

Organização:

Augusto Soares da Silva

Amadeu Torres

Miguel Gonçalves

LINGUAGEM, CULTURA E COGNIÇÃO

ESTUDOS DE LINGUÍSTICA COGNITIVA

VOLUME I



ALMEDINA

Offprint from:

Verhagen, Arie

2004 Language, culture, nature: exploring new perspectives. In:
Augusto Soares da Silva, Amadeu Torres, Miguel Gonçalves
(eds.), *Linguagem, Cultura e Cognição: Estudos de Linguística
Cognitiva*. Coimbra: Editora Almedina, 165-187.

Language, culture, nature: exploring new perspectives

Arie Verhagen

Abstract

Insights from cognitive linguistics about the crucial role of construal and (inter)subjectivity in language use and in linguistic structure allow for an understanding of the nature of human language as in fact parallel to that of animal communication, which is generally viewed as primarily a matter of managing and assessing others, rather than as the exchange of information. On the other hand, a number of results from biological research into animal communication systems, in particular birdsong, provide evidence for the existence of rather flexible vocal learning, cultural variation (dialects), and cultural change in animal communication, which also help to narrow the (conceptual and evolutionary) gap between human language and animal communication. A non-monolithic conception of language and culture is required in order to make progress in understanding both as integral parts of the natural world.

Keywords: evolutionary approach, cultural evolution, animal communication, cognitive coordination.

1. Introduction

Cognitive linguistics participates in and contributes to a broad intellectual movement of recontextualizing language, specifically with respect to its social and cultural dimensions, as Dirk Geeraerts pointed out in his contribution to this conference.¹ What I want to do is to take a further step in this direction, one that also parallels the position of Enrique Bernárdez. We do not just want to contextualize language with respect to such things as interpersonal discourse and human culture, but also to (re)naturalize it, as a communication system of biological organisms. Cognitive linguistics

1. Part of the work reported here was done when I was a fellow-in-residence at the Netherlands Institute for Advanced Study (NIAS). I would also like to thank Carel ten Cate for almost immediately grasping the basic idea of my NIAS-project when I explained it, and then drawing my attention to Owings & Morton (1998).

started out on the basis of a strong commitment to psychological plausibility, and now it is becoming increasingly clear for all cognitive sciences that we also must aim for *biologically* plausible accounts. Neural models represent one crucial development in this respect, but an important perspective that has so far received little attention is that of evolution, in particular the evolution of behavior. What I will suggest is that certain independently developed insights in cognitive linguistics can be linked to insights about animal communication, which in turn gives rise to interesting new research questions. Exploration of the latter may provide further contributions to the enterprise of contextualizing and naturalizing our conceptions of language.

A few years ago, a book on animal vocal communication appeared (Owings & Morton 1998) with the subtitle *A New Approach*. The authors state quite explicitly what they mean by this, as follows:

This book provides a discussion of animal vocal communication that avoids human-centered concepts and approaches, and instead links communication to fundamental biological processes. It offers a new conceptual framework [...] that allows for the integration of detailed proximate studies of communication with an understanding of evolutionary perspectives [...]. Animals use signals in self-interested efforts to manage the behavior of other individuals, and they do so by exploiting the active assessment processes of other individuals. [...] Communication reflects the fundamental processes of regulating and assessing the behavior of others, not of exchanging information. (Owings & Morton 1998: i)

As an example, consider a young animal producing a certain call upon encountering an exemplar of a specific species of predators. Even if the call is species-specific, there is no reason to say that its meaning consists of reference to the predator (the individual, or the category). The meaning of the call is to get, say, the young's mother (who has an interest in its survival) to act in a way that is most effective for the young's own interest, by exploiting the mother's capacity to assess the situation and the young's behavior. Behavioral biologists may to some extent differ on the question whether a notion of "information" has any role at all to play in explaining animal communication, but such differences are relatively marginal. Thus, although Bradbury & Vehrenkamp (2000) do not agree entirely with Owings & Morton, their initial statement also reads: "It is widely agreed that animal signals modulate decision making by receivers of the signals" (Bradbury & Vehrenkamp 2000: 259, citing a multitude of authors).

Apparently, these scholars consider exchange of information a human-centered concept, and so they would perhaps not object to the idea that human communication *might* fundamentally be a matter of exchanging information. But what if human language is also fundamentally a matter of regulating and assessing others, with exchange of information being secondary at best? This is the first part of the line of thought I want to explore, arguing that a number of insights from cognitive linguistics help to reduce the appearance of difference between human language and animal communication; I will be using mainly examples from my own work, but the general point does not depend on that. In the second part, I will follow the reverse route, exploring some recent insights in the evolution of animal communication systems which in turn contribute to narrowing this gap.

2. Signals encoding shared concepts

2.1. Two causative constructions in Dutch – What for?

The first example I want to discuss is that of the semantics of causative constructions in Dutch (cf. Verhagen & Kemmer 1997). In Dutch, two distinct verbs may be used in such constructions, viz. *laten* and *doen*, the former being more wide-spread in the modern language than the latter. Some examples illustrating the use of *laten* are given in (1)–(4).

- (1) *Ze liet het badwater weglopen.*
 She let the bathwater run-off
 ‘She let the bathwater flow off.’
- (2) *Hier laten ze je tenminste je gang gaan.*
 Here let they you at-least your trip go
 ‘In this place they at least let you do things your own way.’
- (3) *Zij liet de agent haar rijbewijs zien.*
 She let the officer her driver’s-license see
 ‘She showed the police officer her driver’s license.’
- (4) *De sergeant liet de soldaten door de sneeuw kruipen.*
 The sergeant let the soldiers through the snow crawl
 ‘The sergeant had (made) the soldiers crawl through the snow.’

The claim is that in general, causative constructions with *laten* mark events involving “indirect causation”, specific cases ranging from enablement and permission as in (1) and (2) to coercion as in (4), including indeterminate or intermediate cases as in (3). The reason why the label “indirect causation” is used here, is that in all cases, besides the differences, the force exerted by the causer of the event (i.e. the subject referent) is to some extent not the only one involved; there is another force which *more directly* produces the effect described by the result predicate, for example gravity in (1) or the perceiver in (3). Even in coercion-cases like (4), the soldiers still perform the movements themselves, and the causal role of the sergeant is understood to be mediated by some form of communication; apparently, this is sufficient in present day Dutch (cf. section 2.3) for classification of the causation in this event as indirect.

Things are different when *doen* is used, as may be illustrated on the basis of the following examples.

- (5) *De felle zon deed de temperatuur snel oplopen.*
The bright sun did the temperature fast run-up.
‘The bright sun made the temperature rise quickly.’
- (6) *Dit controversiële programma heeft de VPRO
destijds heel wat leden doen verliezen.*
This controversial program has the VPRO
at-the-time quite some members do loose.
‘This controversial show made the VPRO lose many members at
the time.’
- (7) *Een blik op de voorster ij deed de kersverse PvdA-
voorzitter beseffen dat hij het niet makkelijk
zou krijgen.*
A glance on the front row did the fresh Labor-Party-
chairman realize that he it not easy
would get
‘A glance at the first row made the new Labor Party chairman
realize that his job wasn’t going to be easy.’

Unlike *laten*, *doen* indicates directness of the causal relationship between the causer and the effect. Typically (though not necessarily), it is used with inanimate causers, for events that do not involve communication. Thus we see physical causation in (5), a kind of “inevitable” sociological

causation in (6), and a cognitive effect produced through perception in (7). This sketch is not complete in all respects (see Verhagen & Kemmer 1997 for details of the different concepts involved), but it suffices for my purposes here.

The pattern as such seems orderly enough, but there is an intriguing question: What makes it survive, especially since the distinction is not universal, certainly not in this specific way? In theoretical, evolutionary terms: What are the factors that contribute to the distinction being passed on from one generation to the next? A simple answer is: “because the young imitate the old”, but this is at best a partial one, as meanings do change – imitation is not full proof. So why has there not been a change to a one-verb system? Besides factors favoring such a simplification, there must have been some real forces favoring the preservation of the distinction. It is of course impossible to ever know all the factors producing such evolutionary pressure at the level of the smallest detail. But it is nevertheless possible to identify some specific one(s), and on that basis gain some insight into the *type* of the factors involved – and this is crucial. While the “survival value” of categorization in general may be evident, the value of actual category distinctions marked in human languages often is not so obvious, so if we are to understand their persistence and change over time, we have to have more specific ideas about these.

To this end, it is important to study actual discourse. Thoughts about decontextualized language, although useful for certain purposes and sometimes even indispensable, can never provide evidence for the factors that shaped the present day system, simply because these factors have to have been historically real.

2.2. Moral reasoning as cause of (differential) replication

In this section I will look at a specific instance of modern Dutch discourse, in order to expose the kind of factors producing “pressure” for maintaining a distinction such as the one between “direct” and “indirect” causation. It concerns a book, published in 1998, by Heleen M. Dupuis, professor emeritus of ethics at the Leiden Medical School, and presently

2. *Op het scherp van de snede. Goed en kwaad in de geneeskunde* (“The cutting edge. Good and evil in medical science”). Amsterdam: Uitgeverij Balans, 1998. The passages discussed here are taken from chapter 8, “Over doden en laten sterven” [‘On killing and letting-die’], p. 132-149.

also a senator.² She is a well known public figure, and participates frequently in public debates on moral issues in the Netherlands, such as those on abortion and euthanasia. One chapter in this book is devoted to the moral evaluation of euthanasia. A recurrent phenomenon in this text is that ethical issues and dilemmas are formulated by means of an opposition between *laten sterven* and *doen sterven*. Although it would be quite telling, space limits prohibit giving a complete overview, but the following examples are representative.³

The fragment in (8) introduces the opposition. At this point no moral issue is connected to the distinction, which reflects an obvious practical difference in medical reality.

- (8) *Context: Large scale research has shown that about one third of all deaths in the Netherlands is preceded by some kind of “decision not to provide treatment”. Not all of these decisions actually accelerate death, but some do.*

The decision to let a patient die is taken regularly in our health care system. Next to that there is a limited number of cases of terminating life actively, so a form of doing-die. This happens about 2500-3000 times per year.

In the first sentence, containing ‘let die’, the indirectness of the causation is clear: no treatment is provided, and something else actually causes the patient’s death. The second sentence has ‘do die’ and here the directness is obvious as well; as the wording “terminating life actively” implies, some treatment *is* provided, and it is the most immediate cause of death. In the next fragment, Dupuis connects the difference to the level of morality.

- (9) *Context: Outside the medical context, the difference between letting-die and doing-die is usually clear. Legally the difference between leaving someone in a helpless condition and “culpable homicide” on the one hand and murder and manslaughter on the other is even vast.*

Apparently what is involved are differences in actions that are reasonably well definable, such that letting-die generally counts as morally (much) less objectionable than doing-die.

In daily life, to ‘let die’ is morally superior, less objectionable than to ‘do die’, for obvious reasons; with another more immediate cause of death

3. I will present some information about the context of a quotation in italics, and then give the relevant fragment in idiomatic English – except for the use of the phrase ‘do die’ to represent the Dutch original *doen sterven*, even though this is not proper English.

than the action of a person, the latter's *responsibility* is also less. Not rescuing a person from drowning is not as bad as drowning someone. Only in exceptional circumstances, such as after a battle, things may be different. In (10), Dupuis claims that the morally right thing to do may be to kill a mortally wounded soldier, rather than letting him live a little longer in agony:

- (10) To let a demented old person die in a nursing home is something that few will find objectionable. Doing him die will, to most people, be reprehensible, if not murder. The opposite of this is the moral evaluation of the "coup de grâce", where most people will say that letting-die (i.e. doing nothing) is morally reprehensible.

Most people would agree on this "reversal of values". Things may become more complicated in medical contexts, especially when the whole point of medicine, viz. to cure a person, is no longer attainable. As (10) also demonstrates, there are cases parallel to the default one; letting a sick, demented old patient die can be morally acceptable, while 'doing' him die is morally wrong. But there are also cases that are not clear at all, such as the one described in (11).

- (11) *Context: Another example. A victim of an accident ends up in the Intensive Care unit, with severe brain injuries. It soon becomes clear that recovery will be impossible, the patient can only live on like a plant.*
All equipment is removed, including artificial nutrition, so that the patient will certainly die. In order to accelerate death and save the person and his relatives a period of horrible suffering, it is decided to administer a Haldol cocktail. Is this a matter of letting-die or doing-die? It hardly seems important. What is important is taking the decision that it is better for this person to die. How this is effected is of secondary importance. For that matter, the question is how to judge shutting down the equipment. It is both an active deed (removing the equipment) that makes it certain that the person will die, as a passive one: allowing death. In this case the moral equivalence of doing-die and letting-die appears to be undeniable.

The question raised is: What is morally more acceptable: letting or doing? Dupuis' answer here is: There is no difference; the question is completely irrelevant. Notice that in this example, the whole situation as well as parts of it, actually allow for both types of categorization, i.e. as direct as well as indirect causation. But that does not in itself change the difference between the *conceptions* of 'to let die' and 'to do die'. The final sentence, claiming their moral equivalence, only makes sense if they are conceptually still different. As a corollary, we should also notice that

readers do not have to agree with Dupuis at this point. Imagine a debate between the doctor who administered the Haldol cocktail and a radical opponent of euthanasia about this case. The interesting thing is that we can accurately predict who will use ‘let’ and who ‘do’. The opponent, who wants to criticize the doctor, is likely to use ‘do die’, as it *construes* the doctor as an immediate cause, maximizing his responsibility for the effect. The doctor himself is more likely to use ‘let die’ (suggesting “I only allowed death to occur a little sooner”).

What may we learn from this as linguists? In terms of an evolutionary model of language use and language change as sketched by Croft (2000), we can say that the author reproduced some particular linguistic units, viz. the Dutch causative constructions, several times, thus contributing to their survival and propagation in the population. But that was not her reason for replicating these units. What is more, it is also obvious that the actual reasons do not directly concern the degree of fit between the words and the situations depicted by them, as might have seemed the case if we had only looked at the first example, with ‘let’ indicating absence of treatment and ‘do’ the application of some treatment. Rather, the difference between one variant and the other is one of construal, and the reason for selecting one over the other is to be found in the assessment of the effect that this construal may be expected to have on the addressee’s attitudes and responses.

So one factor contributing to the survival of the conceptual distinction between direct and indirect causation is that it makes it possible for users of the language to construe situations in such a way that they make moral evaluations, attributions of responsibility and guilt, with the appropriate consequences, possible and easier.⁴ The feature that these special cases share with the normal ones (where *doen* is associated with an inanimate causer) is not the degree of activity of the causer in the depicted event (cf. (5)-(7)), but his exclusive responsibility, of which the speaker tries to convince the addressee. It is not the case that “direct” vs. “indirect” is itself a morally or interpersonally relevant distinction, but its recurrent role in conveying evaluative, even ethical judgments crucially contributes to its being maintained in the language.

4. Wierzbicka (1998) contains an interesting analysis of English causative constructions relating them also to specific (English) cultural models.

2.3. Rise of individual autonomy in the conception of human activities

That it is this kind of complex interactions – crucially involving language users’ assessment of cognitive effects in addressees – which are involved in preservation as well as change of linguistic units over time, may be further demonstrated on the basis of a major change in the use of the two causative constructions that occurred since the 18th century (cf. Verhagen 2000). I will summarize the most important aspects here.

In present-day Dutch, a small number of instances of causative *doen* occurs with an animate causer. Typically, they involve some feature of authority in the relationship between causer and causee, as in these examples:

- (12) *Zij smeekte Jezus haar de goede weg te doen bewandelen.*
 She begged Jesus her the good way to do walk-in
 ‘She begged Jesus to make her walk in the right path.’
- (13) *De regering stelt zich voor deze herstructurering
 gefaseerd te doen plaatsvinden.*
 The government proposes REFL PART this restructuring
 phased to do take-place
 ‘The government intends to have this reorganization take place in stages.’

In (12), the causer is Jesus, who is asked to *make* her do something, and in (13), the government presents some outcome as the inevitable result of its intentions. Up to the 18th century, such uses were much more frequent. Some examples are (14), with the mother as causer and the children as causee, and (15), with some royal figure as causer.

- (14) [...]; *en ik poogde mijn kinderen te doen begrypen, dat zy
 and I tried my children to do understand that they
 óók genoeg zouden hebben, indien zy hun begeerten vroeg
 also enough would have if they their desires early
 leerden beteugelen.*
 learned restrain
 ‘[...] and I tried to make my children understand that they would
 also be satisfied if they learned to control their desires early.’

- (15) [...] *dog dat Sijn Hoogheydt nogtans in dese wel hadde, omme*
 but that His Highness yet in this well had for
alvorens sijn opstel aan de Raidpensionaris te doen sien.
 first his outline at the Counselor to do see
 ‘[...] but that His Highness had nevertheless done well in this case,
 in first showing [lit.: to do see] his draft to the Counselor.’

Table 1 (cf. Verhagen 2000: 274) shows some figures which allow for an interpretation of the main factors involved. The leftmost column shows that the use of *doen* with animate causers decreases dramatically, whereas its use with inanimate causers remains remarkably stable (as can be seen in the rightmost column).

Table 1. Animacy and authority over three centuries, in equal amounts of text

| | Animate Causers | Authorities | Inanimate Causers |
|----------------------|-----------------|-------------|-------------------|
| 18th century: | | | |
| <i>doen</i> | 54 | 40 | 35 |
| <i>laten</i> | 68 | 23 | 5 |
| 19th century: | | | |
| <i>doen</i> | 33 | 9 | 37 |
| <i>laten</i> | 54 | 15 | 4 |
| 20th century: | | | |
| <i>doen</i> | 10 | 4 | 34 |
| <i>laten</i> | 53 | 6 | 8 |

What is especially interesting is the correlation between the first and the second column. The latter gives the number of animate causers which were recognizably categorized as an authority in one way or another. It is clear that not only the use of *doen* decreases, but that in general, also with *laten*, the identification of causers as authorities diminishes over time. We may interpret this as a reflection of a general trend towards diminishing importance of hierarchical social relationships in the description of peoples' interactions, as well as other actions. In such events, the use of *doen* suggests a very low degree of autonomy of the causee, which is not really compatible with modern conceptions of individual, autonomous persons. Especially with respect to addressees, the

use of *doen* must have become increasingly inappropriate, not because the conceptualization of specific causal events, such as telling someone something, underwent some important change, but because of a communicatively less appropriate representation of a person's role in the event.⁵

Thus, we see once more that the factors involved in the change and maintenance of the pattern of replication of this linguistic unit are to be found in effects it has on others. Conceivably, a specific factor here is also the self-image that a speaker presents with the use of *doen* in this kind of events, viz. that of an old-fashioned person adhering to a model of personal interaction as governed by hierarchical social relations rather than by individual qualities. In any case, these factors ultimately led to a change in the semantic networks of *doen* as well as *laten*. Inanimate causers are now the only prototypical kind of *doen*-events, and the meaning of *laten* has become more diverse and more general, perhaps even: vague. The general point is that a major force driving the evolution of a linguistic unit is the effect of its use on addressees, and the assessment of that effect by producers.

3. Signals guiding addressees' inferences

3.1. Non-informational signals

In the previous section, I argued that the role linguistic units play in influencing other people's attitudes is critical for understanding their reproduction and change. The functions of the linguistic units considered so far do not themselves encode such processes of influencing; the different causative constructions just provide different construals of causal events. However, natural languages also contain elements whose function actually presupposes a conception of a linguistic utterance as an attempt to influence an addressee. What is more, these elements cannot be seen as ornamental "additions" to some allegedly basic informational content; rather, they are themselves very basic linguistic elements and

5. Notice that *doen* as such does not indicate authority. That concept is only present when the word is used in descriptions of interaction.

often crucial for the interpretability of discourse. One class of such elements are discourse connectives like *so* and *but*. These provide instructions to make a certain type of inference, but specify nothing about the basis for the inferences involved. Another important class are scalar modifiers such as *even* and *only*; these too invite an addressee to make inferences of a particular type without specifying anything about their contents; they are meaningful without having informational content.

How important the role of these elements is in the normal functioning of language may not always be easy to see in isolated sentences, but it is inescapable in connected discourse. Here I will use a few different translations of a biblical passage (chapter 28 from the book of Job; cf. Verhagen 2003) to illustrate it. This is a difficult text, not easy to interpret. The King James Version of a few verses is given in (16).

- (16) 20 Whence then cometh wisdom? and where is the place of understanding?
 21 Seeing it is hid from the eyes of all living, and kept close from the fowls of the air.
 22 Destruction and death say, We have heard the fame thereof with our ears.
 23 God understandeth the way thereof, and he knoweth the place thereof.
 ...
 28 And unto man he said, Behold, the fear of the Lord, that is wisdom; and to depart from evil is understanding.

What is particularly problematic is the text's coherence. Why mention the fowls of the air if the previous clause already mentions *all* living things? What is the role of the concepts of death, destruction, and fame in the verse between the references to living things and God? But several other translations are less hard to understand, and this is especially effected by the use of connectives and scalar modifiers. A typical example is given in (17), from the Good News Bible [italics added].

- (17) 20 Where, then, is the source of wisdom?
 Where can we learn to understand?
 21 No living creature can see it,
 Not *even* a bird in flight.
 22 *Even* death and destruction
 Admit they have heard *only* rumours.
 23 God *alone* knows the way, ...

The informational content is not really different, but here the birds are construed, by the use of *even*, as an extreme case of living things, turning the clause into a particularly strong *argument* for the first one. Similarly, the addition of *only* to *rumours* (*fame* in (16)) helps us understand that death and destruction do not really know wisdom, which immediately makes it clear what kind of argumentative role the message has to play in this context, viz. parallel to that of the living creatures. Apparently, the greater obscurity of (16) results from uncertainty about its argumentative, not so much its informational content. Understanding an utterance, we may conclude, involves knowing what kind of conclusions it is supposed to induce in our minds.

We may suppose that when the background assumptions on which such conclusions are based, are mutually shared in a community, the argumentative role of a specific message can be so obvious for the members of the community that there is little need to mark it by means of such argumentative operators. This then may give the impression that linguistic communication consists primarily of the exchange of information. Nevertheless, comprehension always involves understanding what kind of influence a message is supposed to exert.

The text at hand provides a very striking illustration of this point in view of translations of the final verse, 28, especially of the initial Hebrew conjunction (*waw*). The KJV (16) has *and*, some translations leave it out, and a few have *but*, such as the American Amplified Bible:

- (18) But to man He said, Behold, the reverential and worshipful fear of the Lord – that is Wisdom; and to depart from evil is understanding.

Obviously, all translations agree that God has superior knowledge of wisdom. But a difference arises when the role of human beings is to be characterized, especially with respect to God. God's wisdom is absolute and encompasses all of creation; for humans, wisdom consists in fear of the Lord and departing from evil. So far so good, but what is the *inferential* link between these two messages? One way of answering this question is to construe them as parallel, with fear of the Lord as the way for man to participate in God's wisdom. Another is to construe the link as one of difference: God's wisdom is inherently inaccessible to man, and the wisest he can do is to fear God. The first presupposes a positive, the latter an antagonistic model of the relationship between man and God,

and it is this kind of difference that is connected with the use of *and* vs. *but* here. But what is especially relevant is that it is unavoidable to take some decision on the argumentative nature of the link between the clauses if one is to understand the text at all.⁶ This is not a relatively inconsequential property of linguistic “performance” but something reflected in core parts of the linguistic system, witness the basic role of such elementary units as *but* and scalar modifiers.⁷

3.2. *An integrated perspective*

The linguistic elements considered above and those in section 2 correspond to two dimensions of the basic organization of a linguistic usage event, as depicted in figure 1.

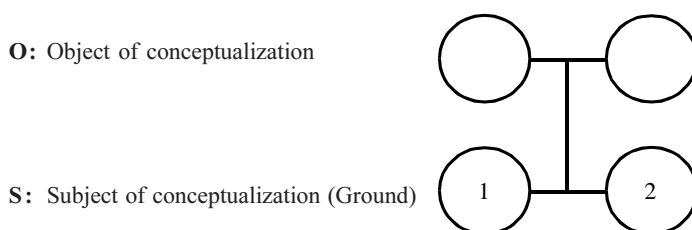


Figure 1. The basic construal configuration (Verhagen, forthcoming)

There are two conceptualizers, a first person/producer, and a second person/addressee, who engage in cognitive coordination by means of a linguistic utterance, with respect to some object of (joint) attention. Following Langacker (1990), I call the vertical line in figure 1 the construal relationship. Signals such as the Dutch causatives operate in that dimension, the basis for their (re)production ultimately lying in the relationship between the two subjects of conceptualization. Signals such as connectives and scalar modifiers operate directly on the relationship

6. One might say that as in many literary works of art, the text allows for more than one reading. But that is something different from saying that it allows for a single coherent reading that is neutral between these two, and that is precisely my point.

7. In Verhagen (forthcoming), I explore such consequences for a wider range of linguistic phenomena, including more abstract grammatical constructions.

indicated by the horizontal line between conceptualizers 1 and 2, as they indicate what kind of inferential processes the addressee should perform.

This does not exclude the possibility that they at the same time also operate on the construal relationship. On the contrary, it is quite normal for a specific linguistic unit to operate in both dimensions. However, the balance between the two often gradually shifts over time, and most of such semantic changes share the same direction, viz. that of realignment from the vertical, construal dimension, to the horizontal level of intersubjective coordination, rather than the other way around. These processes are known as subjectification (Langacker 1990, i.a.), and intersubjectification (Traugott & Dasher 2002).⁸ The basis for such developments and for the uniformity of their direction, is the primacy of the intersubjective coordination relation in actual language use (Verhagen 1995, Langacker 1998, Traugott & Dasher 2002).

The parallel with the basic character of animal communication will by now be obvious. It concerns the fact that human linguistic behavior is primarily also a matter of influencing one another, by exploiting the cognitive capacities of others. First, as I argued in this section, some specific elements of linguistic structure appear to only modify the type of conclusions an addressee should draw from an utterance, not its informational content. Secondly, as argued in the previous section, a crucial factor in the preservation and change of linguistic units in general resides in the rhetorical possibilities that the different construals indicated by these units allow for.

Human language may be more involved than animal communication with influencing mental states (with consequences for long term behavior) rather than with immediate behavioral effects, but this is a matter of degree. First of all, much of language use is actually also aimed at immediate effects,⁹ and secondly, this view still implies a considerably smaller gap than the one between exchanging information with conspecifics and influencing the behavior of conspecifics.

8. The latter term is especially used for the development of linguistic markers managing interpersonal relationships in the act of communication itself, such as honorifics and pronouns of power and solidarity, the former for the development of markers guiding inferences (with consequences not restricted to the communicative situation as such).

9. Understandably, Owings & Morton (1998) mention speech act theory as an approach to human language that resembles their view of communication more closely than other ones.

4. Evolution of culture in nature

In the previous two sections, I argued, from a linguistic perspective, that the basic function of human language rather closely resembles that of animal communication systems –influencing conspecifics by exploiting their interpretive capacities. There are more aspects, though, that make human language what it is. In this section, I want to discuss some research that contributes to narrowing the gap from a biological perspective.

For example, humans must learn their language, including its vocal system. Vocal learning has evolved independently in a number of species of birds (e.g. songbirds) and mammals (e.g. whales and dolphins). Especially songbirds have been studied quite extensively, largely for practical reasons, and as Doupe & Kuhl (1999) show in their comprehensive overview, there are more than superficial parallels between human speech and birdsong, including some neural structures that supposedly have evolved in the context of vocal learning.

Moreover, there is evidence that birds' capacity to learn song is in principle quite flexible. One intriguing fact is that in many species, song learning also appears to be subject to the phenomenon of a critical period. Songs that a bird hears for the first time after a certain age are not learnt as well as songs it has heard at an earlier age. The existence of a critical period after which new songs are harder to learn may be in principle be ascribed to two different kinds of causes.

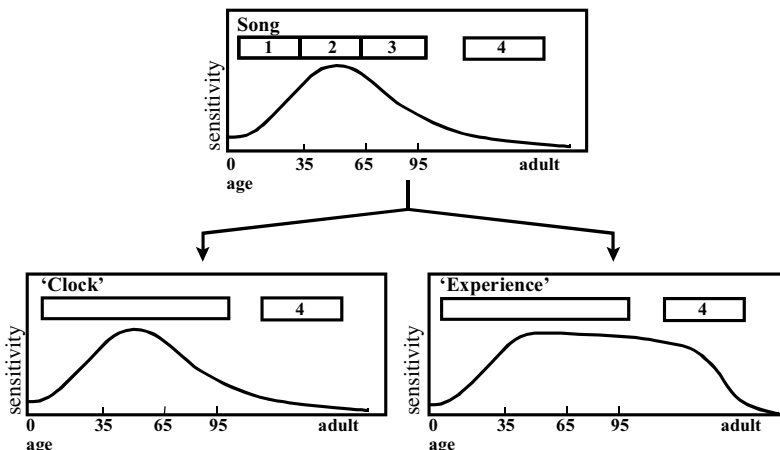


Figure 2. Cognitive effects of learning in zebra finches (from Jones et al. 1996)

The observed reduced capacity of several songbirds to learn in adulthood, after about 95 days of age (cf. the top of figure 2), may be due to some internal “clock”, for example changes in hormone levels accompanying maturation, or to experience itself, such that the acquisition of a certain number of songs makes it harder to add new ones after some time (or, of course, to some combination of the two). These two models make different predictions about what will happen when a young bird is not exposed to adult song. The first predicts that such a bird’s capacity to learn will decline in the same way as that of birds in normal situations, while the second predicts that this bird will have a greater capacity to learn when it is exposed to song type 4 at the age of over 95 days. With birds, such predictions can be tested experimentally, and the results indicate that learning itself is a major factor producing the observed critical period (the model at the bottom right in figure 2 fits the data better than the left one; cf. Jones et al. 1996). So the intrinsic capacity for learning is quite flexible, in principle allowing for the acquisition of a considerable variety of songs, which certainly makes the human capacity for learning a considerable variety of linguistic systems (at least phonological systems) look less “unnatural”.

However, such flexibility of learning capacities, in any species, in principle constitutes a challenge to evolutionary explanations. The question is how such a capacity is maintained over generations, because it is costly. In view of its costs, one would expect that those individuals are favored that have a narrow disposition toward learning a song or set of songs, as they would be able reach the target level of competence sooner, so with the use of less resources, than others. Consider figure 3.

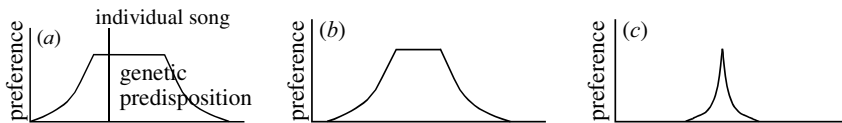


Figure 3. Reduction of learning capacity over generations? (from Lachlan & Slater 1999)

Imagine a species of birds with the genetically determined capacity to learn all songs on the horizontal axis, females preferring some of the songs from this range (e.g. the ones in the middle) more than others. Individual males that learn to produce a song in the most preferred range have an equal opportunity to be recognized as conspecifics by females,

and so to pass on their genes to the next generation. So an individual with a narrower genetic predisposition (figure 3b) would not be at a disadvantage in that respect, and actually have an advantage because of the fewer resources needed to reach an optimal level of song competence. Therefore, while one can imagine evolutionary pressures that favor the initial development of some capacity to learn, this capacity should disappear again over a number of generations (cf. figure 3c); however, this does not happen, certainly not in most, if not all, cases, and the question is how this may be explained.

Lachlan & Slater (1999) propose a mechanism that may account for the maintenance of learning: the existence of the capacity to learn itself creates a condition which disfavors the transmission of genes leading to a narrowing of the song search space. Roughly, the idea is that when the genetic condition for a wide search space is rare in the population, those males that have it will learn all the songs sung by the males with the narrow genetic condition, and thus be recognized as conspecifics, potential mates, by all females, no matter whether the latter have a wider or narrower genetic predisposition. So the wide genetic condition has a relatively good chance of being passed on to the next generation. But if the narrow condition is rare, many males will sing songs outside the range of females with that narrow genetic predisposition, so that these females will be selected against, as they have a harder time finding a potential mate. Thus the narrow condition will become even rarer. In other words, once the capacity to learn is there, it creates a situation favoring the widening of the genetic capacity to learn, which is why this is aptly called the “cultural trap hypothesis”:

The “cultural trap” hypothesis is based on gene-culture coevolutionary theory [...] learning is maintained in an evolutionary trap formed by the interaction between genes and culture. (Lachlan & Slater 1999: 702)

What we have here is a mechanism that leads us to expect evolution of capacities to learn behavioral patterns with a considerable range of variation, as long as the costs are not too high. As we saw above, there is indeed independent evidence for such flexibility in at least some songbirds. Now this in turn should lead us to expect that birdsong exhibits cultural evolution, resulting in dialect variation between sub-populations. If the transmission of communicative units over generations is to such a large extent based on the cultural mechanism of learning and relatively independent of genetic transmission, then there should be varieties of

birdsong, due to the same kind of mechanisms that produce varieties of languages (i.e. dialects) in human populations. In fact, the existence of birdsong dialects has been known since several decades (Doupe & Kuhl 1999: 574/5), and it is also clear that such dialect variation only occurs when songs are transmitted culturally and not genetically (Doupe & Kuhl 1999: 605).

Many changes in human language – which underlie the differentiation into dialects or even different languages – do not (only) involve change of form, but typically (also) change of function. As we know, it is normal, in the case of human language, that the use of forms is continuously extended to new domains, often along particular paths of change (e.g. in grammaticalization; cf. Bybee 1998, Croft 2000, Traugott & Dasher 2002). Thus we should raise the question whether processes of change in culturally transmitted animal communication systems may also involve functional changes. One study suggesting that something of this kind does indeed occur, is Borgia & Coleman (2000). In many species, there is a correlation between signals for aggression in male-male interaction and courtship signals in male-female interaction, for obvious reasons, but this study is one of the first, I think, that provides empirical evidence that the latter actually developed, over time, out of the former. Figure 4 presents the known genealogical relationships between a number of (sub)species of bowerbirds.

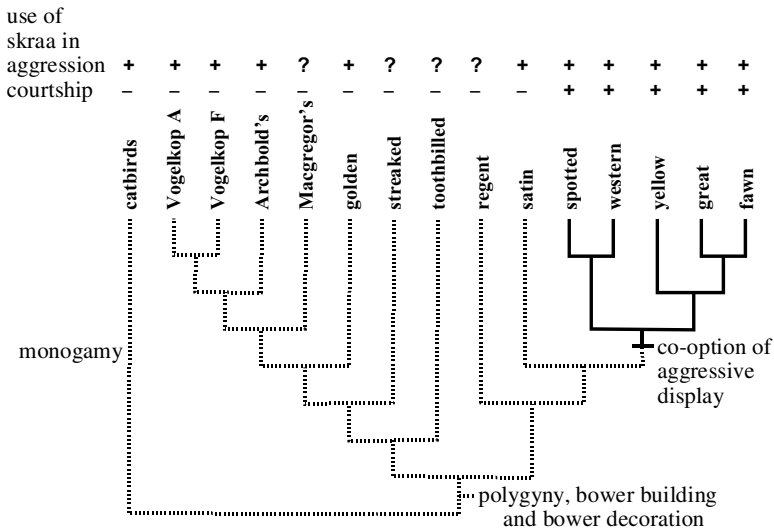


Figure 4. Co-option of aggressive display for use in courtship by *Chlamydera* bowerbirds

The top rows indicate whether a so-called skraa-call is used in aggression and in courtship. The fact that the latter set matches a subpart of the tree is clear evidence that the aggressive function was primary, and that it was later, as the authors call it, co-opted for courtship.

While this is certainly an interesting candidate for a parallel to functional change in language, it is as yet unclear whether it may actually be called a “semantic” change in the sense that applies to human language. Borgia & Coleman do not address the question whether the locus of the change is DNA or memory. Only in the latter case, of course, would we be prepared to consider it a “pure” parallel to semantic change in human language. This is just one of the many instances where it is clear that more research, both conceptually and empirically, is called for. But it does help us to see that such investigations are worthwhile, and may lead to deeper understanding.

While this brief overview is very limited and has certainly not touched all possible interesting points of comparison,¹⁰ it does show that also from a biological perspective, there are several research results that contribute to narrowing the gap between animal communication and human language.

5. Conclusion

One thing that the discussions and comparisons in the previous sections make clear is that “language” and “culture” are actually multifaceted notions, and that at least some of the facets may also be found in other species than our own. It is a crucial component of these two concepts that the phenomena involved are transmitted via imitation and learning, resulting in cognitive structures that are thus reproduced across indivi-

10. For example, human languages are systems with “double articulation” (Hockett 1958), with connected but relatively independent layers of meaningless units (phonology), and meaningful ones (lexicon and grammar). This property of language is essential for its infinite expressivity, which is also intriguing from an evolutionary point of view (cf. Nowak et al. 1999), and it has been put forward as possibly the only “design feature” of language without an analogue in other animals. In connection with infinite expressivity, the property of recursion is also often mentioned, but although this is certainly important for language use, there are good reasons to assume that it is not a general feature of linguistic structure per se, but rather of some subtype of conceptualizations (most importantly: “other minds”) expressed in some linguistic constructions; cf. Verhagen (forthcoming).

duals and across generations without being coded for in the genes. Focusing on this aspect, we can see that we are not the only species that has culture, that culture is not at all that unnatural a phenomenon, and that studying the evolution of culture in this sense in other species may contribute to understanding cultural evolution in humans.

At the same time, what is not included in this set of features is the fact that for humans, culture also involves mutually shared models of the world (life, ourselves, etc.). It is part of the environment with which linguistic systems (mental grammars) interact, and to whose “survival” and reproduction it contributes, as we have seen in section 2. Human language does not just interact with a biological system (the brain), but also with other cultural systems. It remains to be seen to what extent something similar holds in other species. Perhaps it is precisely in this area that differences may be found between culture and communication systems in humans and in other species, i.e. not so much as an “essential”, qualitative difference (such as those between “language” and “not language”, or “cultural” and “natural”, as normally conceived), but as differences in degree of complexity and organization. It may turn out that human linguistic units interact much more with these shared cognitive models which are also transmitted culturally, than communicative units in other species, so that human language would effectively exist and evolve in a more complex kind of environment than communication systems of other species. But differences should be expected to be small, and “bridgeable”. There is little hope of understanding both human language and human culture as natural phenomena if we would maintain that there is a huge gap. Cognitive linguistics, which has been emphasizing the importance and systematicity of construal, shared cultural models, subjectivity and intersubjectivity since its inception, contributes in a specific, arguably crucial way to narrowing it. Such contributions allow us to break up the notions of language and culture into different aspects, some of which we may share with several other species, others with only a few, or even none. This situation provides, in my view, a parallel to the one in the developmental and comparative study of social cognition, about which Tomasello et al. (2003b: 204; cf. Tomasello et al. 2003a) recently remarked:

we are certainly never going to make progress on questions concerning the evolution and ontogeny of social cognition if we think in terms of a monolithic ‘theory of mind’ that species either do or do not have. We are beyond that now. It is time to turn up the microscope.

Likewise, if we are to make progress in understanding language and culture as natural phenomena, we must discontinue thinking in terms of monolithic and essentialist concepts of language and culture that species either do or do not have, and I have claimed that we can. “It is time to turn up the microscope”, indeed.

References

- Bybee, Joan
 1998 A functionalist approach to grammar and its evolution. *Evolution of Communication* 2: 249-278.
- Croft, William
 2000 *Explaining Language Change. An Evolutionary Approach*. London, etc.: Longman.
- Borgia, Gerald & Seth William Coleman
 2000 Co-option of male courtship signals from aggressive display in bowerbirds. *Proceedings of the Royal Society of London B* 267: 1735-1740.
- Bradbury, Kack W. & Sandra L. Vehrencamp
 2000 Economic models of animal communication. *Animal Behaviour* 59: 259-268.
- Geeraerts, Dirk
 2003 Cognitive Linguistics and the underlying trends in linguistic theory. Plenary lecture presented at *Language, Culture and Cognition: An International Conference on Cognitive Linguistics*. Braga: Universidade Católica Portuguesa. July 16-18.
- Hockett, Charles F.
 1958 *A Course in Modern Linguistics*. New York: The Macmillan Company.
- Jones, Alex E., Carel ten Cate, Peter J.B. Slater
 1996 Early experience and plasticity of song in adult male zebra finches (*Taeniopygia guttata*). *Journal of Comparative Psychology* 110: 354-369.
- Lachlan, Robert F. & Peter J.B. Slater
 1999 The maintenance of vocal learning by gene-culture interaction: the cultural trap hypothesis. *Proceedings of the Royal Society of London B* 266: 701-706.
- Langacker, Ronald W.
 1990 Subjectification. *Cognitive Linguistics* 1: 5-38.
 1998 On subjectification and grammaticalization. In: Jean-Pierre Koenig (ed.), *Discourse and Cognition. Bridging the Gap*, 71-89. Stanford: CSLI Publications.
- Nowak, Martin A., David C. Krakauer & Andreas Dress
 1999 An error limit for the evolution of language. *Proc. R.Soc. Lond. B* 266: 2131-2136.

- Owings, Donald H. & Eugene S. Morton
1998 *Animal Vocal Communication: A New Approach*. Cambridge: Cambridge University Press.
- Tomasello, Michael, Josep Call & Brian Hare
2003 a Chimpanzees understand psychological states – the question is which ones and to what extent. *Trends in Cognitive Science* 7: 153-156.
2003 b Chimpanzees versus humans: it's not that simple. *Trends in Cognitive Science* 7: 239-240.
- Traugott, Elizabeth Closs & Richard B. Dasher
2002 *Regularity in Semantic Change*. Cambridge: Cambridge University Press.
- Verhagen, Arie
1995 Subjectification, syntax, and communication. In: Dieter Stein & Susan Wright (eds.), *Subjectivity and subjectivisation: linguistic perspectives*, 103-128. Cambridge: Cambridge University Press.
2000 Interpreting Usage: Construing the History of Dutch Causal Verbs. In: Michael Barlow & Suzanne Kemmer (eds.), *Usage-Based Models of Language*, 261-286. Stanford, CA: CSLI Publications.
2003 Semantics, Inferential Cognition, and Understanding Text. In: Ellen van Wolde (ed.), *Job 28. Cognition in Context*, 231-252. (Biblical Interpretation Series, Volume 64.). Leiden: Brill.
forthcoming *Constructions of Intersubjectivity*. Oxford: Oxford University Press.
- Verhagen, Arie & Suzanne Kemmer
1997 Interaction and causation: Causative constructions in modern standard Dutch. *Journal of Pragmatics* 27: 61-82.
- Wierzbicka, Anna
1998 The semantics of English causative constructions in a universal-typological perspective. In: Michael Tomasello (ed.), *The New Psychology of Language. Cognitive and Functional Approaches to Language Structure*, 113-153. London/Mahwah, NJ: Lawrence Erlbaum Ass.