Introducing Arguments
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Chapter 1

Introduction

1.1 "Noncore" Arguments

A comprehensive theory of linguistic representations must minimally (i) define the nature of the primitive building blocks that enter into linguistic computation, (ii) characterize the manner in which the basic units combine into complex representations, and (iii) identify the ways in which languages may differ with respect to their inventory of possible representations. This book aims to meet these requirements in the domain of verbal argument structure, focusing on the question of how arguments that are not, in a sense, "core" arguments of the verb get introduced into argument structures. For example, even though the English verb *melt* minimally only needs to combine with an argument describing an entity undergoing the melting, as in (1a), English grammar also allows the sentence in (1b), where the entity that melts is now the object of the sentence and the subject position is filled with a noun phrase describing a causer of the melting event. Further, it is possible to add yet another argument to this structure, as in (1c), where the new argument is realized as an indirect object and is interpreted as some type of beneficiary of the melting event.

(1) *English*
   a. The ice melted.
   b. *John* melted the ice.
   c. *John* melted *me* some ice.

   This type of argument structure variation is a pervasive property of human language; most languages have verbs that exhibit precisely the behavior illustrated in (1). For example, the data in (2) show that the Venda verb *nok* 'melt' can appear in all the same environments as the English verb *melt*.

(2) *Venda*
   a. Mahaḓa o-nok-a.
      snow   3SG.PAST-melt-FV
      'The snow melted.'
   b. Mukasa o-nok-is-a   mahaḓa.
      Mukasa 3SG.PAST-melt-CAUSE-FV   snow
      'Mukasa melted the snow.'
   c. Mukasa o-nok-is-el-a   Katonga mahaḓa.
      Mukasa 3SG.PAST-melt-CAUSE-APPL-FV Katonga snow
      'Mukasa melted Katonga the snow.'

Given the similarity between (1) and (2), it is natural to hypothesize that the grammatical elements that allow for the variation in (1) and (2) are, in fact, the same. However, on closer inspection, this hypothesis proves hard to maintain, as the inventories of verbs that allow the addition of causer and benefactive arguments are drastically different in English and in Venda. For example, in Venda these two types of arguments can productively be added to unergative verbs, as shown in (3), while this is impossible in English, (4).

(3) *Venda*
   a. Mukasa o-se-is-a   Katonga.
      Mukasa 3SG.PAST-laugh-CAUSE-FV Katonga
      'Mukasa made Katonga laugh.'
   b. Mukasa o-amb-el-a   Katonga.
      Mukasa 3SG.PAST-speak-APPL-FV Katonga
      'Mukasa spoke for Katonga.'

(4) *English*
   a. *Mary laughed Sue.
      (Intended meaning: 'Mary made Sue laugh.')
   b. *Mary spoke Sue.
      (Intended meaning: 'Mary spoke for Sue.')

The distributional difference can be explained in two ways. One possibility is that the additional arguments in the two languages are introduced by different elements with different distributions, despite superficial similarities. Alternatively, it is possible that the elements allowing the addition of the new arguments in the two languages are in fact the same, and some other factor is responsible for the distributional difference. Distinguishing between these two types of explanations and articulating the properties of argument-introducing elements is the essence of this book.

1.2   Representing Verbs and Their Arguments

The question of what grammatical elements are responsible for allowing noncore arguments to appear in argument structures cannot be investigated without making some basic assumptions about the representations of verbs and their arguments. In other words, we must have a hypothesis about what the representations are to which so-called noncore arguments can be added. In some very intuitive sense, verbs describe events in the world and verbal arguments name individuals that stand in some relevant relations to these events. However, even though most theories of lexical semantics aim to capture this basic intuition in some way, the details of the representations vary widely from one researcher to another. A quick glance at some of the leading works on lexical semantics and argument structure from the past few decades reveals a lack of agreement on how to represent just a simple unergative verb.

(5) a. *Levin and Rappaport Hovav 1995*
       run: [x $ACT_{\langle RUN \rangle}$]
   b. *Jackendoff 1990*
       Bill walked into the room.
       [$_{Event}$ GO [$_{Thing}$ BILL] [$_{Path}$ TO [$_{Place}$ IN([$_{Thing}$ ROOM])]]]
   c. *Pustejovsky 1995*

$$\begin{bmatrix} \textbf{run} \\ [\text{EVENTSTR} = [E_1 = e_1\text{: process}]] \\ \begin{bmatrix} \text{QUALIA} = \text{AGENTIVE} = \text{run\_act}(e_1, x) \\ \dots \end{bmatrix} \end{bmatrix}$$

   d. *Hale and Keyser 1993*

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        /\
       /  \
      V    N
    (do)   run
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   Clearly, then, even basic questions having to do with the representation of verbs and their arguments—such as "What is the fundamental nature of lexical complexity?"—are still open. In (5a–c), the lexical semantic representations are all different from the *syntactic* structures in which verbal arguments appear; the theories proposing these representations hold that the lexical entries of verbs are semantically complex in a way that differs from the complexity encountered at the sentential level. Given this difference, these theories must be accompanied by a theory that states

exactly how the predicates and arguments in the lexical semantic representations map onto syntactic positions. Developing such *linking theories* has in fact been the main focus of argument structure research for decades. For example, in their seminal work *Unaccusativity*, Levin and Rappaport Hovav (1995) propose the rules in (6b,c) to account for the fact that the causer of an eventuality is generally realized as the subject of the sentence and the individual undergoing change as the direct object.

(6) a. break: [[x DO-SOMETHING] CAUSE [y BECOME BROKEN]]
    b. *Immediate Cause Linking Rule*
        The argument of a verb that denotes the immediate cause of the eventuality described by that verb is its external argument.
        (p. 135)
    c. *Directed Change Linking Rule*
        The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument. (p. 136)

In contrast to the theories that consider lexical complexity to be different from syntactic complexity, a number of theories today hypothesize that in fact no such difference exists (see, e.g., Baker 1988a; Hale and Keyser 1993; Borer 1994, 1998; Harley 1995; Marantz 1997; Miyagawa 1998; Travis 2000). In these theories, lexical semantic representations *are* syntactic representations, and consequently no mapping problem arises. This eliminates the need for linking rules, which in any case are seldom more than generalizations over observed correspondences between argument positions and their interpretations.

The syntactic approach is not without its challenges, though; differences do exist between morphological constituents such as *joyful* in *joyfulness* and syntactic constituents such as *the girl* in *The girl ran*. One much-discussed difference is that *joyfulness* exhibits "lexical integrity" (Di Sciullo and Williams 1987); that is, it behaves as a unit in a way that *The girl ran* does not. For example, the morphological constituent *joyful* fails all traditional tests of syntactic constituency (such as extractability and conjoinability; see in particular the discussion in Bresnan 1995 and Bresnan and Mchombo 1995). Clearly, then, syntactic theories of word formation must provide a theory about extraction, conjunction, and so forth, such that constituents that depend on other constituents within a phonological word cannot be targeted by them. However, on the basis of lexical integrity alone, it seems unwarranted to draw the strong conclu-

sion that entirely different modules of grammar must be responsible for the construction of complex entities such as *joyfulness* as opposed to complex entities such as *The girl ran*. In this book, I will entertain the (to my mind, more interesting) hypothesis that syntactic structure building is the only mode of structure building in natural language.

For present purposes, then, the assumption that word formation is syntactic means that the elements that introduce noncore arguments into argument structures must be syntactic heads. These syntactic heads combine with their complements and specifiers via the traditional modes of semantic composition, which I take to be Functional Application and Predicate Modification.

(7) a. *Functional Application*
    If α is a branching node, $\{\beta, \gamma\}$ is the set of α's daughters, and $[\![\beta]\!]$ is a function whose domain contains $[\![\gamma]\!]$, then $[\![\alpha]\!] = [\![\beta]\!]([\![\gamma]\!])$.
    (Heim and Kratzer 1998, 44)

  b. *Predicate Modification*
    If α is a branching node, $\{\beta, \gamma\}$ is the set of α's daughters, and $[\![\beta]\!]$ and $[\![\gamma]\!]$ are both in $D_{\langle e,t \rangle}$, then $[\![\alpha]\!] = \lambda x \in D_e. \ [\![\beta]\!](x) = [\![\gamma]\!](x) = 1$.
    (Heim and Kratzer 1998, 65)

Verbs in general will be taken to have neo-Davidsonian meanings, where the verb itself names a property of an eventuality (which I take to be a cover term for events and states, following Bach 1981) and the syntactic arguments of the verb name event participants, that is, individuals who stand in thematic relations to the eventuality (Parsons 1990, building on proposals in Castañeda 1967 and Davidson 1967). In this type of framework, the meanings of sentences involve underlying quantification over events, as shown in (8) (temporal relations are ignored here).

(8) a. Brutus stabbed Caesar.
  b. ($\exists$e) stabbing(e) & agent(e, Brutus) & theme(e, Caesar)
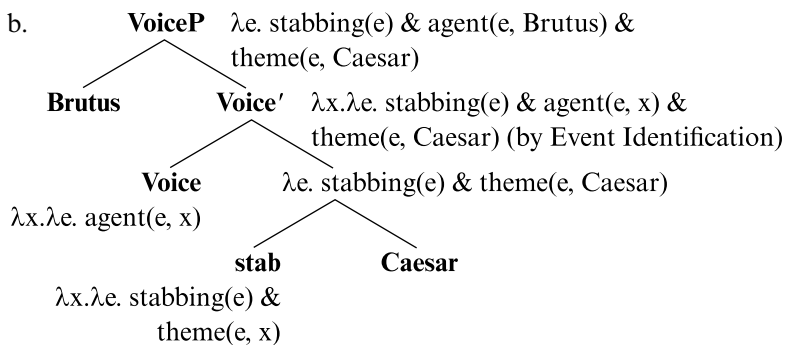   (Parsons 1990, 97)

As Kratzer (1996, to appear b) discusses, a neo-Davidsonian approach to logical forms does not entail that the *syntax* must be neo-Davidsonian. In other words, maintaining that the agent and the theme are syntactic arguments of *stab* (rather than separate predicates) is possible even if we consider representations in conceptual structure to be neo-Davidsonian, as shown in (9).

(9) *Ordered argument association in the syntax and neo-Davidsonian*
     association in conceptual structure
     stab: $\lambda x.\lambda y.\lambda e.$ stabbing(e) & agent(e, y) & theme(e, x)

However, Kratzer's thesis is that when it comes to the external argument, argument association *is* neo-Davidsonian even in the syntax. In other words, Kratzer argues that the external argument is introduced not by the verb but by a separate predicate, which Kratzer calls Voice. Voice is a functional head denoting a thematic relation that holds between the external argument and the event described by the verb; it combines with the VP by a rule called Event Identification. Event Identification allows one to add various conditions to the event that the verb describes; Voice, for example, adds the condition that the event has an agent (or an experiencer or whatever one considers possible thematic roles for external arguments). Event Identification is stated in (10) and exemplified in (11). (As in Kratzer 1996, *s* is the semantic type for eventualities.)

(10) *Event Identification*
      $\langle e,\langle s,t\rangle\rangle$ $\langle s,t\rangle \rightarrow \langle e,\langle s,t\rangle\rangle$

(11) a. Brutus stabbed Caesar.
      b.   **VoiceP** $\lambda e.$ stabbing(e) & agent(e, Brutus) &
                               theme(e, Caesar)

      Brutus   **Voice′** $\lambda x.\lambda e.$ stabbing(e) & agent(e, x) &
                                    theme(e, Caesar) (by Event Identification)

                  Voice $\lambda e.$ stabbing(e) & theme(e, Caesar)
            $\lambda x.\lambda e.$ agent(e, x)

                          stab   **Caesar**
                    $\lambda x.\lambda e.$ stabbing(e) &
                              theme(e, x)

    The proposal that external arguments are not true arguments of the verb was first made in Marantz 1984. Marantz observes that internal arguments often trigger special interpretations of the verb while external arguments hardly ever do so, and he argues that this is straightforwardly accounted for if the external argument is not a true argument of the verb. Kratzer's proposal builds on Marantz's insight and develops a theory about how Marantz's idea can be executed in the syntax without sacrificing traditional assumptions about semantic composition and projection. In other words, Kratzer's theory is an account of how external arguments

are syntactically introduced even though they are not projected by the verb.

The assumption that the external argument is not a true argument of the verb has become standard in much syntactic research. For example, all current work within the Minimalist Program assumes it. In Chomsky 2000, 2001, the external-argument-introducing head plays a special role in defining a domain for cyclic interpretation and spell-out, namely, a phase. The assumption that the external argument is not an argument of the verb is also crucial here: the properties of applicative constructions (chapter 2) and their interactions with causative constructions (chapter 3) could not otherwise be accounted for. Thus, one of the main contributions of this book is to provide a new empirical argument for separating the external argument from its verb: I will show that even though external arguments are obligatory in some syntactic environments (unlike, say, most indirect objects), they are "additional" in that they involve an argument introducer that is separate from the verb.

A terminological remark is in order. I will call the external-argument-introducing head *Voice*. In this, I follow Kratzer, rather than Chomsky, who calls it *v* (read "little v"). The label *v* is, however, also used in a broader sense in Marantz's work, where it stands for any functional head that is of verbal category (i.e., for any verbal derivational affix, in traditional terms). To avoid confusion, and because this book focuses on the interpretations and argument structures of argument-introducing heads, I will label functional heads according to their meanings (rather than categories) throughout. Thus, Voice can be taken as a metavariable ranging over possible interpretations of the relation between an external argument and the event described by the complement of Voice.

1.3 Summary of the Proposal: Seven Argument Introducers

I will argue that to a large extent, noncore arguments are introduced by the seven functional heads listed in table 1.1. I take these heads to belong to a universal inventory of functional elements from which a particular language must select (Chomsky 2000). I argue that crosslinguistic variation has two sources: (i) selection (Chomsky 2000) and (ii) the way a language packages the selected elements into syntactic heads.

In chapter 2, I propose a new applicative typology. The syntax of applicative constructions has been heavily studied, the main discovery being that in some applicatives both the direct object and the indirect object

Table 1.1
Argument introducers

Head	Meaning	Example construction
1. High applicative	Thematic relation between an applied argument and the event described by the verb	• Chaga benefactive (sec. 2.1) • Luganda benefactive (secs. 2.1.2, 2.1.3) • Venda benefactive (secs. 2.1.2, 2.1.3) • "Gapless" Japanese adversity passive (sec. 2.3)
2. Low recipient applicative	Transfer-of-possession relation between two individuals: asserts that the direct object is *to* the possession of the indirect object	• English double object construction (secs. 2.1, 2.1.1, 2.1.2) • Japanese double object construction (secs. 2.1.1, 2.1.2)
3. Low source applicative	Transfer-of-possession relation between two individuals: asserts that the direct object is *from* the possession of the indirect object	• Hebrew possessor dative (sec. 2.2) • Japanese adversity causative and "gapped" adversity passive (sec. 2.3)
4. Root-selecting Cause	Relates a causing event to a category-free root	• Japanese lexical causative (sec. 3.4.2.1) • English zero-causative (sec. 3.4.2.2)
5. Verb-selecting Cause	Relates a causing event to a verb	• Bemba *-eshya* causative (sec. 3.4.3.1) • Finnish *-tta* causative (sec. 3.4.3.2)
6. Phase-selecting Cause	Relates a causing event to a phase (i.e., is able to combine with a constituent to which an external argument has been added)	• Venda *-is* causative (sec. 3.4.4) • Luganda *-sa* causative (sec. 3.4.4)
7. Voice (Kratzer 1996)	Thematic relation between the external argument and the event described by the verb	• Any construction with an external argument, diagnosable via, say, passivization. For empirical evidence, see in particular secs. 2.1 and 3.4.4.

exhibit object properties while in others only the applied argument does. Various syntactic solutions to this difference have been proposed, relying on thematic hierarchies or Government-Binding Theory notions such as Case theory (Baker 1988a) or government (Marantz 1993).

I show that applicative constructions in fact divide into two types *semantically*. In one type, the applicative head denotes a thematic relation between an individual and the event described by the verb. I call this type a *high applicative* (see point 1 in table 1.1), since the applicative head attaches above the VP. The other type of applicative is *low* (see points 2 and 3 in table 1.1); the head combines with the direct object and denotes a transfer-of-possession relation between the direct object and the applied argument. This proposal accounts naturally for various applicative asymmetries, including new data on the combinatorics of secondary predication with the two types of applicatives (sections 2.1.3, 2.1.4). Further, I argue that low applicatives come in two varieties: one describes a recipient relation between the indirect and direct objects and the other a source relation. It will turn out that so-called adversity constructions, which otherwise constitute a puzzling syntax-semantics mismatch, are in fact ordinary double object constructions except that they exemplify the source variety of the low applicative.

In chapter 3, I develop a theory about causativization. I argue that causative constructions are crosslinguistically *similar* in that they all involve a causative head that introduces a causing event into the semantics of the construction. Crucially, though, the causative head does not introduce an external argument; external arguments are always introduced by Voice. Crosslinguistic *variation* in causative constructions derives from two sources: (i) the syntactic dependence of Cause on Voice (section 3.3) and (ii) the size of the complement of Cause (section 3.4). Important differences in the distribution of causative constructions follow from these two parameters.