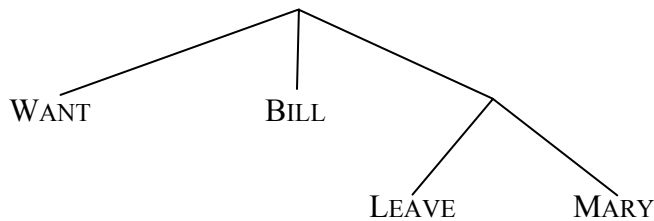
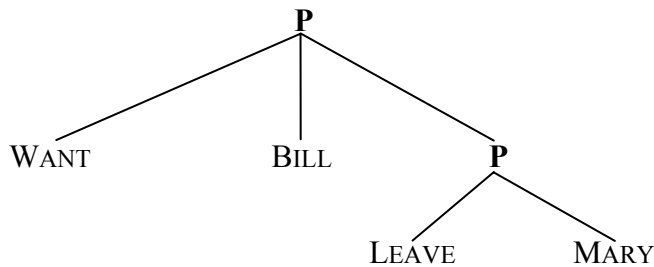


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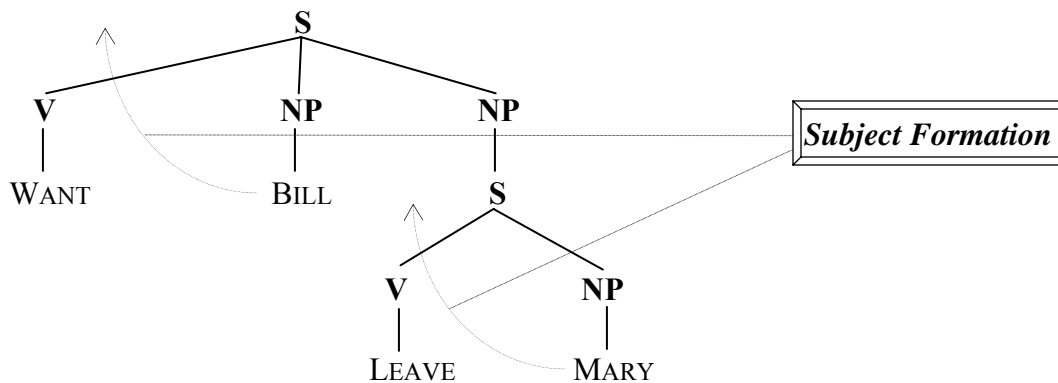
In the Logic Study Guide, we ended with a logical *tree diagram* for WANT (BILL, LEAVE (MARY)), in both unlabelled:



and labelled versions:



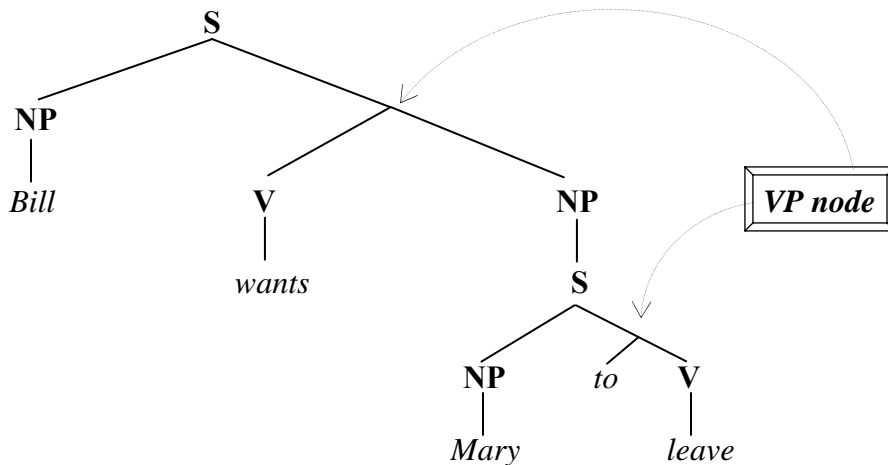
We remarked that one could label the **P**redicate and **A**rgument nodes as well, and that it was common to use *S* instead of *P* to label propositions in such logical tree structures in linguistics. It is also common, in practice, to use *V* to label Predicates, and *N* (or *NP*, standing for *Noun Phrase*) to label Arguments. This would produce the following diagram:



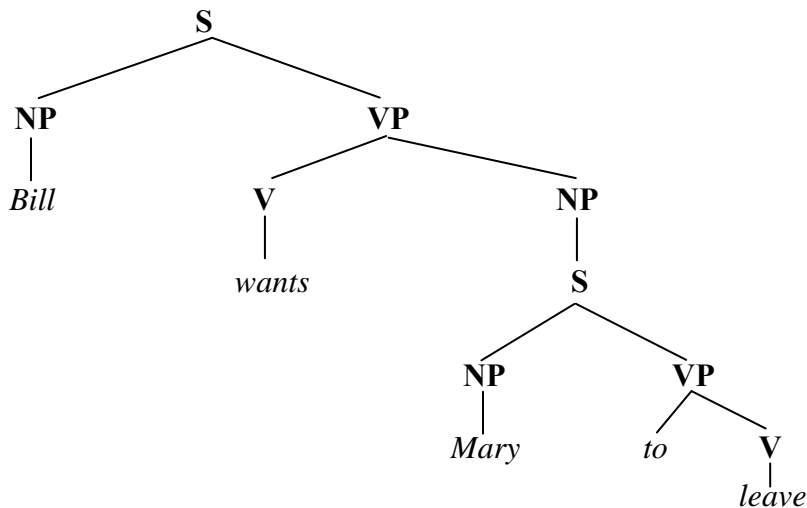
Note that, while these two predicates are in fact verbs, and the arguments are nouns, that's not always the case, and one may use **V** loosely to label any Predicate node, whatever its syntactic class might be. This kind of structural description, intermediate between logic and surface syntax, is called a **deep structure**; we say this diagram represents the deep structure of *Bill wants Mary to leave*. Roughly speaking, deep structures are intended to represent the meaning of the sentence, stripped to its essentials. The deep structures are then related to the actual sentence by a series of relational **rules**.

For instance, one such rule is that in English, there **must** be a subject NP, and it **precedes** the verb, instead of coming after it, as here. So we relate this structure with the following one by a rule of **Subject Formation**, which applies to every deep structure towards the end of the **derivation** (the series of rule applications; a number of other rules would have already applied earlier, producing the other differences). In the diagram above, the effect of Subject Formation is indicated by the curved arrows; it moves the first argument of each clause up and out of the clause, forming a new constituent:

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Subject Formation takes the first (Subject) argument NP following the V and moves it up to hang from the S node, leaving behind what remains of the initial S. The original S node is left unlabelled in this diagram, as is the original S node that remains downstairs after applying Subject Formation to the infinitive. What should we call these nodes? They're not Sentences any more; they're sentences that have lost their subject. They **are** constituents of the sentence, though, and since they are always headed by a **V**, they are traditionally labelled Verb Phrase, or **VP**. Adding these labels leads to the following diagram, which is called a **Phrase-Marker**, or the **Surface Structure**:



It's important to note that a derivation like this (of which we have seen here only the last step) is **not** intended to represent what goes on in a speaker's mind when they say the sentence; rather, it's just an abstract model, a way to keep the intermediate structures sorted out and to label the various stages in the chain of structures between the meaning, or deep structure, and the syntax, or surface structure.

The metaphor used here is as if the deep structure (the meaning) rises out of the depths of the mind like a sea monster, and transforms itself gradually as it rises, until it becomes something that can survive in the air, namely an actual piece of language, the surface structure, transformed from a chunk of thought and meaning. As Shakespeare put it, in a rather different context,

'It has suffered a sea change
Into something rich and strange.'

This is why this kind of grammatical model is often called *transformational grammar*; the individual rules that relate stages of a derivation are sometimes called *transformations*, though we will simply call them *rules*. There are lots of different rules, and different kinds of rules, but since rules are abstractions and we are concerned here with data analysis, we will mostly pay attention to the structures that provide evidence for the rules, which are called, simply, *constructions*. All syntax depends on constructions; every language has thousands of constructions, some common, some rare, and every variety in between. In English, the two most common constructions are the NP and the VP, which together make up every S; in fact, the basic structure of an English sentence is simply NP – VP. Both of these constructions have internal structure (that’s why they’re called *constructions*), and several different parts that have to come together in just the right way, ordinarily in just the right order.

Verb Phrases are the more important and the more complex of the two construction types. The predicate in a clause determines almost everything else in the clause – what can be the subject, whether there is a direct or indirect object and what kind of noun can function as either, what kinds of constructions can be used in the clause, what prepositions and adverbs can be used, what auxiliary verbs can be used, and so on. The predicate (which is usually a verb, and almost always includes some verb in its VP, even if it’s only an auxiliary like *be*) is the *head* of the VP and of the clause as a whole. No verb, no clause. At least, not in English. As I like to put it, verbs have more fun.

Noun Phrases, by contrast with VPs, are static and subordinate. Verbs are the type of word *par excellence* that indicates action, motion, and continuity in time; the German word for ‘verb’ is *Zeitwort*, which means ‘time word’. The old saw still taught to children in school is that “a noun is the name of a person, place, or thing”, while “a verb denotes action, being, or state of being”. These definitions are precisely backward. It is **not** true that all nouns or all verbs mean these kinds of things; but it *is* true that persons, places, and things are denoted by nouns, while action, being and state of being are denoted by verbs. The problem with definitions like this is that they appeal to meaning instead of grammar to define grammatical categories.

For our purposes, we will call anything a *verb* that one can use in the present or past tense (technically, we say they *take tense inflections*), and we will call anything a *noun* for which one can substitute a personal pronoun (*he, she, him, her, it*) without change in meaning. These are not perfect definitions, but they do have the advantage of being testable by any native speaker in the syntax lab, instead of requiring one to distinguish, for instance, whether *love* is a person, a place, or a thing, or whether *live* denotes ‘action’, ‘being’, or ‘state of being’.

The rest of this study guide is about VPs. Verb Phrases, being clauses (sentences) without a subject, normally begin with a Verb node on the left. More often than not, this initial verb is an *auxiliary verb*. Auxiliaries fall into several categories; English is changing and one of the most obvious changes of the last few centuries has been the multiplication of auxiliary verb group constructions. However, there are four canonical categories of auxiliary verb that can occur, alone or together, in an *auxiliary verb chain*, before the main verb of a verb phrase; each must be followed by a particular form of the **next** verb, whether that next verb is the main verb or another auxiliary verb in the chain.. In their order of appearance, these are:

1. **Modal Auxiliary Verbs**: *may, might, can, could, shall, should, will, would, must* modal auxiliaries must be followed by an *infinitive* verb form.

Bill might be here. Mary can go now.

(*be* and *go* are infinitive verb forms)

[for more about modal auxiliary verbs, see <http://www.umich.edu/~jlawler/ae/modals.html>]

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2. **have**, the **Perfect** auxiliary; *have* must be followed by a **past participle** verb form
Bill has gone already. Bill might have left already.
(gone and left are past participle verb forms; the have in *might have* is an infinitive)
3. **be**, the **Progressive** auxiliary; this *be* must be followed by a **present participle** form
Bill is leaving now. Mary has been driving the car. Bill might have been sleeping.
(leaving, driving, and sleeping are present participles; been is a past participle)
4. **be**, the **Passive** auxiliary; **this** *be* must be followed by a **past participle** form
Bill was seen with Mary. Bill has been seen with Mary.
Bill has been being seen with Mary since January.
Bill might have been being seen with Mary even before then.
Bill is not being seen with Mary these days.
Bill might be seen with Mary again soon.

Note that there are two different auxiliary uses of *be*: the progressive, which follows it with a present participle, and the passive, which follows it with a past participle. It is the form of the following verb that we use to tell the difference between the two constructions. Passive is a little different from the other auxiliaries – there are other considerations in the passive beyond the auxiliary and verb form. Passive is a rule that relates an transitive active sentence with an intransitive passive sentence, in which, besides the use of auxiliary *be* followed by the past participle of the main verb, the active direct object becomes the passive subject, the active subject shows up in the passive, if at all, in a prepositional phrase with *by*, and there is no change in meaning despite these massive changes in structure:

The Acme Construction Co. erected this building in 1980.

Passive ↔ *This building was erected by the Acme Construction Co. in 1980.*

These canonical auxiliary verbs must occur in the order specified, and each must be followed by the correct form of the next verb in sequence. The first verb in the verb phrase of a main clause **must** be marked for tense – i.e, it must be either present or past tense; this applies to main verbs if there are no auxiliaries, or to the first auxiliary if there are. (Except for modal auxiliary verbs, which have no tense markings (they are called **defective** verbs because they lack these tense forms, as well as participles and infinitives); as we will see, modal auxiliaries are exceptional in practically every way.) In all the examples above, the **first** auxiliary verb (the un-underlined verb) was either present tense or past tense, or a modal auxiliary.

This **first auxiliary verb** position is a very important one in English, since many syntactic rules require something to happen to the first auxiliary verb, and may require there to **be** a first auxiliary verb even if the sentence doesn't have one. Consider what happens when sentences with auxiliary verbs in them get used with a negative, or get formed into a *yes/no* question (i.e, a question that can be answered with *yes* or *no*; there are several other kinds of question):

Bill was living on Elm Street.

(progressive auxiliary verb *was* in past tense; present participle *living*)

Negative ↔ *Bill wasn't living on Elm Street.*

(past tense auxiliary *was* takes negative)

Question ↔ *Was Bill living on Elm Street?*

(auxiliary *was* inverted for question)

Bill has been living on Elm Street.

(perfect auxiliary verb *has* in present tense)

Negative ↔ *Bill hasn't been living on Elm Street.*

(present tense auxiliary *has* takes negative)

Question ↔ *Has Bill been living on Elm Street?*

(auxiliary *has* inverted for question)

Consider, by contrast, what happens when there **is** no auxiliary verb:

Bill lives on Elm Street.

(no auxiliary verb; main verb *lives* in present tense)

Negative ↔ *Bill doesn't live on Elm Street.*

(auxiliary *does* in present tense takes negative, with infinitive *live*)

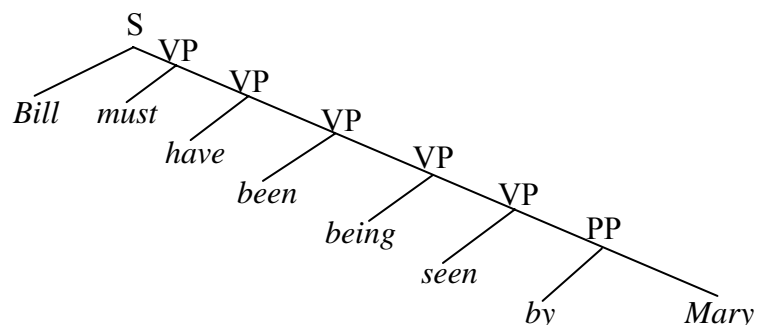
Question ↔ *Does Bill live on Elm Street?*

(inverted present tense *does* required for question, with infinitive *live*)

Where did the *does* come from above? In both cases, it is **inserted** by a rule which requires the presence of at least one auxiliary verb in the VP: respectively, the rules of **Negative Formation** (which requires that a negative word come after the first auxiliary verb), and of **Yes/No Question Formation** (which requires that the first auxiliary verb appear inverted, **before** the subject, at the beginning of a *yes/no* question). This process is called **Do-Support**; the basic idea is that sometimes an auxiliary verb is required, and if so, a present or past form of *do* is supplied, free of charge.

Do-support do (there are several other kinds of auxiliary *do* constructions; *do-support do* is the most common), like a modal auxiliary, must be followed by an infinitive form of the main verb; unlike a modal, however, it **is** inflected for present or past tense. *Do-support do* has no meaning, and there is no meaning change in a sentence from *do-support*. Since *do-support* only occurs in cases where there are no other auxiliaries, this auxiliary *do* never occurs in the multiple sequences of the other (Modal, *have*, and *be*) auxiliaries discussed above; it's a parallel construction.

A question arises about how such constructions as auxiliary verbs and verb chains ought to be represented in tree diagrams. There are several ways to handle these, but the simplest one, which we will use, is to simply treat each verb as the head of its own VP node, so that in *Bill must have been being seen by Mary* the auxiliary verb chain would have the tree structure:



In principle, there is only one VP per S, but clauses can be broken up and merged with one another by a number of processes, and the construction of auxiliary verbs and verb chains is one such. These verbs may be on the way to becoming verbal prefixes; in generations, auxiliaries often get reduced and attached to the words they modify, until all that is left is a suffix (from auxiliaries that follow) or prefix (from those that precede). This is the origin, for instance, of the future tense in French and Spanish.

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There are many, many other auxiliary constructions in English besides *do*-support and canonical verb chains. Here is a list of some VP constructions that everybody is familiar with; there are plenty more, many with special pronunciations that are unique to the construction:

<i>I had to go</i>	/ayhæ̀rə̀go/
<i>I used to go</i>	/ayústə̀go/
<i>I am used to going</i>	/amyústə̀gowən/
<i>I used to be used to going</i>	/ayústə̀biyústə̀gowən/
<i>I am going to be used to going</i>	/amgónə̀biyústə̀gowən/
<i>I was going to go</i>	/awə̀zgónə̀go ~ awə̀zgówənə̀go/
<i>I might have had to go</i>	/aymà̀yrə̀hæ̀dtə̀go/
<i>I had been going to go</i>	/aydbɪ̀ngówənə̀go/
<i>I might have been going to go</i>	/aymà̀yrə̀bɪ̀ngówənə̀go/
<i>I had had to go</i>	/aydhæ̀dtə̀go/
<i>I used to have to go</i>	/ayústə̀hæ̀ftə̀go/
<i>I was going to have to go</i>	/awə̀zgənə̀hæ̀ftə̀go/
<i>I have got to go</i>	/aygá̀rə̀go/
<i>I want to go</i>	/aywánə̀go/
<i>I don't want to go</i>	/arṑwánə̀go/
<i>I have got to want to go</i>	/aygá̀rə̀wánə̀go/
<i>I ought to go</i>	/ayó̀rə̀go/
<i>I ought to want to go</i>	/ayó̀rə̀wánə̀go/
... etc.	

These come from several different sources (some of which are preserved in the way they're written), and they have different meanings and uses, and they're at several different stages on the road from independent clause to auxiliary construction; but they illustrate just how complex VP constructions have become in English.

As an exercise, try to isolate each construction that appears in the list above, give it a name (e.g. the *have to* construction), mention any oddities about its pronunciation, and indicate what it means, what must follow it, and what it can combine with.

We will return to these constructions presently; for now, let us consider what else is in the VP besides the main verb and its auxiliaries. One thing is the direct object and another is the indirect object; these are the non-subject arguments of transitive and bitransitive predicates. Everybody knows there's a difference between the subject and the objects, but few can articulate these differences. That's not surprising, because there is no consistent relation between the subject and the object *per se*, but rather there are relations between the subject and the verb, and between the object(s) and the verb. Some of these relationships are reasonably regular and predictable: subjects of verbs that denote actions tend to be agents of those actions, while subjects of predicates denoting states tend to be experiencers of those states. Indirect objects of bitransitive verbs, which ordinarily refer to an event of transfer, are goal of transferred things, which show up as direct objects, while the subject is the agent and source.

But the relationship between a transitive predicate and its direct object varies significantly, depending on the nature of the predicate. About the only generalization that can be made is that the direct object is ordinarily **affected** by whatever the predicate refers to. Thus the direct object of a verb denoting a bodily action like *kick*, *hit*, or *touch* refers to the 'target' of the action by the subject, while the direct object of a verb denoting a sensation like *see*, *fear*, or *learn* refers to something that causes the sensation in the subject; each individual verb has its own individual relation with its object(s).

For example, consider the different roles that *the ball* plays in the following:

- *Bill kicked the ball.* [affected patient]
- *Bill made the ball.* [created thing]
- *Bill saw the ball.* [sensory percept]
- *Bill mentioned the ball.* [conceptual topic]
- *Bill remembered the ball.* [experiential percept]
- *Bill feared the ball.* [emotional percept]
- *Bill wanted the ball.* [motivational goal]

In these sentences (and it would be easy to go on for many, many more) *the ball* sometimes refers to a physical object, sometimes to the sensory image of a physical object, and sometimes to an abstract mental concept. Each of these is further qualified by how it is affected or how it is related to the subject by virtue of the meaning of the verb. The precise nature of the relation of direct object is determined by the verb; in effect, it is part of the meaning of the verb. It is for this reason that the direct object is considered part of the Verb Phrase, while the subject is not. In terms of the tree structure, this is shown by the independent status of the subject NP, directly under the S node, while the object NP is directly under the VP node.

As an exercise, construct another dozen sentences like those above, using other possible objects, like personal names, collective nouns, or place names. What other kinds of direct object relation can you find? Try to construct pairs of sentences with the **same** kind of direct object; in such cases, what can you say about the pair of verbs involved?

The direct object NP usually follows the main verb, which is at the end of the auxiliary verb chain. The object and the main verb are very tightly bound; even words like adverbs that can go almost anywhere in the sentence can't come between the main verb and the direct object:

- *Yesterday Bill kicked the ball.*
- *Bill rarely kicked the ball.*
- *Bill kicked the ball savagely.*
- **Bill kicked yesterday the ball.*
- **Bill kicked rarely the ball.*
- **Bill kicked savagely the ball.*

(Incidentally, the convention in syntax is to mark ungrammatical sentences with an **asterisk**, like the last three sentences above; this is done to demonstrate when application of a rule to a given construction is not allowed. Creating sentences by application of rules is part of studying grammar, and it is important to be able to tell where rules apply and where they don't; hence the convention of generating – but marking – ungrammatical sentences.)

The other argument that sometimes occurs in the VP is the **indirect object**. Indirect objects can only occur with bitransitive predicates, just as direct objects can only occur with transitive predicates. Bitransitive predicates, as noted before, all refer to some kind of **transfer**, either physical (*I tossed the ball to Bill*) or communicational (*I told the story to Bill*), of a **trajector** (denoted by the direct object) from a **source** (denoted by the subject) to a **goal** (denoted by the indirect object). It is almost always the case that the indirect object in a clause refers to a **person**, since most verbs of transfer refer to transfers between people.

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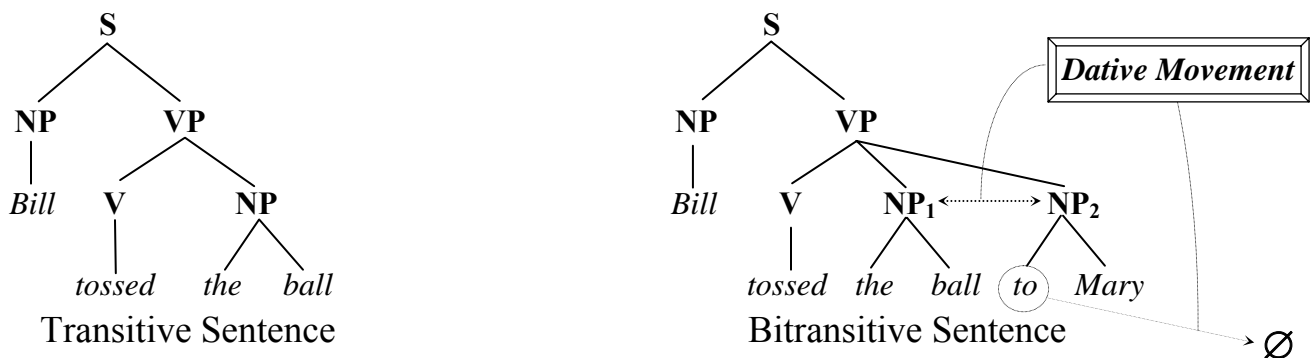
Indirect objects can occur with direct objects in two different constructions. One puts the direct object **before** the indirect object, and marks the indirect object with the preposition *to*; the other puts the direct object **after** the indirect object, and just uses the two noun phrases:

I tossed the ball to Bill. ~ *I tossed Bill the ball.*
I told the story to Bill. ~ *I told Bill the story.*

This is an example of an **alternation**; that is, a systematic relation between two different constructions that mean the same thing. We say these two constructions alternate – one can use either. Alternations are always **governed** by a verb – in this case, they are governed by all (or almost all) bitransitive verbs – which means that it is the verb, and the type of verb, that determines whether the alternation is possible. An alternation can define a rule that changes one of the constructions into the other; this particular alternation is called the **Dative Alternation**, and the rule that changes the first construction into the second is variously called **Dative**, **Dative Movement**, or **Goal Advancement**.

(This is probably a good place to point out that there are many, many theories of syntax that are called *generative* by various people. They have proliferated since the original advent of generative grammar in 1956, and now, after a half-century of heresy and schism, they constitute a mutually incompatible and totally incomprehensible spectrum of terms, rules, axioms, claims, and counterclaims. Since our purpose is to describe and explain English grammar, using only terminology necessary to describe the phenomena we are considering, we will ignore most of them here. I mention alternative terms only to show that they refer to the same phenomena.)

Since both versions of the Dative alternation mean the same thing, it's important to note that the goal NP in both cases can be called the indirect object; its position doesn't change its grammatical role. However, this does pose a problem for our tree structures, since one or the other order of direct and indirect object ought to be chosen as the basic one, just to be consistent. Consequently, we will somewhat arbitrarily choose the first order – the one with *to* – as the basic one, thus will denoting the structures of both transitive and bitransitive clauses with the direct object immediately following the main verb. The indirect object will then follow the direct object, thus:



Note that the indirect object node in the tree diagram on the right is marked as *NP₂*, even though it is obviously a prepositional phrase (*PP*). *PP* would be one acceptable label for this node, but I have chosen to label it as an NP for two reasons: (1) it functions as an NP, the indirect object of the clause, and (2) the preposition *to* disappears under the Dative alternation. Labelling it as a *PP* would draw attention to the preposition, which is dispensable, instead of the grammatical relation of indirect object NP. The purpose of tree diagrams is to point out the important relations, rather than to be some kind of complete accounting of all the minor details. In general, prepositional phrases in English mostly function as (specially-marked) NPs, and we will often simply call them NPs. Under this analysis, then, Dative movement simply deletes the preposition *to* from *NP₂* (indicated by the **Zero** marker '∅') and exchanges the positions of *NP₁* and *NP₂* (indicated by the double-headed arrow).

We now have a conventional representation for all three arguments of a proposition. Recall that there are never more than three: subject, direct object, indirect object. Every sentence has a subject in English, transitive sentences have direct objects as well, and bitransitive sentences have both subject and direct object, plus an indirect object, all portraying transfer of some real or abstract trajector from source to goal. These three categories of NPs in a clause are called **grammatical relations**, to distinguish them from all other uses of NPs, like apposition or object of preposition; indeed, some syntactic theories, like **Relational Grammar**, simply call Subject, Direct Object, and Indirect Object **1**, **2**, and **3**, respectively, because they are considered **so** basic.

Ramifications of this scheme fall into two categories: (a) other parts of the VP, that **don't** bear grammatical relations, and (b) extensions of one of the grammatical relations, such as having a clause instead of a simple NP as the subject or direct object. We will deal with category (b) in a separate study guide on Complements. Here we will take up category (a), which largely consists of adverbials.

Adverbs have long been called a 'wastebasket' category in syntax. Their definition is very general: adverbs are distinguished from adjectives – which modify nouns – by saying they 'modify verbs, adjectives, or other adverbs'; to this one can add that they modify phrases and clauses as a whole. If something doesn't fit nicely in some other word class, it generally gets lumped in as an adverb of some sort. Traditionally, **adverbs** (and **adverbials**, which means 'any chunk that acts like an adverb' – not a terribly precise definition) represent qualifications and afterthoughts to ordinary propositions. If an clause, for instance, describes an event (the prototype situation), then that event **must** have taken place at some **time**, in some **place**, and under some **circumstances**; these may or may not be mentioned in the clause, and they may or may not be important to understanding it. If they are, then one may use some kind of adverb or adverbial to denote them.

Besides these **essential** adverbials, which in principle may be added to **any** sentence to describe place, time, or circumstance, there are also **specific** adverbials that describe other, special, kinds of qualifications that are not part of any and every event. One of the differences between the two kinds of adverbials is what happens to them with negation. If the adverbial is **not** essential, but rather specific, then negating it **doesn't** negate the whole sentence, and fronting the negative adverbial **doesn't** govern subject-verb inversion:

<i>I didn't make that for any reason.</i>	~	<i>*For no reason did I make that.</i>
<i>I didn't make that in any manner.</i>	~	<i>*In no manner did I make that.</i>
<i>I didn't make that with any instrument.</i>	~	<i>*With no instrument did I make that.</i>

However, if the adverbial **is** essential, then negating it **does** serve to negate the whole sentence, and fronting the negative adverbial **does** govern subject-verb inversion:

<i>I didn't make that at any time.</i>	~	<i>At no time did I make that.</i>	~	<i>Never did I make that.</i>
<i>I didn't make that at any place.</i>	~	<i>At no place did I make that.</i>	~	<i>Nowhere did I make that.</i>
<i>I didn't make that in any way</i>	~	<i>In no way did I make that.</i>	~	<i>No way did I make that.</i>
<i>I didn't make that under any circumstances</i>	~	<i>Under no circumstances did I make that.</i>		

Both of these kinds of adverbials can be considered constituents of the VP. Their placement in the tree structure is somewhat arbitrary, since they may in fact occur in a number of positions in the actual sentence. However, all of them do often occur at the end of the sentence – as afterthoughts, usually – and that is a traditional place to put them in diagrams, treating other positions as derived by movement rules. Since adverbs are largely unplumbed mysteries in English grammar, this solution will do as well as any other for our purposes.