Semantics

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chapter 5

Sentence Semantics 1: Situations

5.1 Introduction

In chapter 3 we discussed aspects of word meaning. In this chapter we investigate some aspects of meaning that belong to the level of the sentence. One aspect is the marking of time, known as **tense**. How this is marked varies from language to language: it might be marked on a verb in languages like English or by special time words as in Chinese, as shown in 5.1a–c below:[1]

5.1   a.   Tā xiànzài yǒu kè
            he now   have classes
            'He now has classes.'
      b.   Tā zuótian   yǒu kè
            he yesterday have classes
            'He had classes yesterday.'
      c.   Tā míngtian yǒu kè
            he tomorrow have classes
            'He will have classes tomorrow.'
                 (Tiee 1986: 90)

Here the verb *you* 'has/have' does not change form: the time reference is given by the time words, *xiànzài* 'now', *zuótian* 'yesterday' and *míngtian*

'tomorrow'. We can compare this with the English translations where the verb *have* changes for tense to give the forms, *have*, *had* and *will have*.

However it is marked, the location in time identified by tense belongs not to a single word but to the whole sentence. Take for example the English sentence 5.2 below:

5.2   Hannibal and his armies brought elephants across the Alps.

Though it is the verb *bring* which carries the morphological marker of tense, it seems sensible to say that the whole event described belongs in the past. In this chapter we will look at a number of semantic categories which, like tense, belong at the sentence level and which can be seen as ways that languages allow speakers to construct different views of situations. We begin by looking in section 5.2 at how languages allow speakers to classify situations by using semantic distinctions of **situation type, tense** and **aspect**. Then in section 5.3 we look at how systems of **mood** and **evidentiality** allow speakers to adopt differing attitudes towards the factuality of their sentences. Each of these are sentence-level semantic systems which enable speakers to organize descriptions of situations.

5.2 Classifying Situations

5.2.1 Introduction

We can identify three important dimensions to the task of classifying a situation in order to talk about it. These dimensions are **situation type, tense** and **aspect**. Situation type, as we shall see in section 5.2.2, is a label for the typology of situations encoded in the semantics of a language. For example, languages commonly allow speakers to describe a situation as static or unchanging for its duration. Such **states** are described in the following examples:

5.3   Robert loves pizza.

5.4   Mary knows the way to San José.

In describing states the speaker gives no information about the internal structure of the state: it just holds for a certain time, unspecified in the above examples. We can contrast this with viewing a situation as involving change, e.g.

5.5   Robert grew very quickly.

5.6   Mary is driving to San José.

These sentences describe **dynamic** situations. They imply that the action has subparts: Robert passed through several sizes and Mary is driving through various places on the way to San José.

This distinction between static and dynamic situations is reflected in the choice of lexical items. In English, for example, adjectives are typically used for states and verbs for dynamic situations. Compare the states in the a examples below with the dynamic situations in the b sentences:

5.7   a.   The pears are ripe.
        b.   The pears ripened.

5.8   a.   The theatre is full.
        b.   The theatre filled up.

This is not an exact correlation, however: as we saw above there are a number of **stative verbs** like *be, have, remain, know, love* which can be used to describe states, e.g.

5.9   The file **is** in the computer.

5.10   Ann **has** red hair.

5.11   You **know** the answer.

5.12   The amendment **remains** in force.

5.13   Jenny **loves** to ski.

We will say that adjectives and stative verbs are inherently static, i.e. that it is part of their lexical semantics to portray a static situation type.

We have already briefly mentioned the dimension of **tense**. As we will describe in section 5.2.3, many languages have grammatical forms, such as verb endings, which allow a speaker to locate a situation in time relative to the 'now' of the act of speaking or writing. **Aspect** is also a grammatical system relating to time, but here the speaker may choose how to describe the internal temporal nature of a situation. If the situation is in the past, for example, does the speaker portray it as a closed completed event, as in 5.14 below, or as an ongoing process, perhaps unfinished, as in 5.15?

5.14   David wrote a pornographic novel.

5.15   David was writing a pornographic novel.

This is a difference of aspect, usually marked as with tense by grammatical devices. Tense and aspect are discussed together in section 5.2.4 and we

discuss the problems of comparing the aspectual systems of different languages in 5.2.5. Finally section 5.2.6 is a brief look at how these dimensions combine to allow speakers to portray different situations.

5.2.2   Verbs and situation types

We saw in the last section that certain lexical categories, in particular verbs, inherently describe different situation types. Some describe states, others are dynamic and describe processes and events. In this section we describe elements of the meaning of verbs which correlate to differences of situation type.

Stative verbs   In the last section we saw examples of inherently stative verbs like *be, have, know* and *love*. These verbs allow the speaker to view a situation as a steady state, with no internal phases or changes. Moreover the speaker does not overtly focus on the beginning or end of the state. Even if the speaker uses a stative in the past, e.g.

5.16   Mary loved to drive sports cars.

no attention is directed to the end of the state. We do not know from 5.16 if or how the state ended: whether Mary's tastes changed, or she herself is no longer around. All we are told is that the relationship described between Mary and sports cars existed for a while. We can contrast this with a sentence like 5.17 below, containing a dynamic verb like *learn*:

5.17   Mary learned to drive sports cars.

Here the speaker is describing a process and focusing on the end-point: at the beginning Mary didn't know how to drive sports cars, and at the end she has learnt. The process has a conclusion.

Stative verbs display some grammatical differences from dynamic verbs. For example, in English progressive forms can be used of dynamic situations like 5.18a below but not states like 5.18b:

5.18   a.   I am learning Swahili.
        b.   *I am knowing Swahili.

As noted by Vlach (1981), this is because the progressive aspect, marked by *-ing* above, has connotations of dynamism and change which suits an activity like *learn* but is incompatible with a stative verb like *know*. We discuss the English progressive in sections 5.2.3 and 5.2.5 below.

Similarly it usually sounds odd to use the imperative with statives; we can compare the following:

5.19   a.   Learn Swahili!
        b.   ?Know Swahili!

Once again, we can speculate that imperatives imply action and dynamism, and are therefore incompatible with stative verbs.

It may be, however, that the distinction between state and dynamic situations is not always as clear-cut. Some verbs may be more strongly stative than others; *remain* for example, patterns like other stative verbs in not taking the progressive, as in 5.20b below, but it does allow the imperative, as in 5.20c:

5.20   a.   The answer remains the same: no!
        b.   *The answer is remaining the same: no!
        c.   Remain at your posts!

It is important too to remember that verbs may have a range of meanings, some of which may be more stative than others. We can contrast the stative and non-stative uses of *have*, for example, by looking at how they interact with the progressive:[2]

5.21   a.   I have a car.
        b.   *I am having a car.
        c.   I am having second thoughts about this.

5.22   a.   She has a sister in New York.
        b.   *She is having a sister in New York.
        c.   She is having a baby.

Dynamic verbs   **Dynamic** verbs can be classified into a number of types, based on the semantic distinctions **durative/punctual** and **telic/atelic** which we will discuss below. These different verb types correlate to different dynamic situation types. One possible distinction within dynamic situation types, for example, is between **events** and **processes**. In events, the speaker views the situation as a whole, e.g.

5.23   The mine blew up.

while in a process, we view, as it were, the internal structure of a dynamic situation, e.g.

5.24   He walked to the shop.

Processes can be subdivided into several types, for example **inchoatives** and **resultatives**. Inchoatives are processes where our attention is directed to the beginning of a new state, or to a change of state, e.g.

5.25   The ice melted.

5.26   My hair turned grey.

Resultatives are processes which are viewed as having a final point of completion: our attention is directed to this end of the process, e.g.

5.27   Ardal baked a cake.

5.28   Joan built a yacht.

One difference between these types concerns interruption. If the action of melting is interrupted in 5.25 or my hair stops turning grey in 5.26, the actions of melting and turning grey can still be true descriptions of what went on. However if Ardal in 5.27 and Joan in 5.28 are interrupted halfway, then it is no longer true to describe them as having baked a cake or built a yacht. In some sense, to use resultatives we have to describe a successful conclusion. In this section we look at two important semantic distinctions in verbs which underlie these different dynamic situation types.

The first distinction is between **durative** and **punctual**: **durative** is applied to verbs which describe a situation or process which lasts for a period of time, while **punctual** describes an event that seems so instantaneous that it involves virtually no time. A typical comparison would be between the punctual 5.29 and the durative 5.30:

5.29   John coughed.

5.30   John slept.

What matters, of course, is not how much time an actual cough takes but that the typical cough is so short that conventionally speakers do not focus on the internal structure of the event.

In Slavic linguistics the equivalent of verbs like *cough* are called **semelfactive** verbs, after the Latin word *semel*, 'once'. This term is adopted for general use by C. S. Smith (1991), Verkuyl (1993) and other writers. Other semelfactive verbs in English would include *flash, shoot, knock, sneeze* and *blink*. One interesting fact is that in English a clash between a semelfactive verb and a durative adverbial can trigger an **iterative** interpretation, i.e. where the event is assumed to be repeated for the period described, e.g.

5.31   Fred coughed all night.

5.32   The drunk knocked for ten minutes.

5.33   The cursor flashed until the battery ran down.

In each of these examples the action is interpreted as being iterative: 5.31 is not understood to mean that Fred spent all night uttering a single drawn-out cough!

The second distinction is between **telic** and **atelic**. **Telic** refers to those processes which are seen as having a natural completion. Compare for example:

5.34   a.   Harry was building a raft.
       b.   Harry was gazing at the sea.

If we interrupt these processes at any point then we can correctly say:

5.35   Harry gazed at the sea.

but we cannot necessarily say:

5.36   Harry built a raft.

As we saw earlier, telic verbs are also sometimes called **resultatives**. Another way of looking at this distinction is to say that *gaze* being atelic can continue indefinitely, while *build* has an implied boundary when the process will be over.

It is important to recognize that although verbs may be inherently telic or atelic, combining them with other elements in a sentence can result in a different aspect for the whole, as below:

5.37   a.   Fred was running. (atelic)
       b.   Fred was running in the London Marathon. (telic)

5.38   a.   Harry was singing songs. (atelic)
       b.   Harry was singing a song. (telic)

This telic/atelic distinction interacts with aspectual distinctions: for example, a combination of either the English perfect or simple past with a telic verb will produce an implication of completion. Thus, as we have seen, both 5.39 and 5.40 entail 5.41:

5.39   Mary painted my portrait.

5.40   Mary has painted my portrait.

5.41   The portrait is finished.

However, the combination of a progressive aspect and a telic verb, as in 5.42 below, does not produce this implication: 5.42 does not entail 5.41 above:

5.42   Mary was painting my portrait.

Comrie (1976) gives examples of derivational processes which can create telic verbs from atelic verbs, e.g. the German pairs in 5.43:

5.43   a.   *essen* 'eat', *aufessen* 'eat up'
       b.   *kämpfen* 'fight', *erkämpfen* 'achieve by fighting'

He contrasts the following sentences:

5.44   a.   die Partisanen haben für die Freiheit ihres Landes gekämpft.
       b.   die Partisanen haben die Freiheit ihres Landes erkämpft.
             'The partisans have fought for the freedom of their country.'
                                                            (Comrie 1976: 46–7)

where 5.44b implies that their fight was successful while 5.44a does not.

5.2.3   A system of situation types

Speakers use their knowledge of these semantic distinctions – stative/dynamic, durative/punctual, telic/atelic – to draw distinctions of situation type. We have seen that some verbs, like *paint*, *draw* and *build*, are inherently telic while others like *talk*, *sleep* and *walk* are atelic. Similarly some verbs are inherently stative, like *know*, *love* and *resemble*, while others, like *learn*, *die* and *kill*, are non-stative. We have also seen from examples like 5.37 and 5.38 above that while these distinctions are principally associated with verbs, combining a verb with other elements in a sentence, like object noun phrases and adverbials, can alter the situation type depicted.

The task for the semanticist is to show how the inherent semantic distinctions carried by verbs, and verb phrases, map into a system of situation types. One influential attempt to do this is Vendler (1967). Below are the four kinds of situations he identified, together with some English verbs and verb phrases exemplifying each type (Vendler 1967: 97–121):

5.45   a.   States
             desire, want, love, hate, know, believe
       b.   Activities (unbounded processes)
             run, walk, swim, push a cart, drive a car
       c.   Accomplishments (bounded processes)
             run a mile, draw a circle, walk to school, paint a picture, grow up, deliver a sermon, recover from illness
       d.   Achievements (point events)
             recognize, find, stop, start, reach the top, win the race, spot someone

C. S. Smith (1991), building on Vendler's system, adds the situation type **semelfactive**, distinguishing it from achievements as follows:

5.46   *Semelfactives* are instantaneous atelic events, e.g. [knock], [cough].
        Achievements are instantaneous changes of states, with an outcome of
        a new state, e.g. [reach the top], [win a race].   (Smith 1991: 28)

She identifies three semantic categories or features: [stative], [telic] and
[duration], with roughly the characteristics we have already described, and
uses these to classify five situation types, as follows (1991: 30):

5.47

Situations	Static	Durative	Telic
States	[+]	[+]	n.a.
Activity	[–]	[+]	[–]
Accomplishment	[–]	[+]	[+]
Semelfactive	[–]	[–]	[–]
Achievement	[–]	[–]	[+]

We can provide examples of each situation type, as follows:

5.48   She hated ice cream.   (State)

5.49   Your cat watched those birds.   (Activity)

5.50   Her boss learned Japanese.   (Accomplishment)

5.51   The gate banged.   (Semelfactive)

5.52   The cease-fire began at noon yesterday. (Achievement)

It is important to remember that these situation types are interpretations of
real situations. Some real situations may be conventionally associated with
a situation type; for example, it seems unlikely that the event described in
5.53 below would be viewed other than as an accomplishment:

5.53   Sean knitted this sweater.

Other situations are more open, though: 5.54 and 5.55 below might be used
of the same real-world situation, but give two different interpretations of it:
5.54 as an activity and 5.55 as a state:

5.54   Sean was sleeping.

5.55   Sean was asleep.

5.2.4 Tense and aspect

Tense and aspect systems both allow speakers to relate situations to time,
but they offer different slants on time. Tense allows a speaker to locate a

chapter 6

Sentence Semantics 2: Participants

6.1 Introduction: Classifying Participants

In the last chapter we looked at aspects of sentence-level semantics: how speakers may choose to characterize situations and express various degrees of commitment to the portrayal. Another set of semantic choices which face a speaker seeking to describe a situation concerns how to portray the roles of any entities involved. Take for example 6.1 below:

6.1   Gina raised the car with a jack.

This sentence identifies three entities, *Gina, the car* and *a jack,* related by the action described by the verb *raise.* The sentence portrays these entities in specific roles: Gina is the entity responsible for initiating and carrying out the action, the car is acted upon and has its position changed by the action, and the jack is the means by which Gina is able to cause the action. Such roles have a number of labels in semantics, including participant roles (Allan 1986), deep semantic cases (Fillmore 1968), semantic roles (Givón 1990), thematic relations (Gruber 1976; Jackendoff 1972) and thematic roles (Dowty 1986, 1989, 1991; Jackendoff 1990). Given its wide usage in recent work, we will use the last term here: **thematic roles**.

In this chapter we examine this notion of thematic roles. We begin by sketching the basic picture of these roles that seems to be assumed by much

of the syntax and semantics literature. Thus in sections 6.2–6.4 we outline the main contenders for individual types of roles, look at the relationship between thematic roles and grammatical relations, and discuss the idea that verbs must have their thematic role requirements listed in the lexicon. In the second part of the chapter we look more critically at the idea of thematic roles: first, in section 6.5, we review criticisms that have been levelled at the notion. Then in 6.6 we review the job these roles do in linguistic description. In the third and final part of the chapter, section 6.7, we investigate **voice** systems and see how they allow speakers some flexibility in the relationship between thematic roles and grammatical structure: we focus on **passive** voice and **middle** voice.

6.2 Thematic Roles

Each of the writers mentioned above, and others, for example Andrews (1985) and Radford (1988), have proposed lists of thematic roles. From this extensive literature we can extract a list of thematic roles like the following (where the relevant role-bearing nominal is in bold):

AGENT: the initiator of some action, capable of acting with volition, e.g.

6.2   **David** cooked the rashers.

6.3   **The fox** jumped out of the ditch.

PATIENT: the entity undergoing the effect of some action, often undergoing some change in state, e.g.

6.4   Enda cut back **these bushes**.

6.5   The sun melted **the ice**.

THEME: the entity which is moved by an action, or whose location is described, e.g.

6.6   Roberto passed **the ball** wide.

6.7   **The book** is in the library.

EXPERIENCER: the entity which is aware of the action or state described by the predicate but which is not in control of the action or state, e.g.

6.8   **Kevin** felt ill.

6.9   **Mary** saw the smoke.

6.10   **Lorcan** heard the door shut.

BENEFICIARY: the entity for whose benefit the action was performed, e.g.

6.11   Robert filled in the form for **his grandmother**.

6.12   They baked **me** a cake.

INSTRUMENT: the means by which an action is performed or something comes about, e.g.

6.13   She cleaned the wound with **an antiseptic wipe**.

6.14   They signed the treaty with **the same pen**.

LOCATION: the place in which something is situated or takes place, e.g.

6.15   The monster was hiding **under the bed**.

6.16   The band played **in a marquee**.

GOAL: the entity towards which something moves, either literally as in 6.17 or metaphorically as in 6.18:

6.17   Sheila handed her licence **to the policeman**.

6.18   Pat told the joke **to his friends**.

SOURCE: the entity from which something moves, either literally as in 6.19 or metaphorically as in 6.20:

6.19   The plane came back **from Kinshasa**.

6.20   We got the idea **from a French magazine**.

Thus to return to our first example, repeated below:

6.21   Gina raised the car with a jack.

we can describe the thematic roles by calling *Gina* the AGENT of the action, *the car* the THEME, and *the jack* the INSTRUMENT.

There is some variation in the use of these terms: for example Radford (1988) treats PATIENT and THEME as different names for the same role. Here we adopt the distinction that PATIENT is reserved for entities acted upon and changed by the verb's action while THEME describes an entity moved in literal or figurative space by the action of the verb, but constitutionally unchanged. Thus the noun phrase *the rock* would be a PATIENT in 6.22 below but a THEME in 6.23:

6.22   Fred shattered **the rock**.

6.23   Fred threw **the rock**.

A number of tests for identifying thematic roles have been suggested. Jackendoff (1972), for example, provides a test for AGENT: whether the phrases like *deliberately, on purpose, in order to*, etc. can be added to the sentence. This reflects the fact that an AGENT characteristically displays animacy and volition. The contrast between 6.24 and 6.25 below identifies John as an AGENT in 6.24 but not 6.25:

6.24   **John** took the book from Bill in order to read it.

6.25   ?**John** received the book from Bill in order to read it.

Some writers (e.g. Foley and Van Valin 1984, Jackendoff 1990) have suggested that AGENT is a particular type of a more general thematic role ACTOR, where ACTOR 'expresses the participant which performs, effects, instigates, or controls the situation denoted by the predicate' (Foley and Van Valin 1984: 29). So every AGENT is an ACTOR, but not the other way round: in 6.26 below *the car* is an ACTOR but not AGENT since it presumably is in possession neither of a wish to kill nor to animate:

6.26   **The car** ran over the hedgehog.

Other simple tests suggested by Jackendoff (1990) include predicting that for an ACTOR (X) it will make sense to ask 6.27 below, and for a PATIENT (Y) that it will be able to occur in the frames in 6.28:

6.27   What did X do?

6.28   a.   What happened to Y was...
         b.   What X did to Y was...

So for example 6.29 below the tests would give 6.30–1, identifying *Robert* as the ACTOR and *the golf club* as PATIENT:

6.29   Robert snapped the golf club in half.

6.30   What Robert did was to snap the golf club in half.

6.31   a.   What happened to the golf club was that Robert snapped it in half.
         b.   What Robert did to the golf club was snap it in half.

Some writers have suggested other thematic roles in addition to those we have discussed. For example a role of PERCEPT is sometimes used for the entity which is perceived or experienced, e.g.

6.32   a. The general inspected **the troops**.
        b. Did you hear **that thunder?**
        c. **That shark** frightened the swimmers.

A role of RECIPIENT is sometimes identified, e.g. by Andrews (1985), as a type of GOAL involved in actions describing changes of possession, e.g.

6.33   a. He sold **me** this wreck.
        b. He left his fortune **to the church**.

While these roles, ACTOR, AGENT, PATIENT, EXPERIENCER, THEME, INSTRUMENT etc. may seem intuitively clear, in practice it is sometimes difficult to know which role to assign to a particular noun phrase. For example, in a sentence like 6.34 below *to the lighthouse* is clearly a GOAL, and in 6.35 *him* is a BENEFICIARY, but in 6.36 below is *Margarita* the GOAL/RECIPIENT, or the BENEFICIARY, or both?

6.34   Fergus carried the bag **to the lighthouse**.

6.35   Sylvie bought **him** a sports car.

6.36   **Margarita** received a gift of flowers.

Examples like these raise the difficult question of whether a single entity can fulfil two or more thematic roles at the same time; for example in 6.37 below, are we to say that Mr Wheeler is both AGENT and THEME?

6.37   **Mr Wheeler** jumped off the cliff.

These issues are still under investigation in various theoretical approaches. A central claim of Chomsky's Principles and Parameters theory, for example, is the **Theta-Criterion**, which states that there must be a one-to-one correspondence between noun phrases and thematic roles (see Chomsky 1988; Haegeman 1994). Jackendoff (1972), on the other hand, suggested that one entity might fulfil more than one role. In Jackendoff (1990) the idea that one nominal might fulfil more than one role is elaborated into a theory of tiers of thematic roles: a **thematic tier**, which describes spatial relations, and an **action tier** which describes ACTOR–PATIENT-type relations. His examples include the following (1990: 126–7):

6.38   a. Sue hit   Fred.
            Theme   Goal   (thematic tier)
            Actor   Patient   (action tier)

        b. Pete threw   the ball.
            Source   Theme   (thematic tier)
            Actor   Patient   (action tier)

        c. Bill entered   the room.
            Theme   Goal   (thematic tier)
            Actor   (action tier)

        d. Bill received   a letter.
            Goal   Theme   (thematic tier)
                                     (action tier)

Thus *Fred* in 6.38a is simultaneously the GOAL and the PATIENT of the action. The gaps in a tier reflect instances where the nominal has only one thematic role: thus *the room* in 6.38c has no role in the action tier. Presumably these tiers would divide thematic roles into two types, perhaps as follows:

6.39   a. Action tier roles: ACTOR, AGENT, EXPERIENCER, PATIENT,
                                      BENEFICIARY, INSTRUMENT.
        b. Thematic tier roles: THEME, GOAL, SOURCE, LOCATION.

To these dimensions of action and space, Jackendoff also proposes a dimension of time, which we will not investigate here. The basic insight is clear: the roles that speakers assign to entities may be more complicated than a single thematic role label. For a detailed discussion of this proposal, see Jackendoff (1990: 125–51).

Having identified these thematic roles, the next question we might ask is: how are such roles identified in the grammar? For our English examples above, the answer is: by a combination of syntactic structure and the choice of verb. There are typical matchings between participant roles and grammatical relations. As in our original example 6.21, the subject of the sentence often corresponds to the AGENT, the direct object to the THEME, while the INSTRUMENT often occurs as a prepositional phrase. Though this is the typical case, it is not necessarily so: for example, it is possible to omit the AGENT from the sentence and as a result have the INSTRUMENT occupy subject position, e.g.:

6.40   **The jack** raised the car.

We can see the effect of the choice of verb if we try to describe this same situation without either the AGENT or the INSTRUMENT. We cannot simply allow the THEME to occupy subject position as in 6.41; we have to change the verb as in 6.42:

6.41   *The car raised.

6.42   The car rose.

This is because the verb *raise* requires an ACTOR. The verb *rise*, however, describes a change of state without any slot for an ACTOR so that while 6.42 above is fine, 6.43 and 6.44 below are not possible:

6.43   *Gina rose the car.

6.44   *The jack rose the car.

What this simple example shows is that a speaker's choice of participant roles has two aspects: the choice of a verb with its particular requirements for thematic roles, and within the limits set by this, the choice of grammatical relations for the roles. We look at these choices in the rest of this chapter, beginning with the relationship between thematic roles and grammatical relations: first we describe how various thematic roles may occupy subject position, then we look briefly at the selection of thematic roles as part of a verb's lexical semantics. Later we discuss the role of *voice* in allowing speakers to alter prototypical matchings between thematic roles and grammatical relations.

6.3   Grammatical Relations and Thematic Roles

We have seen that while in English there is a tendency for subjects to be AGENTS, direct objects to be PATIENTS and THEMES, and INSTRUMENTS to occur as prepositional phrases, this need not always be the case. There are two basic situations where this is not the case: the first is where roles are simply omitted, and the grammatical relations shift to react to this, as we will discuss in this section; and the second is where the speaker chooses to alter the usual matching between roles and grammatical relations, a choice often marked by an accompanying change of verbal *voice*. We deal with voice later on in section 6.7.

We can begin with a simple example of thematic role omission in 6.45–7 below:

6.45   Ursula broke the ice with a pickaxe.

6.46   The pickaxe broke the ice.

6.47   The ice broke.

This is similar to our example 6.21 earlier: in 6.45 Ursula is the AGENT and subject, the ice is the PATIENT and direct object, and the pickaxe, the INSTRUMENT, is in a prepositional phrase. In 6.46 the AGENT is omitted and now the INSTRUMENT is subject; and finally in 6.47 with no AGENT or INSTRUMENT expressed, the PATIENT becomes subject. The verb *break*, unlike *raise* earlier, allows all three thematic roles to occupy subject position. Several writers have suggested that this process of different roles occupying the subject position is a hierarchical process, not only in English but across many languages. The observation is that when speakers are constructing a sentence,

they tend to place an AGENT into subject position, the next preference being for a RECIPIENT or BENEFACTIVE, then THEME/PATIENT, then other roles. From our English examples, it seems that INSTRUMENT is then preferred to LOCATION. This is sometimes described as an *implicational hierarchy*. There are various versions of such a hierarchy proposed in the literature, e.g. in Fillmore (1968) and Givón (1984b), but we can construct a simple example of a universal subject hierarchy like 6.48 below:

6.48   AGENT > RECIPIENT/BENEFACTIVE > THEME/PATIENT > INSTRUMENT > LOCATION

This diagram can be read in two equivalent ways: one is that the leftmost elements are the preferred, most basic and expected subjects, while moving rightward along the string gives us less expected subjects. A second way to read this diagram is as a kind of rule of expectation, going from right to left: if a language allows the LOCATION role to be subject, we expect that it will allow all the rest. If, however, it allows the role INSTRUMENT to be subject, we expect that it allows those roles to the left, but we don't know if it allows the LOCATION role as subject. The idea is that languages can differ in what roles they allow to occur as subject but they will obey this sequence of preference, without any gaps. So, for example, we should not find a language that allows AGENT and INSTRUMENT to be subject but not THEME/PATIENT.

It is a little difficult to think of English examples with LOCATION as subject, unless we include sentences like 6.49a–b below:

6.49   a.   **This cottage** sleeps five adults.
        b.   **The table** seats eight.[1]

but the other positions on the hierarchy occur regularly, as we can see from the following examples:

6.50   AGENT subjects:
        The thief stole the wallet.
        Fred jumped out of the plane.

6.51   EXPERIENCER subjects:
        I forgot the address.
        Your cat is hungry.

6.52   RECIPIENT subjects:
        She received a demand for unpaid tax.
        The building suffered a direct hit.

6.53   PATIENT subjects:
        The bowl cracked.
        Una died.

6.54   THEME subjects:
        Joan fell off the yacht.
        The arrow flew through the air.

6.55   INSTRUMENT subjects:
        The key opened the lock.
        The scalpel made a very clean cut.

See Comrie (1981) and Croft (1990) for discussion of this and other implicational hierarchies.

6.4   Verbs and Thematic Role Grids

As we saw earlier with the verbs *raise*, *rise* and *drive*, verbs have particular requirements for their thematic roles. Since this is part of a speaker's semantic knowledge about a verb, we might expect it to be part of the lexical information stored for verbs. Thus we need to know not only how many arguments a verb requires (i.e. whether it is intransitive, transitive, etc.) but also what thematic roles its arguments may hold.

In the generative grammar literature, this listing of thematic roles is often called a **thematic role grid**, or **theta-grid** for short.[2] A simple example might be:

6.56   **put** V: <AGENT, THEME, LOCATION>

This entry tells us that *put* is a three-argument, or ditransitive, verb and spells out the thematic roles the three arguments may carry. Here we show Williams's (1981) suggestion of underlining the AGENT role to reflect the fact that it is this role that typically occurs as the subject of the verb (or 'external argument' in Williams's terminology). Clearly this is just the start of the job that a grammatical description must do of mapping between thematic roles and grammatical categories and structures. Our thematic grid for *put* in 6.56 predicts that this verb, when saturated with the correct arguments, might form a sentence like 6.57:

6.57   John$_{AGENT}$ put the book$_{THEME}$ on the shelf$_{LOCATION}$[3]

Of course, not all nominals in a sentence are arguments of a verb and thus specified in verbal theta-grids in the lexicon. We will make the assumption that one can employ grammatical tests to identify arguments: for example, to distinguish between the role of argument played by the prepositional phrase *in the bathroom* in 6.58 below and its status as a non-argument in 6.59:

6.58   [$_S$ Roland [$_{VP}$ put [$_{NP}$ the book] [$_{PP}$ in the bathroom]]]

6.59   [$_S$ Roland [$_{VP}$ read [$_{NP}$ the book]] [$_{PP}$ in the bathroom]]

The square brackets in 6.58–9 reflect the fact that while *in the bathroom* is an argument of the verb *put*, explaining why it cannot be omitted:

6.60   *Roland put the book.

it is not an argument of the verb *read*, on the other hand, which can form a sentence without it:

6.61   Roland read the book.

In grammatical terms, while *in the bathroom* is an argument in 6.58, it is an **adjunct** in 6.59. As well as not being required by the verb, adjuncts are seen as less structurally attached to the verb, explaining why 6.62 below is a much more unusual word order than 6.63, and usually requires a marked intonation pattern:

6.62   In the bathroom Roland put a book.

6.63   In the bathroom Roland read a book.

See Radford (1988) and Haegeman (1994) for discussion of the grammatical status of arguments and adjuncts. We will assume that all verbs may co-occur with adjuncts (usually adverbials of time, place, manner, etc.) and that requirements need only be listed in the lexicon for arguments.

Another way of making this distinction is to distinguish between **participant roles** and **non-participant roles**. The former correspond to our arguments: they are needed by the predication, in the sense we have been discussing; the latter are optional adjuncts which give extra information about the context, typically information about the time, location, purpose or result of the event. Of course only participant roles will be relevant to verbal thematic grids, and our discussion in this chapter focuses on these participant roles.

Listing thematic grids soon reveals that verbs form classes which share the same grids. For example, English has a class of TRANSFER, or GIVING, verbs which in one subclass includes the verbs *give*, *lend*, *supply*, *pay*, *donate*, *contribute*. These verbs encode a view of the transfer from the perspective of the AGENT. They have the thematic grid in 6.64; 6.65 is an example:

6.64   V: <AGENT, THEME, RECIPIENT>

6.65   Barbara$_{AG}$ loaned the money$_{TH}$ to Michael$_{RE}$.[4]

Another subclass of these TRANSFER verbs encodes the transfer from the perspective of the RECIPIENT. These verbs include *receive, accept, borrow, buy, purchase, rent, hire.* Their thematic grid is in 6.66, with an example in 6.67, paralleling 6.65 above:

6.66   V: <RECIPIENT, THEME, SOURCE>

6.67   Michael$_{RE}$ borrowed the money$_{TH}$ from Barbara$_{SO}$.

Thematic grids such as these are put to use in the literature for a variety of jobs. We can look at some of these in section 6.6, when we ask more generally: what purpose do thematic roles serve in linguistic analysis? First, though, we discuss some of the problems associated with the simple picture of thematic roles we have outlined so far.

6.5   Problems with Thematic Roles

In our introductory discussion, we mentioned that the lists of roles given in the literature have varied from author to author. Authors disagree about what, if any, distinctions are to be made between PATIENT and THEME, for example, or between AGENT and related roles like ACTOR, EXPERIENCER, etc.

We can see these debates as reflections of two general problems with thematic roles (usually abbreviated to 'theta-roles', sometimes also called θ-roles). The first problem is really about delimiting particular roles. The extreme case would be to identify individual thematic roles for each verb: thus we would say that a verb like *beat* gives us two theta-roles, a BEATER-role and a BEATEN-role. This would of course reduce the utility of the notion: if we lose the more general role-types like AGENT, PATIENT etc., then we cannot make the general statements about the relations between semantic roles and grammatical relations discussed earlier, nor put theta-roles to any of the uses we describe in the next section.

But if we are to classify individual theta-roles roles like BEATER and BEATEN into theta-role types like AGENT and PATIENT, we will have to find some way of accommodating variation within the role type. Let us take the example of PATIENT in a typical grid:

6.68   V: <AGENT, PATIENT, INSTRUMENT>

A typical example would be 6.69:

6.69   The child$_{AG}$ cracked the mirror$_{PA}$ with his toy$_{IN}$.

Earlier we defined the PATIENT as the entity affected by the action of the verb. However, attempts to examine particular verbs, such as Dixon (1991),

reveal that both the type of 'affectedness' and the role of the INSTRUMENT vary between verb types. For example, Dixon (1991: 102–13) identifies eight types of affectedness: a range including the minimal contact of the verb *touch* in 6.70, where possibly no change occurs in the PATIENT, through *rub* in 6.71, where the surface of the PATIENT might be affected, and *squeeze* in 6.72 where a temporary change of shape in the PATIENT occurs, to *smash* in 6.73, where the PATIENT loses its physical integrity:

6.70   John touched the lamp with his toe.

6.71   The captain rubbed the cricket ball with dirt.

6.72   Henry squeezed the rubber duck in his hands.

6.73   Alison smashed the ice cube with her heel.

The questions which face semanticists here are: do the differences between the affectedness of the PATIENT reduce the usefulness of this label, or can the differences be explained in some way?

The second problem is more general: how do we define theta-roles in general? That is, what semantic basis do we have for characterizing roles? Facing both of these problems, Dowty (1991) proposes a solution where theta-roles are not semantic primitives but are defined in terms of **entailments** of the predicate. In this view a theta-role is a cluster of entailments about an argument position which are shared by some verbs. He gives examples like *x murders y, x nominates y, x interrogates y,* where:

6.74   entailments they all share include that *x* does a volitional act, that
         x moreover intends this to be the kind of act named by the verb,
         that *x* causes some event to take place involving *y* (*y* dies, *y* acquires
         a nomination, *y* answers questions – or at least hears them),
         and that *x* moves or changes externally (i.e. not just mentally).
         (1991: 552)

Such a set of shared entailments about *x* will serve to define the nominal which denotes *x* as AGENT. Thus theta-roles are defined in terms of shared verbal entailments about nominal referents.[5] We will see something of how these entailments are used in this approach in the rest of this section.

In this view of theta-roles as clusters of entailments, we can see a solution to the problem of the fuzziness of roles. Dowty proposes that we view the roles not as discrete and bounded categories but instead as **prototypes**, where there may be different degrees of membership. He suggests that there are two basic prototypes: Proto-Agent and Proto-Patient,[6] each of which would contain characteristic lists of entailments such as those in 6.75 and 6.76 below:

6.75   Properties of the Agent Proto-Role (Dowty 1991: 572):
        a. volitional involvement in the event or state
        b. sentience (and/or perception)
        c. causing an event or change of state in another participant
        d. movement (relative to the position of another participant)

6.76   Properties of the Patient Proto-Role (Dowty 1991: 572):
        a. undergoes change of state
        b. incremental theme[7]
        c. causally affected by another participant
        d. stationary relative to movement of another participant

The idea is that these clusters of entailments would allow various kinds of shading. For example, some arguments might have more of the entailments than others. So, for example, *John* in *John cleaned the house* would include all four of the entailments in 6.75 above: volition, sentience, causation and movement. By contrast *John* as an argument of *drop* in *John fainted and dropped the vase* would involve no volition, and *the storm* in *The storm destroyed the house* would involve neither sentience nor volition. We can see that this approach allows variation amongst AGENTS: some will be more typical and involve a greater number of characteristic entailments; others will be more marginal. Similar variation would hold for PATIENTS.

This approach would also allow other forms of fuzziness: some entailments might be viewed as more important than others; or each entailment itself might be fuzzy-edged. As several commentators have pointed out, speakers sometimes blur the distinction between sentient and non-sentient when they talk about computers, saying things like *The computer thinks these are the same file* or *This program doesn't realize that the memory is full.*

These proposals by Dowty to view thematic roles in terms of prototypical clusters of entailments allow flexibility in defining thematic roles. One result of his classification is that traditional role-types fall out as more-or-less prototypical versions of the two main categories. Thus, as we have seen, a centrally prototypical AGENT like *Maggie* in 6.77a below involves all four entailments in 6.75, while an EXPERIENCER, like *Joan* in 6.77b can be seen as a more marginal AGENT, including sentience but not volition or causation; and an INSTRUMENT like *the scalpel* in 6.77c includes causation and movement but not volition or sentience:

6.77   a. **Maggie** pruned the roses.
        b. **Joan** felt the heat as the aircraft door opened.
        c. **The scalpel** cut through the muscle.

Similarly a centrally prototypical PATIENT, like *the roses*, in 6.77a and repeated in 6.78a below, will involve all four entailments in 6.76 above, but a PERCEPT like *the game* in 6.78b does not undergo a change of state nor is it causally affected:

6.78   a. Maggie pruned **the roses**.
        b. Roberto watched **the game**.

Having seen something of an attempt to cope with the problem of defining theta-roles on a more systematic basis, in the next section we examine some of the uses of such roles.

6.6 The Motivation for Identifying Thematic Roles

From our discussion so far it is clear that linguists employ thematic roles to describe aspects of the interface between semantics and syntax, in particular to characterize the links between the semantic classification of its participants that is inherent in a verb's meaning and the grammatical relations it supports. Thus, to recap our discussion in its simplest terms, when we use an English verb like *feel* in *Joan felt the heat as soon as the aircraft door was opened*, we identify a relationship between an EXPERIENCER and a PERCEPT. This can be viewed as one of many conventional ways of viewing relations that are coded in the language. Grammatically, of course, the verb *feel* is transitive, taking a subject and direct object. As we have seen, one fact we have to account for is that there is a conventional linkage between the participant roles and the grammatical relations, such that in this case the EXPERIENCER will be subject and the PERCEPT, direct object.[8]

Predicting such linkages, and more general patterns amongst individual cases, is one of the primary functions of thematic roles. To take one example, in Dowty's prototype and entailments approach described in the last section, this linkage is described as below by an argument selection principle (1991: 576) (together with a couple of ancillary principles and the characteristics in 6.79d):

6.79   a. *Argument Selection Principle*: In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object.
        b. *Corollary 1*: If two arguments of a relation have (approximately) equal numbers of entailed Proto-Agent and Proto-Patient properties, then either or both may be lexicalized as the subject (and similarly for objects).
        c. *Corollary 2*: With a three-place predicate, the non subject argument having the greater number of entailed Proto-Patient properties will be lexicalized as the direct object and the non subject argument having fewer entailed Proto-Patient properties will be lexicalized as an oblique or prepositional object (and if

two non subject arguments have approximately equal numbers of entailed P-Patient properties, either or both may be lexicalized as direct object).

    d. *Non discreteness*: Proto-roles, obviously, do not classify arguments exhaustively (some arguments have neither role) or uniquely (some arguments may share the same role) or discretely (some arguments could qualify partially but equally for both proto-roles).

Though the phrasing of these principles makes it sound as if theta-roles are in competition for grammatical slots in the formation of each sentence, Dowty intends these observations as a set of constraints on verbal linking rules. As the term *lexicalized* in the above suggests, these principles are viewed as constraints on possible verbs.

    We can give an idea of how such principles might work by looking again at the type of example we have already discussed: the relations between subject position and theta-roles in the sentences in 6.80 below:

6.80   a.   Captain Nemo sank the ship with a torpedo.
            b.   The torpedo sank the ship.
            c.   The ship sank.

In 6.80a *Captain Nemo* has the Proto-Agent properties of volition, sentience, causation and movement and is thus linked to subject position, as predicted by the selection principles. In 6.80b *the torpedo* has the Proto-Agent properties of causation and movement, and thus, in the absence of an entity with a stronger cluster of such properties, becomes subject. Finally in 6.80c *the ship* has just the property of movement, but in this sentence that is enough for it to become the subject.

    This idea of stronger and weaker candidates for subject, and other grammatical roles, leads naturally to the idea of a hierarchy, as we discussed in section 6.3. Dowty's version of a subject hierarchy is as in 6.81 (1991: 578):[9]

6.81   Agent > $\left\{\begin{array}{l}\text{Instrument}\\\text{Experiencer}\end{array}\right\}$ > Patient > $\left\{\begin{array}{l}\text{Source}\\\text{Goal}\end{array}\right\}$

As before, the candidates move from left to right in decreasing strength of linkage to the subject position. In this version, though, the roles themselves are not primitives but convenient labels for clusterings of the proto-role entailments.

    So far we have been talking about theta-roles as explanatory devices in accounting for linkage between semantic and syntactic argument structure. A second justification for using thematic roles is to help characterize semantic verbal classes. For example, we can identify in English two classes of

psychological verbs both of which take two arguments (i.e. are transitive), one of which is an EXPERIENCER and the other a STIMULUS.[10] The classes differ, however, in their linking between these roles and subject and object position. The first class has the theta-grid in 6.82a below, and can be exemplified by the verbs in 6.82b, while the second class has the theta-grid in 6.83a and includes verbs like those in 6.83b:

6.82   Psychological verbs type 1
        a.   V: <u>EXPERIENCER</u>, STIMULUS>
        b.   *admire, enjoy, fear, like, love, relish, savour*

6.83   Psychological verbs type 2
        a.   <<u>STIMULUS</u>, EXPERIENCER>
        b.   *amuse, entertain, frighten, interest, please, surprise, thrill*[11]

Thus we say *Claude liked the result* but *The result pleased Claude.*
    Such classifications of verbs can help predict the grammatical processes individual verbs will undergo. Thus, though the motivation for grammatical rules is often multifactorial, theta-role grids have been used to describe argument changing processes like **passive**, as we shall see shortly, or argument structure alternations like those in 6.84–5 below, where in each case the example sentences are in a, the link between theta-grids and syntactic arguments is given in b, and some example verbs in c:

6.84   a.   He banged the broom-handle on the ceiling.
            He banged the ceiling with the broom-handle.
            She tapped the can against the window.
            She tapped the window with the can.
        b.   V: <<u>AGENT</u>, INSTRUMENT & THEME,[12] LOCATION>
                 NP   NP   PP
            V: <<u>AGENT</u>, LOCATION, INSTRUMENT & THEME>
                 NP   NP   PP
        c.   *bang, bash, beat, hit, knock, pound, rap, tap, whack*[13]

6.85   a.   The whole community will benefit from the peace process.
            The peace process will benefit the whole community.
        b.   V: <<u>BENEFICIARY</u>, SOURCE>
          NP   PP
          V: <<u>SOURCE</u>, BENEFICIARY>
          NP   NP
        c.   *benefit, profit*[14]

These alternations are just two of a large range identified for English in Levin (1993). The conditional factors for such alternations are often a mix of semantic information, such as the verb's meaning and its theta-grid (as shown above), and its syntactic environment.

We can look at one further type of justification for thematic roles which comes from another area of grammar: the claim that in some languages they play a role in the morphology of verbal agreement. Mithun (1991: 514) gives examples of the pronominal verbal prefixes in Lakhota (Siouan; USA, Canada). In the transitive verbs in 6.86a below we see a prefix *wa* which marks an AGENT argument and in 6.86b a prefix *ma*, which marks a PATIENT:

6.86   a.   **awá?u**   'I brought it.'
             waktékte   'I'll kill him.'
        b.   **amá?u**   'He brought **me**.'
             maktékte   'He'll kill **me**.'

We can see that these prefixes do not mark subject or object agreement because a subject, for example, can take either prefix depending on whether it is an AGENT (as in 6.87a below) or PATIENT (as in 6.87b) (Mithun 1991: 514):

6.87   a.   AGENT subjects
             wapsíča   'I jumped'
             wahí   'I came'
        b.   PATIENT subjects
             mak^{h}úže   'I'm sick'
             maxwá   'I'm sleepy'

In other words, what would be a subject pronoun in English corresponds to either an AGENT or PATIENT pronoun affix in Lakhota. Thus Lakhota morphological marking is sensitive to theta-roles rather than grammatical relations. Mithun gives similar examples from Guarani (Tupi; Paraguay, Bolivia), and the Pomoan languages of California. The implication for our discussion is clear: if we need theta-roles to explain morphological patterns, this is strong evidence that they are significant semantic categories.

We have seen then in this section a number of different motivations for identifying thematic roles: to explain linking rules in verbal argument structure, to reflect semantic classes of verbs, to predict a verb's participation in argument structure alternations, and finally to describe morphological rules adequately. For many linguists this utility motivates their continuing use, despite the definitional problems discussed in the last section. In the next section we look at the category of **voice**, which, as we shall see, adds new dimensions to the relationship between theta-roles and grammatical relations.

6.7   Voice

6.7.1   Passive voice

The grammatical category of *voice* affords speakers some flexibility in viewing thematic roles. Many languages allow an opposition between *active voice*