

Table 4.4 Causal mechanisms involved in language stability and change (Croft 2000)

Normal replication	Altered replication (innovation)	Selection (propagation)
<b>Follow conventions of the language</b> <i>Maxim 1</i> : Talk in such a way that you are understood	<b>Be expressive</b> <i>Maxim 2</i> : Talk in such a way that you are noticed <i>Maxim 3</i> : Talk in such a way that you are not recognizable as a member of the group <i>Maxim 4</i> : Talk in an amusing way <i>Maxim 5</i> : Talk in an especially polite, flattering or charming way <b>Be economical</b> <i>Maxim 6</i> : Talk in such a way that you do not expend superfluous energy	<b>Accommodation</b> <i>Maxim 7</i> : Talk like the others talk <b>Act of identity</b> <i>Maxim 8</i> : Talk in such a way that you are recognized as a member of the group
	<b>Non-intentional mechanisms</b> (1) Sound change: articulatory factors (over/undershoot) or auditory factors (hypocorrection) (2) Reanalysis of form-meaning mapping	<b>Prestige</b> Adoption of changes as a result of aspiring to a social group

of variants is due to sociolinguistic processes such as accommodation, identity and prestige.

#### 4.4 The usage-based approach to language acquisition

So far in this chapter, we have seen that a usage-based approach views grammar as a system derived from and grounded in utterances. According to this view, it is from these usage events that the abstracted schemas – the constructions that make up our knowledge of language – arise. We have also explored a usage-based theory of language change. In this section we turn our attention in more detail to the question of *how* linguistic units are derived from patterns of language use by exploring a usage-based account of child language acquisition. In particular, we focus on the acquisition of meaning and grammar rather than phonological acquisition. We base our discussion on the theory proposed by developmental psycholinguist Michael Tomasello in his (2003) book *Constructing a Language*.

A usage-based account of language acquisition posits that language learning involves 'a prodigious amount of actual learning, and tries to minimize the postulation of innate structures specific to language' (Langacker 2000: 2). In this approach to language acquisition, the burden of explanation is placed upon the acquisition of linguistic units rather than upon Universal Grammar. While

cognitive linguists do not deny that humans are biologically pre-specified to acquire language, they reject the hypothesis that there exists a specialised and innate cognitive system that equips us for linguistic knowledge. Instead, cognitive linguists argue that humans employ generalised sociocognitive abilities in the acquisition of language.

#### 4.4.1 Empirical findings in language acquisition

The empirical study of first language acquisition is known as **developmental psycholinguistics**. Since the early studies in developmental psycholinguistics such as Braine (1976) and Bowerman (1973), one of the key cross-linguistic findings to have emerged is that infants' earliest language appears to be **item-based** rather than **rule-based**: infants first acquire specific item-based units (words), then more complex item-based units (pairs and then strings of words), before developing more abstract grammatical knowledge (grammatical words and morphemes, complex sentence structures and so on). Cognitive linguists argue that this provides evidence for a usage-based theory of language acquisition, and that more recent empirical findings in developmental psycholinguistics, particularly since the late 1980s and early 1990s, support this view.

Let's look in more detail at what it means to describe early language acquisition as item-based. When a child first produces identifiable units of language at around the age of twelve months (the **one-word stage**), these are individual lexical items. However, these lexical items do not equate with the corresponding adult forms in terms of function. Instead, the child's first words appear to be equivalent to whole phrases and sentences of adult language in terms of communicative intention. For this reason, these early words are known as **holophrases**. These can have a range of goal-directed communicative intentions. In a study of his daughter's early language, Tomasello found that his daughter's holophrases fulfilled a number of distinct functions, which are illustrated in Table 4.5.

Secondly, the item-based nature of first language acquisition is also revealed at the **two-word stage**, which emerges at around eighteen months. After holophrases, children begin to produce multi-word expressions. These are more complex expressions than holophrases in that they contain two or more lexical items. Some of these early multi-word utterances are of the type *ball table*, when a child sees a ball on the table and concatenates two units of equal status (here nouns) in order to produce a more linguistically complex utterance. However, the majority of early multi-word utterances are not like this. Instead, many early multi-word utterances exhibit **functional asymmetry**. This means that the expressions contain a relatively stable element with 'slots' that can be filled by other lexical items. In other words, early multi-word utterances, rather than containing two or more words of equal status, tend to be 'built'

Table 4.5 Holophrases (Tomasello 1992) (adapted from Tomasello 2003: 36–7)

Holophrase	Communicative function
rockin	<i>First use:</i> while rocking in a rocking chair <i>Second use:</i> as a request to rock in a rocking chair <i>Third use:</i> to name the rocking chair
phone	<i>First use:</i> in response to hearing the telephone ring <i>Second use:</i> to describe activity of 'talking' on the phone <i>Third use:</i> to name the phone <i>Fourth use:</i> as a request to be picked up in order to talk on the phone
towel	<i>First use:</i> using a towel to clean a spill <i>Second use:</i> to name the towel
make	<i>First use:</i> as a request that a structure be built when playing with blocks
mess	<i>First use:</i> to describe the state resulting from knocking down the blocks <i>Second use:</i> to indicate the desire to knock down the blocks

Table 4.6 Examples of utterance schemas (based on Tomasello 2003: 66)

Here's the X?	I'm X-ing it
I wanna X	Mommy's X-ing it
More X	Let's X it
It's a X	I X-ed it
There's a X	
Put X here	
Throw X	
X gone	
X here	
X broken	
Sit on the X	
Open X	

around a functionally more salient and stable word. Tomasello calls expressions like these **utterance schemas** (which are also known as **pivot schemas**). Like holophrases, utterance schemas reflect the communicative intention of an equivalent adult utterance, but represent the acquisition of more schematic knowledge, allowing a wider range of lexical items to fill the slots. The obligatory element is known as the **pivot**. Representative examples of utterance schemas are provided in Table 4.6. In this table, X represents the slot that is 'filled in' and corresponds to a word that describes an entity (noun), shown in the left column, or an action (verb), shown in the right column. (There is no significance to the order in which these utterances are listed in the table.) Because most utterance schemas appear to revolve around verb-like elements, Tomasello (1992) labelled these units **verb-island constructions**. Only later do these verb-island constructions develop into the more familiar constructions of adult-like speech.

Tomasello argues that the third way in which early acquisition is item-based rather than rule-based is in its lack of innovation. In other words, early language use is highly specific to the verb-island constructions that the child has already formed and resists innovation. Tomasello argues that this is because early utterance schemas are highly dependent on what children have actually heard rather than emerging from abstract underlying rules. In an experiment carried out by Tomasello and Brooks (1998), two to three year old children were exposed to a nonsense verb *tamming* (meaning 'rolling or spinning') used in an intransitive frame. This is illustrated in example (18).

(18) The sock is tamming.

This usage is intransitive because the verb *tamming* does not have an object. Children were then prompted to use *tamming* in a transitive frame, with an object. One such prompt was a picture in which a dog was causing an object to 'tam'. The question presented to the children was *What is the doggie doing?* However, children were found to be poor at producing *tamming* in a transitive frame (e.g. *He's tamming the car*). Moreover, they were also found in a further study to be poor at understanding the use of *tamming* in a transitive frame. Tomasello draws two conclusions from these findings: (1) two and three year olds were poor at the *creative* use of the novel verb *tamming*; and (2) early utterance schemas are highly dependent on contexts of use in which they have been heard. Tomasello argues that it is only later, as children acquire more complex and more abstract constructions, that they come to be more competent in the creative use of language.

#### 4.4.2 The cognitive view: sociocognitive mechanisms in language acquisition

As we have seen, the fundamental assumption of cognitive approaches to grammar is the symbolic thesis: the claim that the language system consists of symbolic assemblies, or conventional pairings, of form and meaning. According to Michael Tomasello and his colleagues, when children acquire a language, what they are actually doing is acquiring constructions: linguistic units of varying sizes and increasing degrees of abstractness. As the complexity and abstractness of the units increases, linguistic creativity begins to emerge. According to this view, the creativity exhibited by young children in their early language happens because they are 'constructing utterances out of various already mastered pieces of language of various shapes and sizes, and degrees of internal structure and abstraction – in ways appropriate to the exigencies of the current usage event' (Tomasello 2003: 307). This view of language acquisition is called **emergentism**, and stands in direct opposition to

nativism, the position adopted in generative models. In other words, Tomasello argues that the process of language acquisition involves a huge amount of learning. Recall that cognitive linguists reject the idea that humans have innate cognitive structures that are specialised for language (the Universal Grammar Hypothesis). In light of that fact, we must address the question of what cognitive abilities children bring to this process of language acquisition.

Recent research in cognitive science reveals that children bring a battery of sociocognitive skills to the acquisition process. These cognitive skills are **domain-general**, which means that they are not specific to language but relate to a range of cognitive domains. According to cognitive linguists, these skills facilitate the ability of humans to acquire language. Tomasello argues that there are two kinds of general cognitive ability that facilitate the acquisition of language: (1) **pattern-finding ability**; and (2) **intention-reading ability**.

The pattern-finding ability is a general cognitive skill that enables humans to recognise patterns and perform 'statistical' analysis over sequences of perceptual input, including the auditory stream that constitutes spoken language. Tomasello argues that **pre-linguistic infants** – children under a year old – employ this ability in order to abstract across utterances and find repeated patterns that allow them to construct linguistic units. It is this pattern-finding ability that underlies the abstraction process assumed by Langacker, which we discussed earlier (section 4.2.1).

The evidence for pattern-finding skills is robust and is apparent in pre-linguistic children. For instance, Saffran, Aslin and Newport (1996) found that at the age of eight months infants could recognise patterns in auditory stimuli. This experiment relied on the **preferential looking technique**, which is based on the fact that infants look more at stimuli with which they are familiar. Saffran *et al.* presented infants with two minutes of synthesised speech consisting of the four nonsense words *bidaku*, *padoti*, *golabu* and *tupiro*. These nonsense words were sequenced in different ways so that infants would hear a stream of repeated words such as: *bidakupadotigolabubidakutupiropadoti*. . . , and so on. Observe that each of these words consisted of three syllables. Infants were then exposed to new streams of synthesised speech, which were presented at the same time, and which were situated to the left and the right of the infant. While one of the new recordings contained 'words' from the original, the second recording contained the same syllables, but in different orders, so that none of the 'words' *bidaku*, *padoti*, *golabu* or *tupiro* featured. The researchers found that the infants consistently preferred to look towards the sound stream that contained some of the same 'words' as the original. This shows that pre-linguistic infants are able to recognise patterns of syllables forming 'words' in an auditory stream and provides evidence for the pattern-finding ability.

Further research (see Tomasello 2003 for a review) demonstrates that infant pattern-finding skills are not limited to language. Researchers have also found

Table 4.7 Human pattern-finding skills (Tomasello 2003)

## Human pattern finding abilities

*The ability to relate similar objects and events, resulting in the formation of perceptual and conceptual categories for objects and events. Category formation aids recognition of events and objects.*

*The ability to form sensorimotor schemas based on recurrent perception of action. This is associated with the acquisition of basic sensorimotor skills, and the recognition of actions as events, such as crawling, walking, picking up an object, and so on.*

*The ability to perform distributional analysis on perceptual and behavioural sequences. This allows infants to identify and recognise recurrent combinations of elements in a sequence and thus identify and recognise sequences.*

*The ability to create analogies (recognition of similarity) between two or more wholes, (including utterances), based on the functional similarity of some of the elements in the wholes.*

that infants demonstrate the same skills when the experiment is repeated with non-linguistic tone sequences and with visual, as opposed to auditory, sequences. Some of the key features associated with the human pattern-finding ability are summarised in Table 4.7.

Finally, this pattern-finding ability appears not to be limited to humans but is also apparent in our primate cousins. For instance, Tamarin monkeys demonstrate the same pattern recognition abilities when exposed to the same kinds of auditory and visual sequencing experiments described above for human infants. Of course, if we share the pattern-finding ability with some of the non-human primates, and if these pattern-finding skills facilitate the acquisition of language, we need to work out why only humans acquire and produce language.

According to Tomasello, the answer lies in the fact that the pattern-finding skills described above are necessary but not sufficient to facilitate language acquisition. In addition, another set of skills are required: **intention-reading abilities**. While pattern-finding skills allow pre-linguistic infants to begin to identify linguistic units, the use of these units requires intention-reading skills, which transform linguistic stimuli from statistical patterns of sound into fully fledged linguistic symbols. In other words, this stage involves 'connecting' the meaning to the form, which gives rise to the form-meaning pairing that make up our knowledge of language. Only then can these linguistic sounds be used for communication. This process takes place when, at around a year old, infants begin to understand that the people around them are **intentional agents**: their actions are deliberate and their actions and states can be influenced. The emergence of this understanding allows infants to 'read' the intentions of others. Some of the features that emerge from this intention-reading ability are summarised in Table 4.8.

Like pattern recognition skills, these intention-reading skills are domain-general. Unlike pattern recognition skills, they are **species-specific**. In other

Table 4.8 Human intention-reading abilities (Tomasello 2003)

<i>The ability to coordinate or share attention, as when an infant and adult both attend to the same object.</i>
<i>The ability to follow attention and gesturing, as when an infant follows an adult's gesture or gaze in order to attend to an object.</i>
<i>The ability to actively direct attention of others, such as drawing attention to a particular object or event, for example by pointing.</i>
<i>The ability of culturally (imitatively) learning the intentional actions of others, such as imitating verbal cues in order to perform intentional actions.</i>

words, only humans possess a complete set of these abilities. The evidence is equivocal as to whether our nearest primate cousins, for instance chimpanzees, recognise conspecifics (members of the same species) as intentional agents. However, Tomasello (1999) argues that the answer is no. Moreover, these intention-reading skills begin to emerge just before the infant's first birthday. Tomasello argues that the emergence of holophrases shortly after the infant's first year is directly correlated with the emergence of these skills.

Tomasello argues that our intention-reading abilities consist of three specific but interrelated phenomena: (1) joint attention frames; (2) the understanding of communicative intentions; and (3) role reversal imitation, which is thought to be the means by which human infants acquire cultural knowledge. According to this view, language acquisition is contextually embedded and is a specific kind of cultural learning.

A joint attention frame is the common ground that facilitates cognition of communicative intention and is established as a consequence of a particular goal-directed activity. When an infant and an adult are both looking at and playing with a toy, for example, the attention frame consists of the infant, the adult and the toy. While other elements that participate in the scene are still perceived (such as the child's clothes or other objects in the vicinity), it is this triadic relationship between child, adult and toy that is the joint focus of attention.

The second important aspect of intention-reading involves the recognition of communicative intention. This happens when the child recognises that others are intentional agents and that language represents a special kind of intention: the intention to communicate. For example, when the adult says *tummy bear*, the adult is identifying the toy that is the joint focus of attention and is employing this linguistic symbol to express the intention that the child follow the attention of the adult. This is represented in Figure 4.8, where the unbroken arrow represents the communicative intention expressed by the adult. The dotted arrows represent shared attention.

Finally, Tomasello argues that intention-reading skills also give rise to role reversal imitation. Infants who understand that people manifest intentional

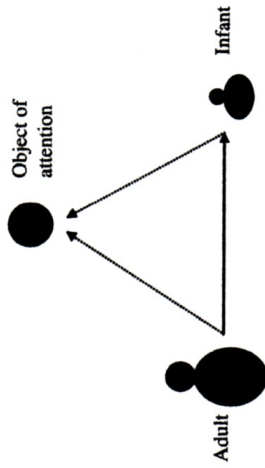


Figure 4.8 The use of a linguistic symbol in a triadic relationship expressing a communicative intention (adapted from Tomasello 2003: 29)

behaviour may attend to and learn (by imitation) the behavioural means that others employ to signal their intentional state. For example, the child may imitate the use of the word *tummy bear* by an adult in directing attention to an object. Tomasello (2003) cites two studies that support the view that infants have a good understanding of the intentional actions of others and can imitate their behaviour. In an experiment reported by Meltzoff (1995), two groups of eighteen-month-old infants were shown two different actions. In one, an adult successfully pulled the two pieces of an object apart. In a second, an adult tried but failed to pull the two pieces apart. However, both sets of infants, when invited to perform the action they had witnessed, successfully pulled the two pieces apart. Meltzoff concludes that even the infants who had not witnessed pieces successfully pulled apart had understood the adult's intention.

In the second experiment, Carpenter, Akhtar and Tomasello (1998) exposed sixteen-month-old infants to intentional and 'accidental' actions. The intentional action was marked vocally by the expression *there!* while the 'accidental' action was marked by *whoops!* The infants were then invited to perform the actions. The children performed the intentional action more frequently than the 'accidental' action. Carpenter *et al.* concluded that this was because the children could distinguish intentional actions from non-intentional ones, and that it is these intentional actions that they attempt to reproduce. In conclusion, Tomasello (2003: 291) claims that language acquisition involves both 'a uniquely cognitive adaptation for things cultural and symbolic (intention reading) and a primate-wide set of skills of cognition and categorization (pattern finding)'.

#### 4.4.3 Comparing the generative view of language acquisition

In this section, we compare the usage-based account of language acquisition with the nativist view that is assumed within the generative framework

developed by Chomsky. This comparison is important because, in many respects, the usage-based view and the nativist view stand in direct opposition to one another. Furthermore, Chomsky's ideas were influential among developmental psycholinguists, particularly during the 1960s and 1970s, and are sometimes presented as the 'standard' view of language acquisition in many contemporary linguistics textbooks. More recently, cognitive theories of child language acquisition have been developed partly in response to Chomsky's claims. We look in more detail at the nativist hypothesis and the linguistic modularity hypothesis, and at the cognitive response to these hypotheses. We then look at alternative interpretations of empirical findings in language acquisition and, finally, consider localisation of linguistic function in the brain.

#### The nativist hypothesis

Until the 1960s, the main influence on developmental psychology was the theory of behaviourism. This is the doctrine that learning is governed by inductive reasoning based on patterns of association. Perhaps the most famous example of associative learning is the case of Pavlov's dog. In this experiment a dog was trained to associate food with a ringing bell. After repeated association, the dog would salivate upon hearing the bell. This provided evidence, the behaviourists argued, that learning is a type of stimulus-response behaviour. The behaviourist psychologist B. F. Skinner (1904-90), in his 1957 book *Verbal Behavior*, outlined the behaviourist theory of language acquisition. This view held that children learnt language by imitation and that language also has the status of stimulus-response behaviour conditioned by positive reinforcement.

In his famous 1959 review of Skinner's book, Chomsky argued, very persuasively, that some aspects of language were too abstract to be learned through associative patterns of the kind proposed by Skinner. In particular, Chomsky presented his famous argument, known as the poverty of the stimulus argument, that language was too complex to be acquired from the impoverished input or stimulus to which children are exposed. He pointed out that the behaviourist theory (which assumes that learning is based on imitation) failed to explain how children produce utterances that they have never heard before, as well as utterances that contain errors that are not present in the language of their adult caregivers. Furthermore, Chomsky argued, children do not produce certain errors that we might expect them to produce if the process of language acquisition were not rule-governed. Chomsky's theory was the first mentalist or cognitive theory of human language, in the sense that it attempted to explore the psychological representation of language and to integrate explanations of human language with theories of human mind and cognition. The poverty of the stimulus argument led Chomsky to posit that there must be

a biologically predetermined ability to acquire language which, as we have seen, later came to be called Universal Grammar.

Tomasello (1995) argues that there are a number of significant problems with this hypothesis. Firstly, Tomasello argues that Chomsky's argument for a Universal Grammar, which was based on his argument from poverty of the stimulus, took the form of a logical 'proof'. In other words, it stemmed from logical reasoning rather than from empirical investigation. Furthermore, Tomasello argues, the poverty of the stimulus argument overlooks aspects of the input children are exposed to that would restrict the kinds of mistakes children might 'logically' make.

For instance, if children were employing the associative or inductive learning strategies proposed by the behaviourists then, as Chomsky pointed out, we might expect them to make mistakes in question formation. For example, based on data like the sentences in (19), children might posit the rule in (20) as part of the inductive process.

- (19) a. The man is bald.  
b. Is the man bald?

#### (20) Rule for question formation

Move the verb to the front in the corresponding declarative sentence.

Furthermore, given the data in (21), we might expect children to produce sentences like (22a), which is formed by moving a verb to the front of the sentence. The underscore shows the position of the verb in the corresponding declarative sentence. However, as Chomsky pointed out, children do not make errors like these, despite the absence of any direct evidence that such constructions are not well-formed, and despite the fact that constructions like (22b) are rather rare in 'motherese' or child-directed speech. Despite this, children produce examples like (22b), which rests upon the unconscious knowledge that the first *is* in (21) is 'buried' inside a phrasal unit (bracketed).

- (21) [The man who is running] is bald.

- (22) a. \*Is the man who \_\_\_\_\_ running is bald?  
b. Is the man who is running \_\_\_\_\_ bald?

According to Chomsky, children must have some innate knowledge that prohibits sentences like (22a) but permits sentences like (22b). According to Tomasello, the problem with this argument is that, in the input children are exposed to, they do not hear the relative pronoun *who* followed by an *-ing* form. In other words, they do have the evidence upon which to make the 'right' decision, and this can be done by means of pattern-finding skills.

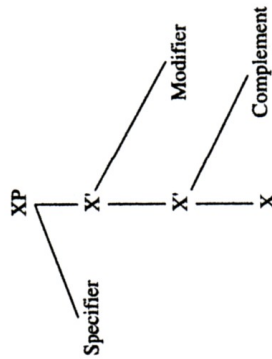


Figure 4.9 The X-bar approach to phrase structure

Tomasello's second argument relates to the nature of the learning skills and abilities children bring with them to the learning process. It has now been established beyond dispute that children bring much more to this task than the inductive learning strategies posited by the behaviourists, which Chomsky demonstrated in 1959 to be woefully inadequate for the task of language acquisition. In the intervening years, research in cognitive science has revealed that infants bring with them an array of cognitive skills, including categorisation and pattern-finding skills, which emerge developmentally and are in place from at least seven months of age. In addition, children also develop an array of sociocognitive (intention-reading) skills, which emerge before the infant's first birthday. On the basis of these facts, there is now a real alternative to the nativist hypothesis.

The third argument that Tomasello raises relates to the notion of language universals. In the 1980s Chomsky proposed a theory of Universal Grammar called the **Principles and Parameters** approach. According to this approach, knowledge of language consists of a set of universal principles, together with a limited set of parameters of variation, which can be set in language-specific ways based on the input received. From this perspective, linguistic differences emerge from parameter setting, while the underlying architecture of all languages is fundamentally similar.

For example, one linguistic universal in the principles and parameters model is the X-bar schema. This is a small set of category neutral rules that is argued to underlie the phrase structure of the world's languages. This idea is illustrated in Figure 4.9. In this diagram, X is a variable that can be instantiated by a word of any class, and P stands for phrase. X represents the **head** of the phrase, which projects the 'identity' of the phrase. The **specifier** contains unique elements that occur at one of the 'edges' of the phrase, and the **complement** is another phrasal unit that completes the meaning of the head. A **modifier** adds additional optional information. The name 'X-bar' relates to the levels between head (X) and phrase (XP), which are labelled X' to show that

Table 4.9 Phrase structures in English

Phrase	Specifier	Head	Complement	Modifier
Noun phrase	that	designer	of time machines	in the shed
Verb phrase	Lily	loves	George	distractedly
Adjective phrase	very	fond	of him	
Preposition phrase	right	over	the road	

they have the same categorial status (word class) as X, but are somewhere between word and phrase.

Table 4.9 provides some examples of phrase structures in English that could be built out of this basic structure.

Notice that some of the cells in Table 4.9 are empty. The idea behind the X-bar model is that only the head is obligatory in the phrase, although each individual head may bring with it some requirements of its own for which this structure can be exploited. For example, a transitive verb will require a complement (object), while an intransitive verb will not. Another important feature of this model is that while hierarchical relations between head, specifier, complement and modifier are universal (this means that the phrasal unit underlies the phrase structure of every language), linear relations are not (this means that the parts can occur in different linear orders). This is where the idea of parameter setting comes in. A child exposed to a head initial language like English adopts an X-bar structure where the head X precedes the complement. A child exposed to a head final language like Korean adopts an X-bar structure where the head follows its complement. Because the X-bar model specifies that the complement always occurs next to the head, only two 'options' are permitted. This illustrates the restricted nature of the parameters of variation in this model.

Tomasello argues, as have many opponents of the generative approach, that the X-bar model does not account for non-configurational languages like the native Australian language Dyirbal. A non-configurational language is one in which words are not grouped into obvious phrasal units. The application of X-bar theory to this type of language raises a number of questions about how the Dyirbal child sets his or her head initial/final parameter. Cognitive linguists like Tomasello argue, then, that the 'universals' posited by generative linguists arise from theory-internal considerations rather than appropriately reflecting the diversity and complexity of language.

The linguistic modularity hypothesis

As we have seen, the generative model rests on the hypothesis that there is a specialised and innate cognitive subsystem or 'language faculty': an encapsulated

system of specialised knowledge that equips the child for the acquisition of language and gives rise to unconscious knowledge of language or competence of the native speaker. This system is often described as a *module* (see Chomsky 1986: 13, 150; Fodor 1983, 2000). Patterns of *selective impairment*, particularly when these illustrate *double dissociation*, are often thought by generative linguists to represent evidence for the encapsulation of such cognitive subsystems. Examples of selective impairment that are frequently cited in relation to the issue of the modularity of language are Williams Syndrome, linguistic savants and Specific Language Impairment. Williams Syndrome is a genetic developmental disorder characterised by a low IQ and severe learning difficulties. Despite this, children with this disorder develop normal or super-normal language skills, characterised by particularly fluent speech and a large and precocious vocabulary. Linguistic savants are individuals who, despite severe learning difficulties, have a normal or supernormal aptitude for language learning. In the case of Specific Language Impairment, a developmental disorder that is probably genetic, individuals perform normally in terms of IQ and learning abilities, but fail to acquire language normally, particularly the grammatical aspects of language. These patterns of impairment constitute a case of *double dissociation* in the sense that they can be interpreted as evidence that the development of language is not dependent upon general cognitive development and vice versa. This kind of evidence is cited by some generative linguists in support of the modularity hypothesis (see Pinker 1994 for an overview).

#### Interpretations of empirical findings in child language acquisition

When looking at empirical evidence for or against a particular theory of language, it is important to be aware that the same set of empirical findings has the potential to be interpreted in support of two or more opposing theories at the same time. In other words, while the empirical findings themselves may be indisputable (depending on how well-designed the study is), the interpretation of those findings is rarely indisputable. For example, while Tomasello argues that the one-word and two-word stages in child language provide evidence for item-based learning, generative linguists argue that the existence of these states provides evidence for a 'predetermined path' of language development, and that furthermore the order of units within the two-word expressions provides evidence for the underlying rule-based system that emerges fully later. Moreover, while Tomasello argues that the tendency for infants to attend to familiar linguistic stimuli provides evidence for pattern-finding ability, generative linguists argue that this provides evidence for the existence of a universal 'pool' of speech sounds that the child is equipped to distinguish between, and that parameter setting abilities are evident in the

infant. As this brief discussion illustrates, the developmental psycholinguistics literature is fraught with such disputes and represents an extremely complex discipline. The interpretation of such findings should always be approached critically.

#### Localisation of function in the brain

The final issue we consider here is the localisation of linguistic function in the brain. So far, we have been discussing models of mind rather than brain. Of course, unlike the mind, the brain is a physical object, and neuroscientists have been able to discover much in recent years about what kinds of processes take place in different parts of the brain. In fact, we have known since the nineteenth century that there are parts of the brain that are specialised for linguistic processing, for most if not all people. There is an overwhelming tendency for language processing to take place in the left hemisphere of the brain, and areas responsible for the production of language (Broca's area) and comprehension of language (Wernicke's area) have been shown to occupy distinct parts of the brain. These findings have prompted many linguists to argue that this supports the view that we are biologically predetermined for language. However, this is not an issue about which cognitive linguists and generative linguists disagree. The nature of their disagreement concerns the nature of these biological systems: whether they are domain-general or specialised. The facts concerning localisation of function do not provide evidence for or against either the cognitive or the generative view, given that both are models of mind.

#### 4.5 Summary

In this chapter we have been concerned with the usage-based thesis and how this model accounts for knowledge of language (grammar), for how language evolves over time (language change) and for how we gain or acquire our native language (language acquisition). We began by outlining the main assumptions that characterise the usage-based view of language adopted by cognitive linguists. The first relates to the central importance of the utterance, which is a situated instance of language use, culturally and contextually embedded, and represents an instance of linguistic behaviour on the part of a language user. The second key assumption is the idea that knowledge of language is derived from and informed by language use. The third key assumption is that human language can only be meaningfully accounted for by emphasising the interactive nature of language use. The fourth assumption relates to the central importance of context to the usage-based model, particularly in the case of accounting for word meaning. The final assumption is that the relative

frequency of linguistic units affects the nature and organisation of the language system. We then explored these issues by introducing Langacker's usage-based model *Cognitive Grammar*. This model assumes that linguistic units or symbolic assemblies are explicitly derived from language use, via a process of abstraction, which gives rise to schemas. We then introduced the theme of language change, and saw that Croft's model of language change, the Utterance Selection Theory, emphasised the importance of linguistic convention and interaction in language change. Drawing on ideas from evolutionary theory, Croft argues that language use represents the interface that mediates between linguistic convention, altered replication (innovation) of linguistic form-meaning units and selection (propagation), giving rise to the adoption of new linguistic conventions (language change). Finally, we examined the work of the developmental psycholinguist Michael Tomasello. Based on empirical findings that early language acquisition is item-based rather than rule-based, Tomasello argues for a construction-based or symbolic view of language acquisition, which relies upon domain-general pattern-finding skills and intention-reading skills. Tomasello argues that language use, in the context of joint attentional frames, facilitates the imitation of linguistic behaviour, which is a form of cultural learning. We compared Tomasello's usage-based account with Chomsky's Universal Grammar model, and found that while cognitive and generative theories stand in direct opposition on the issue of the existence of specialised and innate cognitive systems for language acquisition, they agree that humans are biologically predetermined for language acquisition.

### Further reading

Language and use in cognitive linguistics

- Barlow and Kemmer (2000). This is a recent collection of papers by leading proponents of the usage-based approach to linguistic theory. The introductory article by Kemmer and Barlow is a particularly useful overview of the main tenets of usage-based approaches.

Langacker's usage-based model

- Langacker (1987). Langacker's foundational work, influential in many areas of cognitive linguistics, provides a thorough overview of the usage-based perspective.
- Langacker (1999b). Chapter 4 outlines the usage-based model.
- Langacker (2000). An article-length overview of the ways in which Cognitive Grammar is usage-based.

- Langacker ([1991] 2002). Chapter 10 specifically addresses the usage-based model.

Other usage-based approaches to language change

- Croft (2000). In this important book, Croft adopts a usage-based perspective in attempting to develop a new theory of language change.

The usage-based approach to language acquisition

- Achard and Niemeier (eds) (2000). A special issue of the journal *Cognitive Linguistics*, devoted to research by cognitively-oriented developmental psycholinguists.
- Tomasello (1992). Tomasello's case study of the early linguistic development of his daughter.
- Tomasello (1995). A persuasive critique of the Chomskyan perspective on language and language acquisition as presented in Steven Pinker's (1994) book *The Language Instinct*.
- Tomasello (2000). In this article, Tomasello presents a succinct overview of some of the ideas developed in his 2003 book (see below).
- Tomasello (2002). A collection of articles by leading pioneers in developmental psycholinguists. While not specifically focused on the usage-based perspective, this is an invaluable resource on the state of the art in language acquisition research.
- Tomasello (2003). The definitive usage-based account of language acquisition.

### Exercises

#### 4.1 A definition of the usage-based approach

In your own words, provide a definition of the usage-based thesis in twenty words or fewer. Make sure you include each of the following expressions in your definition: *utterance, grammar, language change, language acquisition*.

#### 4.2 Grammar and language change

The view advocated by cognitive linguists like Langacker is that a grammar sanctions language use: the conventional symbolic units that make up a language license new and ongoing language use. Adopting this hypothesis, explain how Langacker's usage-based approach allows and explains language change.