Language, culture and cognition

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This new series looks at the role of language in human cognition – language in both its universal, psychological aspects and its variable, cultural aspects. Studies will focus on the relation between semantic and conceptual categories and processes, especially as these are illuminated by cross-linguistic and cross-cultural studies, the study of language acquisition and conceptual development, and the study of the relation of speech production and comprehension to other kinds of behaviour in cultural context. Books come principally, though not exclusively, from research associated with the Max Planck Institute for Psycholinguistics in Nijmegen, and in particular the Cognitive Anthropology Research Group.

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Language and conceptualization

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5 Role and individual interpretations of change predicates

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Introduction: roles, individuals, and change predicates

We are only gradually coming to the full realization that grammatical constructions, like lexical items, not only have meaning but offer fascinating evidence about human conceptual structure. Lakoff, Langacker, Talmy, and a few others were ahead of the rest of us in insisting (even during a period when few linguists shared their views) that grammar is a meaningful system which necessarily reflects the conceptual structure it represents. But it still remains true that, while no language is more than very partially described in any framework, the set of cognitively oriented studies of grammatical constructions is as yet very small even relative to our limited conception of full description. There are probably many surprises ahead of us as we continue to analyse mappings of cognition onto grammar.

One particular problem that frequently arises in studies of both lexical and grammatical polysemy is the problem of how seriously to take a linguistic grouping or splitting of two related concepts. Does the use of a single form for multiple senses, or of separate forms for separate senses, have any connection with cognitive relations between the concepts referred to? For example, we may note that one language has separate conditional and topic markers, while another language has only one marker as the central representative of both these functions (see Haiman 1978). Cross-linguistic comparison will assure us that neither of these situations is abnormal: we will find that most languages can differentiate between these two functions, but also that there are etymological connections between them in many languages (for example see Traugott 1985).

An interesting, and common, situation is the one I am about to discuss, where two classes of concepts show both saliently similar and saliently different linguistic treatment in the same language: in this case, one set of constructions treats the concepts similarly, and another set of constructions treats them differently. Under such circumstances, the likeliest conclusion

seems to be that the speakers in question regularly relate two sets of concepts which they also consistently differentiate cognitively. The knowledge that such scenarios are common should make us cautious about presuming that any particular linguistic categorization we observe is the only one possessed by its speakers: we really should look at the entire grammar before being so presumptuous as to say that a language *fails* to mark a particular conceptual distinction or grouping. (And even if that were true, negative linguistic evidence is far harder to evaluate than positive evidence: what does the lack of a distinction tell us about the speaker's cognitive structure, other than that the classification in question has no support from the linguistic system?) In this particular case, however, the complex and fuzzy conceptual categories reflected in the two classes of constructions give us good evidence that the relationship between the categories is itself a complex one.

This chapter concerns two classes of English constructions, both of which are centrally used to express change of an entity over time. It will become evident that one of them regularly extends to a particular, probably cognitively related set of scenarios concerning role–value relations, while the other class of constructions does not. I shall argue that there is further general cognitive motivation for the choice of which construction is restricted and which is extended to the second group of meanings.

Fauconnier (1985) has observed that sentences like *The President changes every four years* have two interpretations, one in which the role of President is taken to change occupant every four years, and one in which the current filler of the role (e.g. George Bush or Bill Clinton) is taken to undergo some transformation every four years (perhaps he changes religion). Fauconnier's general understanding of mental spaces and connectors allows the name for a role (e.g. *the President*) to refer either to the role itself or to the individual filling that role (in some mapping between mental spaces and individuals). That is, there is a general function connecting roles with their values, which allows role-names to refer to role-fillers. Proper names, on the other hand, are taken primarily as referring to the individual referred to and will not automatically also refer via that individual to the role filled; hence *George Bush changes every four years* is unambiguous and does not get interpreted as meaning that the office of President changes tenants.[1]

This chapter concerns a systematic set of contrasts in behaviour between classes of predicates: there are predicates that show the ambiguity mentioned above, and others that force an individual rather than a role reading. Consider the following example. An author has been rewriting and adding to a paper for the last three years, delaying production of the volume in which the paper is to appear and jeopardizing the volume's length limits. The volume's despairing editor says to a colleague:

(1) Higginbottom's paper **gets longer** {every time he sends it in. / with every month of delay}

or

(2) Higginbottom's paper {**lengthens** / **grows**} {every time he sends it in / with every month of delay}

Now consider an alternative scenario. An author has regularly contributed a paper to the Berkeley Linguistics Society conference volume each year, and each successive paper has been longer than the preceding one. Another desperate editor might exclaim something like (1) (namely (3)), but not something like (2) or (4).

(3) Higginbottom's paper keeps **getting longer** every year!
(4) # Higginbottom's paper keeps **lengthening** every year!

(I use a # sign throughout this chapter to indicate that the subject of the example sentence is restricted to an individual reading and cannot have a role reading.) Example (3) shows a particular kind of mapping from roles to individuals. The change process of 'getting longer' is attributable not to any individual holder of the role 'H's paper' but rather to the relationship between the lengths of successive holders of the role. More formally, an individual reading of the subject of *lengthen* would involve a single individual (a paper) which was shorter at an earlier time (T_1) and longer at a later time (T_2), or which continued to show the right kind of length difference between successive sets of earlier or later times. But in the described series of BLS papers, no single entity has changed over time. Instead, the role 'Higginbottom's paper' is filled by a shorter entity at an earlier time than at a later time. This I will call a 'role' reading of a change-of-state predicate, while I will refer to the other reading as an individual reading.

The point of the examples above is that some change-of-state predicates allow role as well as individual readings, while others are restricted to individual readings. In the course of this chapter, I hope to (1) demonstrate that there is regularity to the occurrence of predicates in one class or the other and (2) motivate the contrast by linking it up with a variety of related contrasts which have been noticed elsewhere in the literature, and which can be elucidated using some of the same analytic machinery.

1 Defining the classes of predicates

Let us begin with some further examples of semantically close pairs of predicates which differ with respect to permitting a role reading for their subjects.

(5) Your apartment keeps **getting bigger/(smaller)** every time I visit.
(6) # Your apartment keeps **growing/(shrinking)** every time I visit.
(7) The situation **gets better/worse/crazier** every time I call her.
(8) # The situation **improves/worsens/deteriorates** every time I call her.
(9) The cars **get three feet longer** when you enter Pacific Heights.
(10) # The cars **lengthen by three feet** when you enter Pacific Heights.
(11) Services **get longer** as you go to more Orthodox synagogues.
(12) # Services **lengthen** as you go to more Orthodox synagogues.
(13) His car **went faster** (every time he bought a new one).
(14) # His car **speeded up/accelerated** (every time he bought a new one).

In (5), we could be referring to a sequence of successively larger or smaller apartments (values of the role 'your apartment'); but (6) strongly prefers a reading where the same apartment (individual) is remodelled, gaining or losing space. Example (7) could mean that either a continuing 'situation' (one individual) changes with each phone call, or there are a sequence of situations (values of the role 'the situation') of which each is better (worse, crazier) than the one encountered on the preceding phone call. Example (8) demands the former reading. Example (9) makes sense because we can interpret the role 'the cars' as being filled by different individuals before and after one enters Pacific Heights; (10) doesn't make sense outside of science fiction, because the predicates in question won't allow such a reading, and it's hard to imagine the same individual cars growing longer. Similar examples can be multiplied with ease.

Another way of showing up the same contrast is to take subject noun phrases which are more or less conducive to role or individual readings when used with the same predicates.

(15) My kids keep **getting taller**.
(16) # My kids keep **growing**. (Easily interpretable)
(17) His lovers keep **getting taller**.
(18) # His lovers keep **growing**. (Harder to contextualize)

Grow demands an individual reading, unlike *get taller*; children are naturally understood as individually growing. We find it harder to imagine 'lovers' (whom we normally think of as adults, though here we might think of teenagers instead) individually growing taller, although we can readily imagine the role labelled 'his lovers' having successively taller individuals as values.

For the examples given so far, a simple generalization describes the distinction between the 'permissive' predicates which allow a role reading and restrictive ones which do not: monolexemic change predicates are restrictive, and polylexemic (or periphrastic) ones are permissive. We shall later

see that this division is not perfect, although the exceptions themselves show some further subregularities. But for the moment, it is clear that a large number of contrasts can be regularly described this way. The direction of the contrast (that is, which predicates are restrictive and which are permissive) will be motivated below, by independently motivated iconic principles. But first, let us briefly examine some parallel data.

2 Sequences of individuals in time and space; parts and wholes

The cases we have been examining involve a set of **temporally successive** fillers of a single role. 'Permissive' predicates linguistically treat such a sequence as equivalent to the more basic case of a set of temporally successive states of a single individual tracked through time. Talmy (1988) has observed that some predicates also treat a set of **spatially sequential** objects along a path as linguistically equivalent to the set of temporally successive states of an individual, as in examples (19a–b).

(19a) The telephone poles **get taller** as you go down the road.
(19b) The wells **get deeper** as you go down the road.

Contrasting the examples in (19) with those in (20), we see that such predicates contrast with restrictive ones which do not allow Talmy's observed reading, and we note the familiar monolexemic/periphrastic distinction. Similar pairs can be seen in (21) – (24).

(20a) # The telephone poles **expand/grow** as you go down the road.
(20b) # The wells **deepen** as you go down the road.
(21) The buildings **get older** as you walk towards downtown.
(22) # The buildings **age** as you walk towards downtown.
(23) The windows **get dirtier/sootier/darker** as you go towards the Bay.
(24) # The windows **soil/darken** as you go towards the Bay.

So Talmy's examples also follow the pattern mentioned above for temporal sequences of role-fillers.

Another similar set of examples is cases where an individual does not change over time with respect to some property, but rather there is gradual variation over the physical extent of the individual with respect to the property in question. Examples like (25) are thus in some respects similar to Talmy's examples.

(25) The paint **gets** gradually **darker** as you move along the wall.

Of course, unlike in Talmy's examples, here it is almost impossible to separate '*the paint*' into an objectively determined series of individuals: there is only one surface, and no necessary boundary between the lighter and

darker paint areas. But one way to look at (25) might be to say that if we were to take samples at a series of individual points along the wall, they would fall into a sequence from lightest to darkest. In this case, speakers' judgements involved are not as strong as in the cases where temporally sequential role-fillers or spatially sequential differentiable objects are involved: many speakers find (26)–(28) quite acceptable.

(26) The paint **gradually darkens** as you move along the wall.
(27) The fence **gets higher** as you go towards the back of the yard.
(28) The fence **rises** as you go towards the back of the yard.

What we need now is a formal analysis of the characteristics of these three related data sets, preferably an analysis which will allow us to motivate the contrasts (and the absences of contrast) which are observed. The following section will be devoted to such an analysis.

3 Image-schema transformations, iconicity, and semantic relatedness

It has been demonstrated (Brugman 1988, Brugman & Lakoff 1988) that lexical items may contrast (among other ways) with respect to the image-schematic transformations which link possible interpretations. An **image-schema** is a reduced, topologically structured, schematic representation which is an important underlying unit in our cognitive representation of meaning (see Lakoff 1982, 1987). An example adduced by Brugman and Lakoff is the contrast between path focus and endpoint focus in English prepositions. Many English prepositions, among them *over* and *around*, can be used in examples like the (b) examples below, as well as in the more basic (a) cases:[2]

(29a) Charlotte walked **over** the hill.
(29b) Charlotte lives **over** the hill.
(30a) Charlotte walked **around** the corner.
(30b) Charlotte lives **around** the corner.

The difference between the readings in question in that the (b) readings (the 'endpoint-focus' readings) of the prepositions express a location which is the endpoint of the potential path, but do not (unlike the (a) readings) involve any actual traversal of such a path. Other English prepositions, however, show a different distribution:

(31a) Charlotte walked under the bridge.
(31b) Charlotte lives under the bridge. (* in endpoint-focus sense.)

Figure 5.1 is intended to show the contrast between the two relevant senses of *over*, and the single relevant sense of *under*, in image-schematic terms.

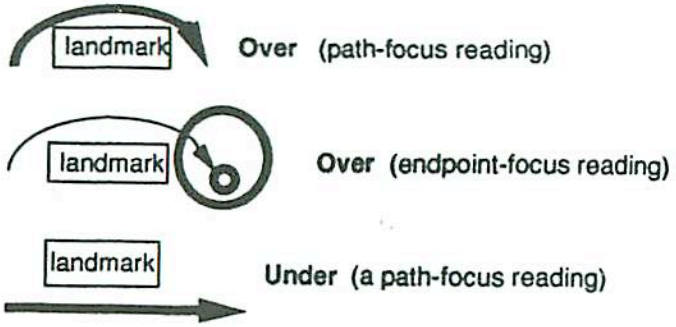


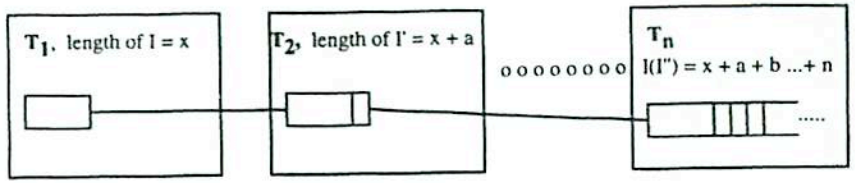
Fig. 5.1 Path-focus and endpoint-focus senses. Bold type indicates the **profiled** elements of the schema, in the relevant sense of the preposition

My claim is that just as prepositions may vary as to whether they allow a 'transformation' of a more central image-schematic meaning to some particular less central meaning, so change predicates may vary in the same way. The basic schema for a change predicate involves at least a sequence of states along a time-axis, with the difference between those states specified by the content of the predicate. Thus, if the predicate in question is *get longer*, then the individual in question is of less length at T_1 than at T_2 (Figure 5.2).

The basic schema, then, is of a single individual which occurs in a temporally sequential set of states varying along some particular parameter. However, a related schema is that of a role which is held by a temporally sequential set of individuals, that set of individuals varying (in order determined by the temporal sequence) along some particular parameter. This is the case with the role reading of *get longer*, as in *his paper gets longer* every year, referring to a sequence of papers each longer than the preceding one (Figure 5.3). Each time *T* is a mental space in Fauconnier's sense and thus has its own set of mappings between a role such as "his paper" and a value for that role.

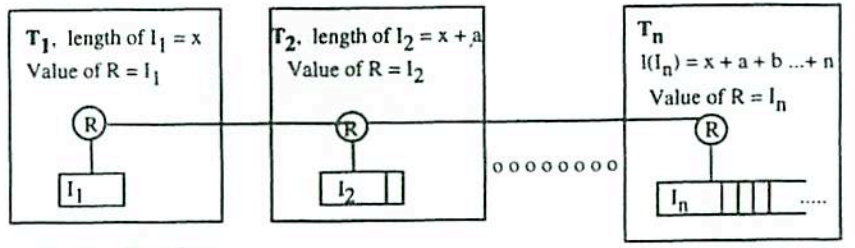
However, as we have observed, *lengthen* does not allow a role reading. We can now precisely describe (though we still have to motivate) this fact by saying that *lengthen* does not allow an image-schematic transformation mapping the kind of structure in Figure 5.3 onto the kind of structure in Figure 5.2; *lengthen* lacks a mapping between a series of individual role-fillers and a series of states of an individual. *Get longer* does allow such a transformation of its basic image-schematic structure.

The Talmy examples discussed above (19a, b) involve mapping a more basic sense of a change predicate (e.g., *get longer*) onto the sequence of states of a physically sequential set of objects along a path. As with the



$T_1, T_2, \ldots T_n$ = times
I, I', I",... = the same individual at different times
Links between I, I', I" show identity

Fig. 5.2 The individual reading of *get longer*.



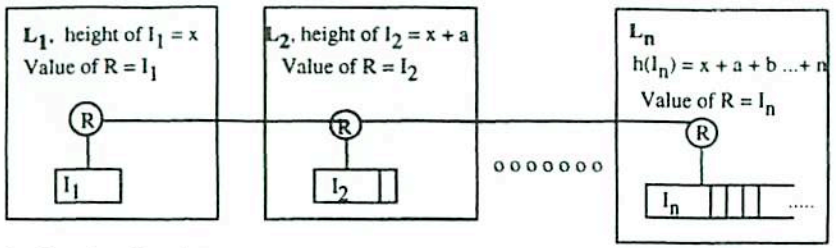
$T_1, T_2, \ldots T_n$ = times
$I_1, I_2, \ldots I_n$ = different individuals
R = role (e.g., "H's paper")

Fig. 5.3 The role reading of *get longer*.

mapping of a sequence of states of one individual onto a sequence of fillers of a role, the choice of lexical predicate determines whether or not this mapping is allowed. Some predicates allow the mapping to extend the range of possible interpretations, others do not; and once again, as a first approximation, we can say that monolexemic predicates are unreceptive to this mapping, while the periphrastic ones readily allow it.

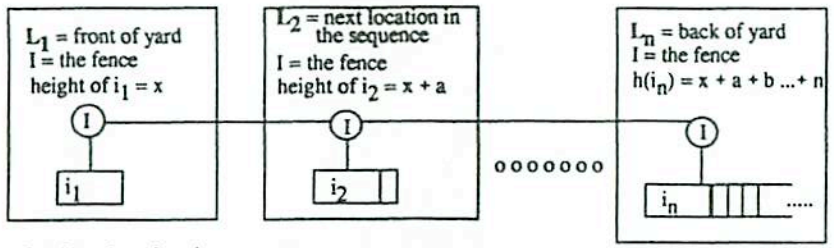
The Talmy readings are probably not to be taken as direct extensions from the basic sense of an individual changing over time, but rather as further extensions from the Figure 5.3 role readings; however, the replacement of a sequence of times by a sequence of locations (L) occurs via a mapping of real time onto scanning time in scanning a spatial path (Figure 5.4). Each *L* is (like the *T*s in Figure 5.3) a mental space and hence has its own mapping of a role such as "telephone pole" onto a value or values.

Finally, there are the examples involving mapping of a temporal sequence onto the states of a series of physically adjacent parts of one individual, scanned linearly. In this case (Figure 5.5), we are, as in the basic schema, only dealing with one individual; but that individual does not



$L_1, L_2, ...L_n$ = locations
$I_1, I_2, ...I_n$ = different individuals (telephone poles)
R = role ("the telephone poles" - each location has a slot for telephone poles, although the same individual poles are not involved)

Fig. 5.4 'The telephone poles *get taller* as you go up the road.'



$L_1, L_2, ...L_n$ = locations
$i_1, i_2, ...i_n$ = parts (or sections of area) of individual I, the fence
i_1 is the section of fence at L_1, i_2 the section at L_2, and so on

Fig. 5.5 'The fence *gets higher* towards the back of the yard.'

change over time. Rather, our spatial scanning of that individual finds parts of that individual which form a sequence varying along the parameter in question. As with the Talmy examples, the mapping of a temporal axis onto a spatial axis is natural enough, given that actual visual scanning occurs in real time; but no real time is necessarily involved here. Perhaps because this case does not involve multiple individuals, it seems particularly close to the basic case, if we may judge by the fact that many speakers do allow monolexemic predicates (as well as periphrastic ones) to cover this extended sense of change predicates: as stated above, *The fence rises towards the back of the yard* is not necessarily unacceptable in the relevant sense. However, there is also a tantalizing configurational parallelism to the Talmy cases: one could say that the role "the fence" is being (metonymically) given a new value in the case of each section of the fence.

4 Iconic motivations for the observed contrasts

I have thus far argued that image-schematic mappings relate different extended senses of change predicates with more basic senses. And I mentioned that there is a salient initial generalization about which predicates 'like' the extended senses, namely periphrastic predicates. We shall see in the next section that this generalization needs refining and has at least one principled set of exceptions. But first it is worth mentioning the probable motivation for such a generalization.

It has been argued in some detail elsewhere (see Fodor 1970, Shibatani 1972, Lakoff & Johnson 1980) that the contrast between monomorphemic or monolexemic and periphrastic causative verb forms is often linked with a semantic contrast between direct, ordinary causation and indirect or unusual causation. Thus *kill* does not mean the same thing as *cause to die*, and parallel data can be adduced from numerous unrelated languages. The analysts who noticed this generalization found it a natural one, recognizing (some more explicitly than others) that a single lexical verb seemed to be most naturally interpreted as referring to a single event. Lakoff (1977), who had originally been among those to explore most fully the claim that verbs such as *kill* were simple syntactically compressed synonyms of periphrastic causatives, laid out a number of general differences between prototypical and aprototypical causation, and noted that this contrast was connected with the contrast between the two sets of predicates.

Haiman (1980, 1983) has more generally claimed that language is iconic for the meaning expressed (a view strongly shared by cognitive linguists in Langacker's and Lakoff's traditions as well). Thus we might say that in general, not just for causative predicates, the contrast between a single lexeme and a lexically complex form is a well-motivated icon for the contrast between a single well-integrated event and a less tightly knit sequence of events.[3]

In the set of data being considered here, I said that periphrastic change predicates allow role senses better than monolexemic predicates. Now, an individual reading of a change predicate could be said to involve a 'single event' in the sense that we track a single individual through a single process of change, although some changes might be more temporally compressed and hence seem more 'event-like' to a viewer than others. A role reading, on the other hand, does not track any single participant through a single process of change (and is also perhaps even more likely than the individual reading to involve a longer time-span and thus to be less event-like in that respect as well). If we were told that some predicates of change allowed the role reading while others did not, we would thus have to guess that (given

other data such as causatives) it would be the monolexemic ones which would be restricted to signifying the tighter event structure of the individual reading. We cannot **predict** that such a contrast between two forms will arise, but if it arises, we can predict the **direction** of the contrast on the basis of an iconic connection with event structure.

Another parallel case is that of duration modifiers in English. There are cases where duration modifiers can modify either an activity or the end state achieved by that activity. Thus, (32) shows the one interpretation, (33) predominately the other, and (34) is a case easily seen as ambiguous (the two continuations are intended to evoke the two readings).

(32) She ran for three hours.
(33) She came into the house for five minutes.
(34) The guests were coming in for two hours.
  (a) . . . but they got a phone call and had to leave after five minutes.
  (b) . . . and Sue had to stand welcoming them that whole time.

For at least some speakers, the end-state-modifying interpretation of duration modifiers is significantly improved or highlighted by the presence of a lexically independent predicate which denotes the end state separately from the activity. Thus, speakers who find (33) impeccable (*came* being separate from *into the house*) may find (35) less perfect, and such speakers also prefer to interpret (36) as involving modification of the activity of entering (while allowing (34) to remain ambiguous).[4]

(35) She entered the house for five minutes.
(36) The guests were entering for two hours.

Although it is hard to find a rigid rule for all speakers about which verbs allow which duration-modifier readings, there don't seem to be cases where the **opposite** of the tendency mentioned above holds true: that is, where the presence of an independent predicate describing the end state of the activity gives a boost to the activity-modification reading and makes the end-state-modification reading worse, rather than the other way around. Iconically, it seems that it is easier to modify something which is overtly and independently expressed in the form of the utterance; lexical independence tends to iconically represent predicational independence, and the reverse is never true.

A final note about which kinds of change predicates are susceptible to the extended set of readings I mentioned above. Thus far I have discussed only predicates indicating change along a scale: the individual becomes **more** or **less** 'long', or whatever the property *P* in question may be. There is of course a whole range of change predicates which refer to transitions from *P* to not-*P*, or from not-*P* to *P*. Some of these allow more restricted role readings, involving just two fillers of the role who differ with respect to *P*, as in (37).

(37) The President became a Democrat. (When Democrat Clinton succeeded Republican Bush)

Example (37) also has an individual reading; the single individual bearing the role of President in the relevant mental space changed his politics.[5]

5 Further complications: nouns describing scales

One set of principled exceptions to the generalization stated above is that many speakers find that subject nouns naming scales are uniquely receptive to 'role' readings, even with monolexemic change predicates. Note the contrast between (38–39), which follow the 'rule', and (40–41), which do not show the contrast in question.

(38) The fences **get taller** as you move westwards across the U.S.
(39) # The fences **grow/rise** as you move westwards across the U.S.
(40) The height of the fences **goes up** as you move westwards.
(41) The height of the fences **rises** as you move westwards.

In general, nouns naming scalar properties accord readily with both monolexemic and periphrastic change predicates, with both 'individual' readings (the local average for fence height changed over time, for example) and 'role' readings (the places passed through on your trip westwards have different average fence heights). I have put 'individual' and 'role' in scare-quotes here, however, because these are not really the same kind of case as the ones we looked at earlier.

A noun phrase like *the fence* may refer to an individual or to a role filled by successive individual fences. An individual fence may change (e.g. get older), or the role may be attributed to some change predicate (*get higher*) on the basis of successive fillers (**values**) of that role which had different heights (*Her back fence gets higher every year*). Things are a bit different with nouns naming scales.[6] A scale names a role: for example, temperature. That role has a value in a given mental space: for example, 40°. That examples such as *The temperature in San Diego is 75°* involve a value being predicated of a role is argued convincingly in Fauconnier (1985). However, an example like (42) shows that a noun phrase like *the temperature* can also fill a value slot:

(42) California's biggest selling point is the temperature.
(43) * California's biggest selling point is 75°.
(44) The temperature in California is 75°.

In examples like (42) and (44), *the temperature* may be a role which is filled by different degree values or a higher-level role which is filled by different local temperature roles taken as values, these in turn being filled by numerical values in degrees. Example (43) shows that the copula construction in English does not ordinarily bypass levels in our understanding of roles and values: 'the temperature' is a value with respect to the role 'California's biggest selling point' but a role with respect to the value '75 degrees'. '75 degrees', however, is not a value of 'California's biggest selling point' – transitivity does not hold.

The temperature in examples like (45–46) refers to a role, therefore, but to a particular kind of role – a role which is a parameter and whose values are values of that parameter. Now, an individual child can grow taller while remaining the same child. But a particular value on a scale cannot change while remaining 'the same' value: 75 degrees cannot 'go up' or 'go down' or 'rise' or 'fall' while remaining 75 degrees and retaining its identity. So in essence **only** the parameters in these examples can be viewed as changing (when they take on different values); the values of roles like temperature do not themselves change but can only be replaced by other values of the same role. This, I suggest, is the reason why nouns like *temperature* readily allow both monomorphemic and periphrastic change predicates, even though they represent roles in the relevant examples, by Fauconnier's (in press) criteria. Individual readings involving real values are not available for these nouns; and even as roles these nouns may simultaneously bear relationships to other roles, behaving like individuals in this respect.

(45) The temperature **goes down** 20° between 6 and 7 p.m.
(46) The temperature **falls** 20° between 6 and 7 p.m.

We can then assume that parameter-naming nouns behave like individuals with respect to the role–individual contrast as it is manifested in linguistic choice of change predicates. But what if such a parameter is involved in another of the image-schema transformations mentioned above? For example, what if we moved through space and observed that the role 'temperature' had (at the same time) different values at different places? This is parallel to the Talmy examples, where 'the telephone poles' is a role which gets different values as we move through space, not time. Speakers show disagreement over these examples, but in cases like (47–48), there are at least some speakers who prefer the periphrastic change predicate to the monolexemic one, and to my knowledge none show the opposite preference.

(47) The temperature **goes down** 20° as you go from Palo Alto to Berkeley.
(48) #? The temperature **falls** 20° as you go from Palo Alto to Berkeley.

At least one speaker who said that (48) was acceptable also said that she found it more acceptable if imagining gradual travel between two locations, with gradual temperature transition, rather than simply referring to a contrast between the two locations. Seen from the driver's viewpoint, during a hypothetical trip from Palo Alto to Berkeley, there is more of an 'event' of change experienced than if we simply focus on the contrast. Related to this may be the further intuition that monolexemic predicates tend to focus on the process of change, while periphrastic predicates (which typically involve one lexical item marking change and another marking the parameter or the end state of the change) often focus more on the final result of the change.[7]

6 Singulars and plurals

Another grammatical contrast which interacts with the ones mentioned above is the singular–plural contrast. Cases which can have either a role or an individual reading show variation as to the interpretation of the subject noun phrase of a change predicate; in particular, singular and plural NPs are often interpreted identically on a role reading but differently on an individual reading. For example, (49) and (50) are almost identical on a role reading: both mean that the role 'her apartment' is filled by successively larger entities. But on an individual reading, (50) involves multiple apartments, each of which grows larger over time; while (49) involves only one expanding individual.

(49) Her apartment keeps getting bigger.
(50) Her apartments keep getting bigger.

Since role readings of change predicates inherently involve mapping a sequence of role fillers with different states onto the sequence of states of one individual, it is natural that the singular–plural distinction should be slightly odd here: singularity and plurality are both involved in the semantics of role readings. One role but multiple values – the form can highlight either aspect of the mapping. With individual readings, where no such mapping is involved, there is naturally no synonymy of singular and plural forms.

7 Questions of extension and intension

Under some division between intensional and extensional meaning, one might say that an example like (51) predicates dying of the extension of the NP *the President*, while (52) predicates commander-in-chief-hood of either the extension or the intension of *the President*, depending on whether we

take it as meaning that the person who fills one role also happens to fill the other, or as meaning that the office of President carries with it the position of commander-in-chief.

(51) The President died.
(52) The President is commander-in-chief.

We might therefore want to say that in this particular case a role reading corresponds to an intensional reading, while an individual reading is an extensional reading. But what about our earlier examples like *The President changes every four years*? Here it is neither the intension nor the extension which 'changes'; it is, rather, the relationship between the two which changes. Here, a role reading does not correspond to a traditional intensional reading, but to something more complex, which can be talked about more readily in the mental-space terminology we have been using than in traditional semantic terms. Change is predicated of the connectors between roles and values. As I suggested above, connectors are abstract image-schematic networks which can be represented by diagrams of the kind used to show the contrasts and similarities between the different constructions discussed above. Thus we can systematically relate the role and individual readings of subjects of change predicates, using exactly the apparatus we use to talk about the role reading of the subject of a non-change predicate like (52)'s *be commander-in-chief*. We need only to add a further image-schema transformation explaining how we can interpret a role reading relative to a change predicate, namely as a change in the role–value mappings. With a change predicate which also involves a specific parameter of change, this change in role–value mappings also involves a sequential set of values of the relevant parameter, attributed to the sequential set of values of the role.

8 Iconicity and exceptions

I have discussed one motivated set of exceptions to the generalization that monolexemic change predicates are unreceptive to role readings of their subjects, while periphrastic change predicates tolerate such readings. This was the case of subject NPs which name properties. This turned out to be a principled exception to our rule, and one which was attributable to the nature of the NPs' semantics rather than to the predicates themselves. However, an obvious counterexample to the original generalization occurs in my very first example sentence, *The President changes every four years*. As I stated at the outset, this example allows a role as well as an individual reading, and the verb *change* is of course monolexemic. What is going on here?

As Langacker (1985) points out, there can only be iconicity of a formal contrast for a functional contrast when there are contrasts to be mapped onto each other in the two domains. If there is only one form for the two functions, that form cannot be said to be iconic for one or the other of the two functions, for example. Most forms are not iconic in themselves; if we examine 'long' and 'short' forms of pronouns, for examples, we see that languages tend to use longer forms (typically stressed) for emphasis, and shorter forms (typically unstressed) for simple reference. We might say that phonological weight is being used iconically here to represent emphasis and informational value. However, as Langacker emphasizes, this is only true within a system of contrasts: a language with 'pro-drop' (zero subject pronouns in the unemphatic usage) may have shorter 'long' pronouns than the 'short' pronouns of some other language, and a language with only one set of pronouns does not participate in this iconic system.

Change is different in at least one important respect from the other change predicates so far examined in this chapter. It does not mention a parameter of change. As I commented above, the contrast between monolexemic and periphrastic change predicates often consists precisely in whether the fact of change and the parameter of change are specified in two distinct lexical terms, or jointly in a single lexical item. Thus *lengthen* (intrans.) specifies both the fact of the change and that the parameter in question is increase in length, within a single word. *Get longer*, on the other hand, uses *get* to signify a change of state, and *longer* to specify that the change is an increase in length. *Change*, although monolexemic, is not capable of entering into this particular contrast with some other, periphrastic predicate, since there is no parameter of change to be separated out and mentioned in a separate lexical item in a corresponding periphrastic form.[8]

If *change* is then not part of the system of contrasts which gives rise to an iconic motivation for barring role readings on other monomorphic change predicates, then we would not expect it to be subject to the effects of such iconicity. And other predicates which do not specify a parameter (e.g. *metamorphose*) are equally not to be expected to follow the same rule I have been discussing. Of course, this doesn't tell us what rules do predict the possibility of role readings for subjects of such predicates (a role reading seems impossible for the subject of *The President metamorphoses every four years*; *metamorphose* seems to refer precisely to a process undergone by one individual, but that is an observation, not an explanation). But it does tell us that where the particular iconic motivation for our original contrast is absent, the effects seem to be likewise absent. *Change* is not then an exception to our rule, but a case to which the rule does not apply.

9 Causative change-predicates

This discussion has focused on intransitive predicates of change (one participant changes state, in the basic sense), to the exclusion of their transitive counterparts, which are sometimes identical in lexical form. *Lengthen*, for example, can either mean 'become longer' or 'cause to become longer'. Without repeating the examples from every section of this chapter in detail in their corresponding causative forms (which are sometimes not possible for non-relevant reasons), I think it worthwhile to observe that some of the same iconically motivated contrasts between role and individual readings occur in the causative change predicates' subjects. For example, a role reading involving a set of successively longer papers is available for (53) but not for (54).

(53) Higginbottom **makes** his paper **longer** every year.
(54) # Higginbottom **lengthens** his paper every year.

Similarly, taking causative versions of some of the Talmy examples, we can remark that Talmy's 'role' reading is available for (55) but not for (56).

(55) He **made** the wells **deeper** as you go up the road. (Talking about the contractor who dug successively deeper wells.)
(56) # He **deepened** the wells as you go up the road.

The part–whole examples (as shown in Figure 5.5) do not show as strong a contrast, but their causative counterparts show the same contrast observable in the intransitive predicates. Thus, at least some speakers who find (57) flawless in a 'role' reading (meaning that he made the fence different heights at different places) still prefer to take (58) in the individual reading only, and hence have trouble interpreting it (was the whole fence lifted?).

(57) He **made** the fence **higher** towards the back of the yard.
(58) #? He **raised** the fence towards the back of the yard.

Other speakers accept both readings for both (57) and (58), as they do for (26) and (28), and hence get a sensible reading for (58) with no trouble.

The causative versions of change-of-state predicates thus appear to be subject to the same iconically motivated constraint on image-schematic transformations of the basic change schema which controls our interpretation of their intransitive counterparts.

10 Conclusions

This chapter has suggested that there are a group of related but distinct secondary interpretations of the subjects of change predicates, besides the

standard interpretation that an individual underwent a change or a group of individuals each underwent a change. These are the originally noted basic 'role' interpretations (a role is filled in temporal succession by values which vary along the parameter specified by the change predicate), the 'Talmy' interpretation (a succession of individuals in space along a path, each filling the role in question, vary along the parameter in question), and the part–whole cases (an individual, in the course of its physical extent, varies with respect to the parameter in question). These different interpretations constitute related, but not identical, deformations of the image-schematic structure which defines the basic semantics of change predicates.

There is strong iconic motivation for the availability of these non-basic 'role' readings with periphrastic predicates for change, and for the unavailability of such readings with monolexemic predicates. This does not mean predictability of the existence of such a contrast but simply that the direction of the contrast coheres with other cross-linguistic generalizations and is presumably more natural for speakers than a contrast in the opposite direction. We may thus see it as a property of a predicate (among many other kinds of properties) that it may allow or disallow certain transformations of the abstract image-schematic structure involved in mapping roles to values in interpreting its nominal complements. So far as I can tell, this is in itself a claim of some interest; it means that facts about the interpretation of mental spaces need to be (more or less regularly) linked with lexical predicates (e.g. *change* and *metamorphose*) or with the lexical/phrasal contrast itself.

Moreover, the cognitive link between scenarios involving change of individuals and scenarios involving successive values of a role does not appear to be specific to English. Matsumoto (in press) examines in detail the expression of "abstract change" in Japanese: his complex array of data includes expressions parallel to the Talmy examples cited here, and also examples equivalent to my cases with role readings of subjects. He comments that Japanese change predicates show exactly the same contrast seen in English: lexical predicates insist on an individual reading of the subject, while periphrastic change predicates allow a role reading as well.[9] If this proves to be a common situation cross-linguistically, we have much stronger reasons to take seriously the claims about cognitive structure which I have tentatively made on the basis of English. Further, as Matsumoto points out, the close parallelism between the abstract uses of motion predicates (as pointed out by Talmy, Langacker, and others) and abstract change predicates is in itself suggestive of some deeper commonality in cognitive structure.

Overall, this seems an important example of the ways in which grammar can be revealing of connections between cognitive structures, and of the

ways in which image-schema transformations and mental spaces are central mechanisms in the cognitive structures so revealed.

Finally, the data in this chapter are not readily explicable without recourse to a cognitively oriented and non-autonomous linguistic theory. In a linguistic model which was essentially autonomous of non-linguistic cognition, there would be no motivation for crucial generalizations observed in this chapter. First, why should it happen to be the case that form has an iconic relation to function? And what defines such an iconic relation, if not cognitive structure: how do I intuitively 'know' (as a speaker rather than an analyst) that temporal sequence of clause production is a natural icon for temporal sequence of described events? Why should it not be 'natural' for me to relate events in the opposite order from their order of occurrence? Iconicity is not 'determined', in the sense that, given a formal parameter, it may be iconically interpreted in various ways: reduplication, for example, may be iconic for plurality or for perfectivity, to pick two from among its numerous cross-linguistically observed senses. But for there to be a natural direction of iconic interpretation, there must be an imposition of general cognitive structure on linguistic form.

To pick a second example, there is nothing objectively similar about an object which is located over something else or which is passing over something else and an object which is at the end of a path going over something else. (In fact, all objects are at the end of some path, going over the relevant landmark object from some location.) Yet our hypothesis of an image schema transformation from path focus to endpoint focus is motivated by the systematic presence of lexical polysemy patterns in English, in which the same preposition covers both of these senses with respect to various spatial relations. The systematicity would be unmotivated, and the generalization hard to state, in a model which did not allow us to relate lexical items' senses according to perceptually determined and speaker-relative links between spatial relationships that are not objectively similar.

Thirdly, it seems even more odd, from an objective point of view, to treat temporal change of an object linguistically like variation over the extent of an object or like the other cases cited in this chapter. Fauconnier's theory of mental spaces, with the ability to treat both locations and times as 'spaces', and the distinction between roles and values (with the possibility of identity relations at either level), allows us to state generalizations about the cases which English treats alike in its use of periphrastic change predicates. This data becomes a sub-case in a much broader set of generalizations, generalizations which would be unstatable in an objectivist semantic model. Further, as stated above, we are accumulating more and more cases (cross-linguistically, as well as in English) where grammar marks aspects of mental-space structure. In a completely autonomous linguistic model,

there would be no reason to expect this finding: supposing that one were even able to state the relevant generalizations with clarity, there would be no motivation for these particular phenomena to emerge as categories in a grammar uninfluenced by a cognitive structure involving something like mental spaces.

NOTES

I would like to thank George Lakoff, Claudia Brugman, Gilles Fauconnier, and Yo Matsumoto for their comments on earlier versions of this work. Claudia Brugman also produced and recorded example (9) and kindly added it to my corpus. Versions of this chapter were presented in 1991 at the UCB-UCSD Cognitive Linguistics Colloquium, and in January 1994 at the meeting of the Linguistic Society of America in Boston, Massachusetts.

1 When the proper name itself is used to mean a role, things are different – e.g. in the context of a television series about George Bush, *George Bush changes every four years* could mean that a different actor takes the role.

2 The schematically presented material here is in a format largely drawn from recent work in cognitive grammar, in particular the work of Langacker (1985, 1987), Talmy (1988), and Brugman and Lakoff (1988). Crucially, there is an understanding that our cognition of motion involves a **trajector** (the thing which moves or is located) and a **landmark** (the thing with respect to which it moves or is located). Further, trajectors and landmarks may be abstract and are not present only in examples of our cognition of physical motion. Thus, an object evaluated with respect to some quality is a trajector, and the quality-scale with respect to which it is evaluated is an abstract landmark.

3 Note that we are **not** claiming that a single word is per se necessarily a perfect icon for an event, or that a group of words is the perfect icon for a sequence of events. As Langacker (1985, 1987) has cogently argued, a parameter of iconicity often depends crucially on the presence of an appropriate **contrast**.

4 I owe the data in question to Charles Fillmore and Paul Kay.

5 But George Lakoff points out to me that if Jackson had been elected, we would not have said *The President became black*. So not every one of these predicates allows role readings, and I don't have an explanation for this particular contrast.

6 I would like to thank Gilles Fauconnier for helping me understand this part of the data, both in personal discussions and in Fauconnier (in press).

7 From this, perhaps, may stem the tendency to interpret monolexemic predicates as more gradual transitions, at least in certain cases; note (i)–(ii):

(i) Her face **reddened.**
(ii) Her face **turned red.**

Although (i) and (ii) can both be followed by either *gradually from years of skiing* or *instantly*, it seems to me that the most natural interpretation in isolation is that (ii) is not so gradual, and even perhaps that the gradual modifier is more natural after (i).

8 Technically, one should almost certainly refer here to both a **parameter** of change (e.g. length) and a **direction** of change (e.g. increase). My examples do not neces-

sitate pulling these two aspects of meaning apart, although of course the morphology of the English comparative shows these components.

9 Matsumoto's chapter and mine have an interestingly complex shared history; he cites an earlier presented version of this chapter, and I now cite his in support of mine. Barbara Dancygier informs me that Polish also shows a contrast similar to that seen in English and Japanese.

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6 Changing place in English and German: language-specific preferences in the conceptualization of spatial relations

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Introduction

This study looks at how speakers of English and German structure space when describing entities such as the layout of a town or village or when giving instructions on how to assemble parts of an object. The cross-linguistic comparison focuses on the types of spatial concepts used to structure space in complex tasks of this kind and how they differ across languages.

We assume that with the definition of a specific communicative task such as a description or instruction, the information to be expressed is not mapped directly from memory into linguistic form (see also Garrod & Sanford 1988, Nuyts 1992). In language production, speakers generate a temporary conceptual structure which focuses a specific set of pragmatic, semantic, and syntactic options and sets guidelines for the process of mapping information into linguistic form.

This conceptual structure consists of a network of abstract conceptual domains such as space, time, objects, events, modality, etc. which allows speakers to establish a coherent frame when locating entities in space and time, when selecting viewpoints on the events related, when specifying their validity and so on (Stutterheim & Klein 1989). How is this temporary level of representation organized? The body of information expressed in a specific communicative task can be treated as an organized structure which answers a specific question, or **quaestio**. A task which the speaker views as best resolved by presenting information in a narrative form answers the question What happened to x at time t_1, at t_2, etc.? (Klein & Stutterheim 1987). The task definition or quaestio sets constraints on the way information is mapped into the different conceptual domains and is interrelated to form a coherent whole. The retrieval of relevant information from memory is thus mediated by the specific conceptual format which is generated for the task.