions ($t = -0.38796$, $df = 36$, $p = .70$). The results are plotted in Figure 6.3:

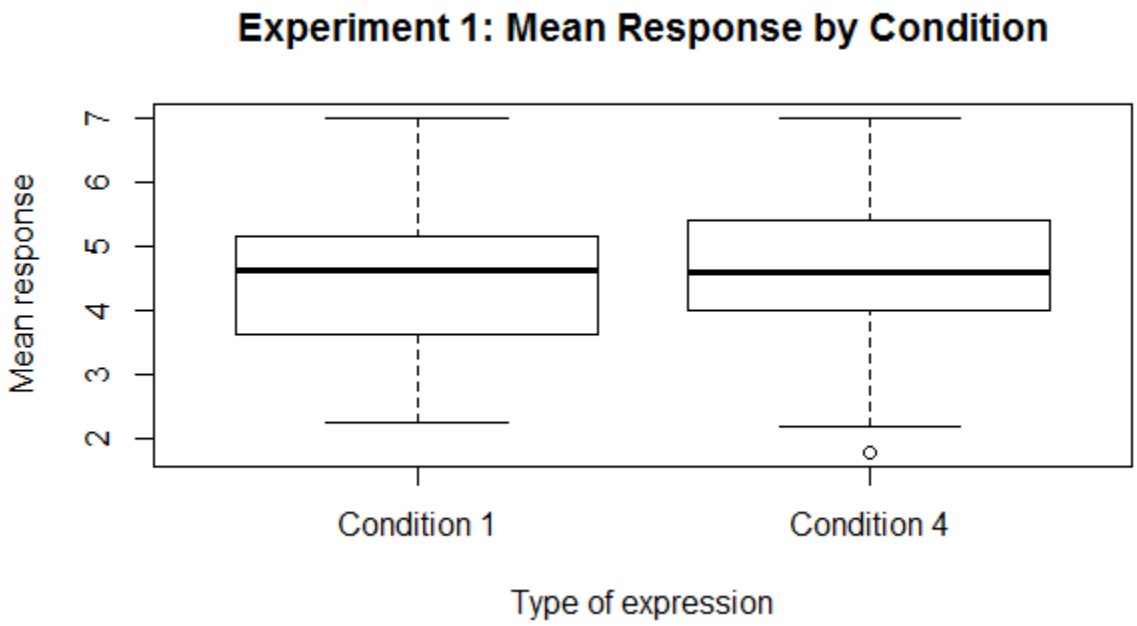


Figure 6.3: Mean response by condition for Experiment 1 (Cond 1: Canonically decomposable vs Cond 4: Proverbs)

Next, let us consider the results of Experiment 2. In this case, we are interested in whether there is a correlation between a subject's decomposability ranking of a given idiom (from Experiment 1) and their apparent flexibility ranking of that idiom. To calculate a given subject's apparent flexibility ranking on a given idiom, the mean of their responses to the different syntactic variations on that idiom was calculated. The base form, in which the only syntactic manipulation is tense inflection, was not included in this mean. Thus the apparent flexibility ranking for a given subject and a given idiom was calculated as the mean of their responses to the passivized, pronominalized, and clefted forms of the idiom. Again, responses of "I don't know the idiom" were ignored, including 29 of the 30 instances in which a subject responded "I don't know the idiom" in Experiment 1. There was one case in which a subject responded "I don't know the idiom" for an idiom in Experiment 1, but gave apparent flexibility ratings to the stimuli involving that idiom in Experiment 2; those responses were also ignored. There were nine cases in which subjects had split responses in Experiment 2, responding "I don't know the idiom" for some syntactic variations on a given idiom, but providing ratings for other syntactic variations on the same idiom; those responses were also ignored. Finally, only idioms in the first two classes from Experiment 1 (idioms described in the literature as decomposable

and apparently flexible, and idioms described in the literature as non-decomposable and apparently inflexible) were considered, since those are the two classes in which decomposability is predicted to correlate with rate of flexibility, according to the literature. In total, 262 subject-idiom pairings were considered.

The Spearman's rank correlation ρ was calculated for decomposability (results from Experiment 1) and apparent flexibility (results from Experiment 2). We find a significant correlation between decomposability and rate of flexibility ($S = 2357400$, $p < .005$, $\rho = .19$). Though the correlation is significant, the relatively low value for ρ indicates a weak correlation. A scatterplot of decomposability versus flexibility is given in Figure 6.4, with decomposability jittered to avoid overplotting:

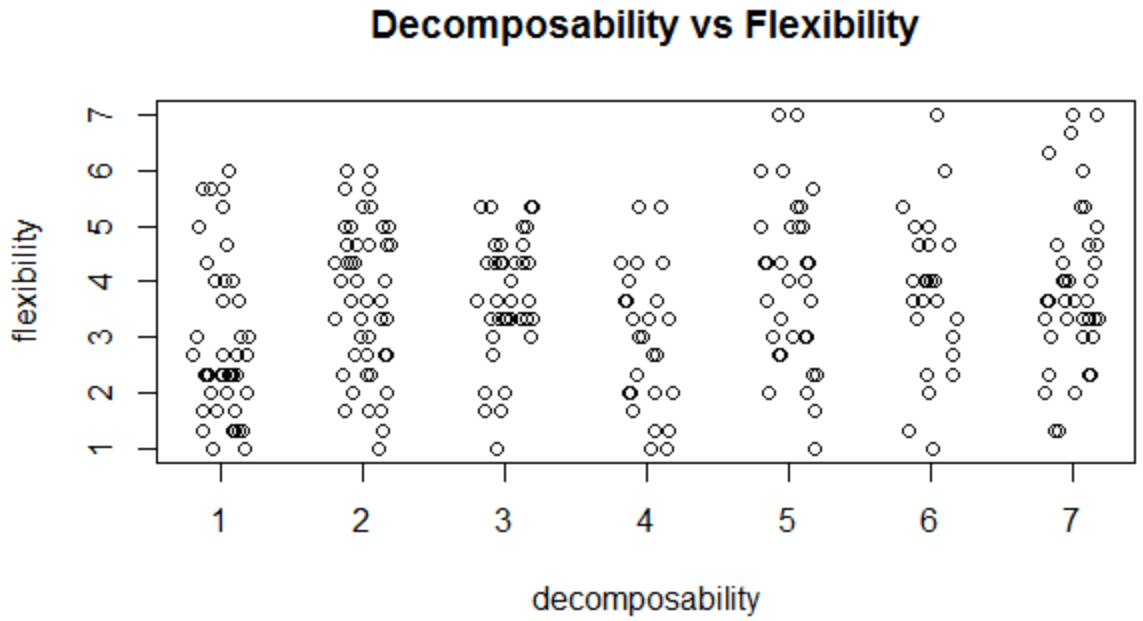


Figure 6.4: Decomposability ratings (Experiment 1) vs Mean flexibility ratings (Experiment 2)

6.4. General discussion

The results of Experiment 1 might help explain the contrast between the results of Gibbs and Nayak (1989) and those of Tabossi et al. (2011). Whereas Gibbs and Nayak (1989) asked subjects to categorize idioms into discrete classes (non-decomposable, abnormally decomposable, and normally decomposable), Tabossi et al. (2011) used a 7-point Likert scale.

As can be seen from Figure 6.4, the subjects in the current study made use of all 7 points on the Likert scale in Experiment 1; if Tabossi et al.'s subjects did the same, then a lower rate of intersubject consistency is to be expected. Nonetheless, as the results of Experiment 1 indicate, the decomposability judgments of the subjects in the current study were overall consistent with the claims in the theoretical literature explored in previous chapters.

The specific pattern of results of Experiment 1 may seem somewhat unexpected, given the theoretical proposal outlined in this dissertation. That is, if idioms like *kick the bucket* have a meaning representation only at the level of the entire structure, then we might predict them to have a very low decomposability rating. In contrast, idioms like *spill the beans* might be predicted to have a very high decomposability rating. But what we see is that, although there is a significant difference between the mean decomposability ratings for the two classes, the overall ratings for the two classes are not highly divergent: the average of the mean ratings for the idioms in Condition 1 is 4.5, while the average of the mean ratings for the idioms in Condition 2 is 3.8. However, there are some possible confounding factors. First, there are different ways in which subjects may interpret the notion of "constituent parts." They may interpret an idiom like *spill the beans* to be divided into two constituent parts: *spill* and *the beans*. On the other hand, they may interpret *spill the beans* to be divided into three constituent parts: *spill*, *the*, and *beans*. Some subjects may also be interpreting the notion of constituent parts syntactically, given the argumentation in previous chapters that both decomposable and non-decomposable idioms have internal syntactic structure. Subjects may also have a general tendency to attempt to force a compositional interpretation when one might be available; since the paraphrases were always structurally isomorphic to the idioms, it was always possible for subjects to force a compositional interpretation in principle, even if it was not the most natural interpretation. While the specific pattern of data is complex, the significant difference in mean responses between Condition 1 and Condition 2 supports the notion that idioms differ in terms of their semantic representations along the lines usually assumed in the literature.

The relatively weak contrast in the data results from Experiment 1 carries over into the comparison between decomposability in Experiment 1 and apparent flexibility in Experiment 2, so it is difficult to make strong claims based on that comparison. Nonetheless, the results do show that there is a significant correlation between decomposability and rate of flexibility, as is predicted by the current proposal.

6.5. Summary

In this chapter, I presented the results of a study investigating native English speakers' judgments about the decomposability and apparent flexibility of idioms. The results support the traditional classification in the literature, explored in detail in this dissertation, of decomposable and non-decomposable idioms, as well as the link between decomposability and apparent flexibility. Note that, as argued in previous chapters, there is no syntactic bifurcation between decomposable and non-decomposable idioms; the difference in judgments between the two groups observed in Experiment 1 would, in my approach, be explained in terms of where the idiomatic semantic representations are localized. Note also that there is not a strictly binary distinction between decomposable and non-decomposable idioms in this respect – some idioms may be partially decomposable, although none of the stimuli used in the experiment have been argued to be partially decomposable.

The results also confirm that idioms which have been described as decomposable but apparently relatively inflexible in the literature indeed pattern with canonical cases of decomposable idioms in terms of decomposability judgments. As discussed in Section 5.7, then, the relative apparent syntactic inflexibility of those idioms is in need of explanation. However, since my approach does not predict a perfect correspondence between decomposability and apparent flexibility, the data can in principle be explained in the same way as the data in Chapter 4, in terms of the interaction between semantic properties of the idioms and the semantic restrictions imposed on particular syntactic configurations.

Finally, the results support the idea that proverbs in general are treated as decomposable, similar to decomposable idioms, even though they appear highly inflexible. This supports the argument, made in Section 5.8, that proverbs should be treated differently from idioms. Although my approach predicts a lack of perfect correspondence between decomposability and apparent flexibility, it also predicts that decomposable idioms should, for the most part, appear syntactically flexible. However, proverbs appear highly inflexible, typically resisting even regular inflection. In Section 5.8, I argued that this is because proverbs, rather than being treated like idioms, are memorized chunks, like lines of poetry or song lyrics.

Chapter 7
Summary

In Chapter 1, I introduced the two broad goals of this dissertation. The first goal was to show that the problems posed by idioms, particularly the fact that they apparently combine properties of lexical items and syntactically complex structures and the fact that they can be syntactically idiosyncratic, can be tackled in a Minimalist framework. The second goal was to show how idioms can shed light on important questions about syntactic architecture, particularly the syntax-semantics interface, including the following questions: What is the relationship between the syntax and the lexicon? What are the necessary building mechanisms of syntax? At what point(s) in the derivation is meaning computed? What sort of information can be stored in the lexicon?

Chapter 2 expanded upon these questions about syntactic architecture. One broad theme that emerged from the discussion was the notion of derivationality versus representationality. The derivationality/representationality distinction applies at two levels. First, to what extent is syntax derivational? Jackendoff's (1997, 2002, 2011) parallel architecture formalism is an example of a non-derivational framework, in which there is no ordered structure-building algorithm; instead, lexical items can be combined in any order, and the resultant structure is judged grammatical if it satisfies a number of constraints. In contrast, Minimalism is an example of a derivational framework, in which syntactic structures are built piecemeal via a structure-building operation, in this case Merge. But idioms complicate this distinction, because of their hybrid behavior, displaying properties of both atomic lexical items and syntactically complex structures. In a derivational framework such as Minimalism, it is tempting to treat idioms as syntactically complex structures which are nonetheless stored in the lexicon and serve as inputs to Merge. But this weakens the derivationality of the system, since it introduces syntactically complex structures which are not constructed as part of the derivation.

The second level at which the derivationality/representationality distinction applies has to do with the relationship between the syntax and the semantics. Montague (1973) proposed a

strongly derivational semantics, in which semantic composition takes place in concert with the syntactic derivation. Heim and Kratzer (1998), in contrast, proposed a weakly derivational semantics, in which LFs are generated from syntactic structures, and those LFs are interpreted by the semantics. A standard (and Minimalist) interpretation of this sort of weakly derivational semantics has LFs being sent to the semantics at the phase level. Ultimately, I ended up arguing for a strongly derivational phase-based syntax, and a weakly derivational semantics.

A second distinction discussed in Chapter 2 is the distinction between lexicalist and non-lexicalist frameworks. Distributed Morphology was adduced as an example of a framework which has a strongly derivational syntax, but in which the syntax is not fed by a lexicon in the traditional sense. Rather, the syntax operates on sets of morphosyntactic features, and phonological and semantic features of the sort found on lexical items in Minimalism enter the derivation post-syntactically. In this sort of framework, the hybrid properties of idioms are less puzzling, since there is no sharp distinction between the syntax and the lexicon. Despite the naturalness with which DM can account for the properties of idioms, I argued in Chapter 5 that it makes the wrong predictions about the aspectual properties of idioms. I also argued that their apparently hybrid properties can be accounted for in a lexicalist framework.

Chapter 3 discussed a number of previous analyses of the behavior of idioms, differing along the axes discussed in Chapter 2 (derivational/representational, lexicalist/non-lexicalist), among others. One of the most influential analyses is that of Nunberg, Sag and Wasow (1994), which was the first detailed analysis to propose a strong link between the apparent differences in the syntactic flexibility of idioms and their semantic decomposability (the extent to which an idiom's individual subcomponents can be assigned independent meanings). This observation has driven much of the subsequent argumentation regarding the behavior of idioms. Nunberg et al. accounted for this pattern by postulating two classes of idioms: decomposable idioms, which are built derivationally in the syntax, and non-decomposable idioms, which for them are stored as constructions (with internal syntactic structure and a meaning associated with the structure as a whole).

I argued that Nunberg et al.'s approach is promising, but faces several difficulties. First, they do not successfully account for co-occurrence restrictions on idiom chunks – i.e. the fact that an idiom is only licensed if a specific set of words occur in a specific sort of configuration. I argued that co-occurrence restrictions regarding idioms are essentially arbitrary, and thus must

be encoded lexically, so Nunberg et al.'s approach, in which decomposable idioms are not lexically stored, cannot account for co-occurrence restrictions. Second, they do not give syntactic analyses which are detailed enough to evaluate. This is a crucial point, because it is not simply the case that decomposable idioms are completely flexible and non-decomposable idioms are completely frozen – it is more accurate to talk about the flexibility of a particular type of idiom in a particular syntactic configuration. So detailed analyses, which recognize that an idiom might be flexible with regards to head movement but inflexible with regards to the passive, for example, are necessary (as I developed in detail in Chapter 4). Finally, I argued that, if possible, decomposable and non-decomposable idioms should be treated uniformly; Nunberg et al. posit two classes of idioms which relate to the syntax in different ways, which is methodologically undesirable.

One implication of my critiques of Nunberg et al. is that all idioms, whether decomposable or non-decomposable, should be lexically stored in order to account for their co-occurrence restrictions. One theory which argues that all idioms are lexically stored is that of Jackendoff (1997, 2002, 2011), in which idioms are stored in the form of syntactic treelets associated with phonological and conceptual (i.e. semantic) structure. The conceptual structure may relate to the syntactic structure in different ways – it may be associated with the entire treelet, in which case the idiom is non-decomposable, or it may be associated with the individual subcomponents of the treelet, in which case the idiom is decomposable. I ended up adopting Jackendoff's assumption that all idioms are lexically stored and that the decomposable/non-decomposable distinction is related the structure of semantic information on idiomatic lexical items, but I did so in a derivational, Minimalist framework, rather than in Jackendoff's non-derivational, constraint-based framework. In Section 5.2.1, I argued that the lack of a notion of phasehood in Jackendoff's framework makes it unable to account for the full range of facts about idioms, and that my system is more constrained than Jackendoff's regarding the set of operations it proposes to derive the empirical properties of idioms.

The final approach which I considered in detail in Chapter 3 is the Distributed Morphology approach. In DM, roots can receive special meanings in particular contexts, a phenomenon known as contextual allosemy. The DM architecture predicts that contextual allosemy should also take place above the word level, which provides a natural way of accounting for idioms: the roots in a given idiom receive special meanings when they appear in

the proper context. Despite the fact that the architecture is naturally suited to dealing with idioms, I ended up arguing in Chapter 5 that DM approaches to idioms make the wrong predictions for some data. Specifically, Marantz (1997) and McGinnis (2002) argue that DM predicts that idioms must have the same aspectual properties as their literal counterparts, because aspect is determined by syntactic structure. However, I argued that there are a number of examples of idioms whose aspect differs from the aspect of their literal counterparts, and that these idioms can be accounted for in my framework, by allowing the idiomatically stored meaning to override the features resulting from the composition of literal meanings.

In Chapter 4, I discussed in detail the syntactic behavior of idioms and provided analyses of a number of syntactic phenomena. First, I showed evidence that idioms have internal syntactic structure. One piece of evidence that idioms have internal structure is the existence of families of closely related idioms (such as *pack a punch* and *pack a wallop*, or *hit the hay* and *hit the sack*). If idioms had no syntactic structure, they would all have to be separately listed in the lexicon, missing out on a generalization. Moreover, I argued extensively that despite the apparently limited syntactic flexibility of idioms relative to non-idiomatic phrases, even non-decomposable idioms display some syntactic flexibility. For example, verb-object idioms are inflected normally, with inflectional suffixes attaching to the verbal head, rather than to the idiom as a whole. I therefore concluded that idioms are not syntactically special, but rather are built by the same operation (Merge) which builds non-idiomatic phrases.

If idioms are built by Merge, what accounts for their apparently limited syntactic flexibility? I argued that the syntactic behavior of idioms can be explained in terms of the interaction between the semantic properties of particular idioms and syntactic and semantic properties of the derivation, and illustrated this method of explanation using several phenomena. First, I explained the fact that chunks of non-decomposable idioms cannot serve as DP topics in English in terms of a semantic constraint on English DP topics: they must be either referential or generic. Chunks of non-decomposable idioms have no independent interpretation, so they cannot be referential or generic. On the other hand, chunks of decomposable idioms can in principle be referential or generic, so they can serve as topics.

I applied a similar argument to passives: passive subjects in English must be at least as discourse-old as the actor. Again, chunks of non-decomposable idioms cannot be passive subjects because they have no independent interpretation, so they do not have a discourse-

new/discourse-old status. However, passives in different languages have partially different properties. For example, non-decomposable idioms are compatible with impersonal passives in German and Estonian, because the derivation of the impersonal passive does not impose semantic restrictions on the passive subject. Similarly, I argued that non-decomposable idioms are compatible with the Japanese *niyotte*-passive only in cases in which the passive subject stays in Spec-*v* instead of raising to Spec-T, because the element in Spec-T must have a topic or focus interpretation (incompatible with a non-referential or generic idiom chunk), whereas no such semantic restrictions are imposed on the element in Spec-*v*.

In the case of pronominalization, I argued that pronouns must refer to something explicit or implicit in the discourse; chunks of non-decomposable idioms do not refer, so they cannot serve as pronoun antecedents. Hence we see the same pattern with pronominalization that we saw with topics and passives: it is only compatible with decomposable idioms.

I also argued that chunks of non-decomposable idioms generally cannot be modified with adjectives, for semantic reasons. Cases in which a non-decomposable idiom chunk appears to be modified by an adjective, such as *John kicked the social bucket*, are actually instances of semantically external modification. This was first pointed out by Ernst (1981), but this dissertation represents the first attempt to develop a concrete analysis of the semantics of such modification. I argued that the adjective QRs and has the semantics of a domain adverb (a modal operator quantifying over possible worlds).

Finally, I argued that both non-decomposable and decomposable idioms are predicted to be generally compatible with head movement, given that canonical instances of head movement do not have semantic effects. I used the examples of German V2 movement and French V-to-T movement, both of which are compatible with non-decomposable idioms.

Overall, then, Chapter 4 showed that the broad pattern whereby decomposable idioms appear more flexible than non-decomposable idioms can be explained in terms of their semantics. The details of the approach were formalized in Chapter 5, which argued that idioms are lexically stored as treelets with associated phonological and semantic representations. If the semantic representations are distributed among the nodes of the treelets, then the idiom is decomposable, and if the semantic representation is associated with the structure as a whole, then the idiom is non-decomposable. This approach is similar to Jackendoff's, and avoids the abovementioned criticisms of Nunberg et al., in that it accounts naturally for co-occurrence

restrictions and avoids positing a syntactic bifurcation between decomposable and non-decomposable idioms.

However, as mentioned above, I also maintain that idioms are built by the same structure-building operation, Merge, as non-idiomatic phrases, despite being lexically stored. Hence, there is a distinction in the lexicon between non-idiomatic lexical items (which can serve as input to Merge) and idiomatic lexical items (which cannot serve as input to Merge). However, the syntactic and phonological features of idiomatic lexical items enter the derivation through the application of Merge (via Merger of atomic lexical items), while their semantic features are accessible through matching. In Chapter 5, I argued that the derivation proceeds as follows. Merge iteratively combines pairs of non-idiomatic lexical items. At the point that a phase has been built up (after Voice or C has been merged), a matching algorithm checks if the resultant structure contains any constituents which correspond to a lexically stored idiomatic structure. If so, that structure may optionally be interpreted using the semantic representations stored with the idiom when the LF is sent to the semantics (during Spell-Out, also at the phase level). The derivation proceeds as usual – Merge is free, so there are no restrictions on the syntactic derivation. In some cases, however, the derivation will crash in the semantics – if, for example, a chunk of a non-decomposable idiom ends up as a topic or as a passive subject. The system is thus strongly syntactically derivational and weakly semantically derivational.

I also argued that the assumption that Merge is free accounts for the existence of syntactically idiosyncratic idioms, which appear not to be syntactically well-formed. I argued that the reason these idioms do not have well-formed literal counterparts is not syntactic; Merge is free to generate those structures. However, the derivations will crash in the semantics because there is no way to successfully interpret them, on a literal reading. If, on the other hand, the idiomatic interpretation is chosen when matching takes place, the resulting structure is interpretable. The semantic representation is associated with the idiom as a whole, so it need not be internally compositional.

Finally, Chapter 5 also discussed a pair of outstanding issues. The first was McCawley's paradox, a challenge for any derivational approach to idioms. According to McCawley's paradox, there is no consistent set of derivational assumptions that ensures that both *Parky pulled the strings that got me my job* and *The strings that Parky pulled got me my job* receive idiomatic readings. I argued that in my system, if we adopt a raising analysis of relative clauses, we can

account for the availability of an idiomatic reading with both sentences. In the former case, matching takes place after raising, and in the latter case, matching takes place before raising. I proposed that idioms like *pull strings* have a variable which can be null or satisfied by a relative clause CP, allowing both types of relative clause structures to match the lexically stored idiom.

The second outstanding issue was the existence of idioms which are decomposable but appear relatively inflexible, such as *raise hell*. I argued that the pattern of data could be explained along the same lines as the data in Chapter 4, but left the details of that explanation as a question for future research.

Finally, Chapter 6 presented the results of an experiment testing native speaker judgments of the decomposability and apparent flexibility of idioms. The results showed that native speaker judgments of decomposability accord with judgments reported in the literature, and also showed a significant correlation between a subject's judgment of an idiom's decomposability and their judgment of its flexibility. The results also showed that idioms described in the literature as decomposable but apparently inflexible are rated similarly to canonical cases of decomposable, apparently flexible idioms with respect to their decomposability. Finally, they showed that proverbs are rated similarly to decomposable idioms with respect to their decomposability, supporting the argument in Chapter 5 that proverbs are necessarily decomposable.

Overall, this dissertation has contributed to the literature in several ways. First, it has shown that, despite the apparent difficulties that idioms raise for lexicalist, derivational frameworks, the behavior of idioms can be accounted for in a way consistent with standard Minimalist assumptions, in particular the assumption that Merge is the sole structure-building operation in the syntax of human language. Second, it has shed light on the relationship between the syntax and the lexicon. Just as in other approaches, non-idiomatic lexical items are combined by Merge to form syntactic structures. Idioms are stored in the lexicon, regarding their phonology and semantics (which one might expect, given that they contain unpredictable information), but their syntactic structure also results from iterative application of Merge. The connection between the syntactic derivation and the lexicon with respect to idioms is a result of the matching operation, which takes place along with Spell-Out at the phase level, thus maintaining the uniformity of non-structure building operations taking place at the phase level (unlike, for example, in DM, in which the Encyclopedia is accessed at the end of the derivation).

Finally, it has provided detailed analyses of the interaction between idioms and a number of syntactic and semantic phenomena, most of which have not previously been analyzed in detail in the Minimalist literature.

APPENDIX

Experimental stimuli

Experiment 1: Decomposability norming

Condition 1 (idioms described as decomposable and syntactically flexible in the literature)

1. break the ice ("relieve tension")
2. bury the hatchet ("end a disagreement")
3. open a can of worms ("create a difficult situation")
4. draw the line ("set a boundary")
5. call the shots ("give orders")
6. add fuel to the fire ("introduce more conflict to a situation")
7. let the cat out of the bag ("allow a secret into the open")
8. pull strings ("exploit personal connections")

Condition 2 (idioms described as non-decomposable and syntactically inflexible in the literature)

1. chew the fat ("have a conversation")
2. shoot the breeze ("have a conversation")
3. tie the knot ("have a wedding")
4. play the field ("date multiple people")
5. kick the bucket ("lose one's life")
6. take note of ("pay attention to")
7. poke fun at ("make jokes about")
8. lift a finger ("make a minimal effort")

Condition 3 (idioms described as decomposable and syntactically inflexible in the literature)

1. hit the sauce ("drink a lot of alcohol")
2. play with fire ("get involved with a dangerous situation")
3. hit the sack ("go to bed")

4. get the picture (“understand a situation”)

5. pop the question (“propose marriage”)

6. pack a punch (“have a strong impact”)

7. raise hell (“cause trouble”)

8. keep one’s cool (“maintain one’s composure”)

Condition 4 (filler condition: proverbs)

1. all that glitters is not gold (“everything that looks nice is not valuable”)

2. barking dogs seldom bite (“people who make threats are rarely dangerous”)

3. when it rains, it pours (“when one bad thing happens, many bad things do”)

4. there are plenty of fish in the sea (“there are many people available to date”)

5. a rolling stone gathers no moss (“someone who always moves around will not be successful”)

6. blood is thicker than water (“family relationships are stronger than other relationships”)

7. birds of a feather flock together (“similar people associate with each other”)

8. every cloud has a silver lining (“all bad situations have an upside”)

9. still waters run deep (“people with a calm appearance might have a complex inner life”)

10. the early bird gets the worm (“whoever arrives first has the best chance of success”)

11. the pen is mightier than the sword (“writing is more effective than violence”)

12. too many cooks spoil the broth (“an excessive number of people working on a task will ruin it”)

Experiment 2: Flexibility judgments

Class 1 (idioms described as decomposable and syntactically flexible in the literature)

Condition 1 (base form)

1. James tried to keep the secret, but ultimately he let the cat out of the bag.

2. Rhonda opened a can of worms by hiring the unpopular candidate.

3. After many years of feuding, the rival families finally buried the hatchet.

4. Kathy pulled strings to get her friend a promotion.

Condition 2 (passivization)

1. The secret remained under wraps for months, but in the end the cat was let out of the bag.
2. A can of worms was opened thanks to the controversial decision.
3. John held a grudge against Anne for years, but finally the hatchet was buried.
4. I don't know how such an incompetent person managed to get the job, but I imagine strings were pulled.

Condition 3 (pronominalization)

1. Candace let the cat out of the bag by revealing Mike's affair, but Jake had already let it out of the bag anyway.
2. The new tax law opened a can of worms, and the new tariff opened one too.
3. The Hatfields proposed burying the hatchet to end the feud, but the McCoys refused to bury it.
4. I'm generally against taking advantage of my position by pulling strings, but I'll pull them if I have to.

Condition 4 (clefting)

1. It was the political cat that Omar let out of the bag when he revealed the candidate's secret.
2. It was a metaphysical can of worms that Rachel opened with her experiment purporting to prove that free will doesn't exist.
3. It was the legal hatchet that the two companies buried when they finally settled the lawsuit.
4. It was corporate strings that Nathan pulled to try to get his cousin a job.

Class 2 (idioms described as non-decomposable and syntactically inflexible in the literature)

Condition 1 (base form)

1. The old friends had a lot of catching up to do, so they shot the breeze.
2. Paul kicked the bucket after a long illness.
3. Sam poked fun at Jane for wearing her shirt inside out.
4. Peter and Emily chewed the fat, talking about everything from current events to celebrity gossip.

Condition 2 (passivization)

1. Linda and Max met at a café to chat, and the breeze was shot for hours.
2. That looks like a funeral procession, so I'm assuming the bucket was kicked by someone.
3. Fun is often poked at Jerry, because he's such a klutz.
4. When two chatterboxes meet up, the fat is usually chewed.

Condition 3 (pronominalization)

1. Hannah and her cousin planned to shoot the breeze for a few minutes, but they had so much to talk about that they shot it all night.
2. Despite her illness, Maya avoided kicking the bucket for years, but she finally kicked it last week.
3. Even though Omar doesn't like it when people poke fun at him, Candy pokes it at him anyway.
4. Kevin hoped to chew the fat with his old friend so they could catch up, and chew it they did.

Condition 4 (clefting)

1. It was the political breeze that the talk show hosts shot last episode.
2. It was the social bucket that Andrew kicked when he made an embarrassing faux pas.
3. It was only gentle fun that Sandy poked at Jim.
4. It was the political fat that the panelists chewed.

Class 3 (idioms described as decomposable and syntactically inflexible in the literature)

Condition 1 (base form)

1. Johnny is only two years old, but he raises hell like a teenager.
2. The presentation was thorough and really packed a punch.
3. Due to her intelligence, Mila got the picture immediately.
4. Andy often plays with fire by getting into risky situations.

Condition 2 (passivization)

1. Hell was raised by the misbehaving child.

2. A punch was packed by the documentary on the Holocaust.

3. So far, people don't really understand the gravity of the situation, but I hope the picture will be gotten soon.

4. Despite being told that fire should not be played with, Tom got involved with some dangerous people.

Condition 3 (pronominalization)

1. I always hope that Victoria won't raise hell, but in vain: she raises it without fail.

2. Adam's speech packed a punch, and Barbara's packed one too.

3. Ethan got the picture after the situation was explained to him, and Maria got it too.

4. Kate was warned against playing with fire by getting involved with mobsters, but she played with it anyway.

Condition 4 (clefting)

1. It was political hell that the Republicans raised when the gun control bill passed.

2. It was a nutritional punch that the new snack food packed.

3. It was the economic picture that the students got after listening to the panel of experts.

4. It was political fire that Portugal played with by introducing austerity measures.

Filler Condition 1 (telic context)

1. Since it was Jane's birthday, her friends painted the town red with her in three hours.

2. After her pet died, Lisa cried her eyes out in two days.

3. Manny sang his heart out in five minutes.

4. After getting the bad news, Natalie drowned her sorrows in a few hours.

5. Jerry laughed his head off in two minutes.

6. Eliza worked her butt off in ten hours.

7. After her favorite team lost, Emily ate her heart out in a few days.

8. Norm talked his ass off in an hour.

Filler Condition 2 (atelic context)

1. To celebrate his engagement, Jack and his friends painted the town red for hours.
2. When Max's girlfriend broke up with him, he cried his eyes out for days.
3. Taylor sang her heart out for the whole concert.
4. After losing his job, Pat drowned his sorrows for days.
5. Lori laughed her head off for five minutes.
6. Fred worked his butt off all day long.
7. After losing the championship, Kevin ate his heart out for a few days.
8. Phoebe talked her ass off for an hour.

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