11. Grammar and cooperative communication

1. Meaning in animal and in human communication: managing versus sharing[1]

Compared to animal communication, human language use appears to exhibit an exceptionally high degree of information sharing. Starting with Dawkins and Krebs (1978), behavioural biologists have come to the conclusion that animal signalling is best seen as

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an instrument for manipulation (both of conspecifics and members of other species), not for sharing information. Owings and Morton (1998) introduce the complementary notions of "management" (for the signaller's side) and "assessment" (for the interpreter's side) to characterize the nature of vocal communication among non-human animals as directly linked to the fundamental biological process of maximizing an organism's fitness; they contrast this with "exchanging information", which they associate with human communication. As they state at the very beginning of their book:

> This book provides a discussion of animal vocal communication that [...] links communication to fundamental biological processes. [...]. 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 and Morton 1998: i)

Human communication, linguistic and otherwise, is the exception; as Tomasello (2008:5) remarks about a simple human pointing gesture to indicate something of interest to one's company: "Communicating information helpfully in this way is extremely rare in the animal kingdom, even in our closest primate relatives". Information is a potentially precious resource and sharing it does not obviously enhance fitness. Information sharing thus requires rather special conditions to be biologically adaptive, for example genetic relatedness ("kin-selection"). But humans also readily share information with non-kin. In the case of humans, the biological conditions consist in the special character of human sociality as exhibiting a level of cooperation that is unique in the animal kingdom (Enfield and Levinson 2006; Tomasello 2009, 2014), which is itself part of our adaptation to life in cultural environments: groups of collaborating individuals sharing a set of cultural practices and competing with other groups (Boyd and Richerson 2006; Richerson and Boyd 2005).

Another hallmark of human languages is that they are fundamentally conventional. A regular association between sound and meaning consists in a process of repeated use that is crucially based on – and at the same time (re)produces – mutually shared knowledge and expectations in a community, i.e., a convention. It is typical for a convention that it contains an element of arbitrariness, in the sense that another behavioural pattern could in principle work equally well. For example, I drive on the left side of the road in Great Britain just because I know that, in this community, everyone else does and that everyone expects everyone else (including me) to do so; I definitely switch to driving on the right when I find out, e.g., upon entering a country on the European continent, that is what everybody in that community does. In the same way, I use the sound *horse* for the concept HORSE just because I know that, in this community, everyone else uses it that way and everyone expects every other member of the community to use it that way. I would readily change my use of this sound if I were to find out that the members of the relevant community were using it in another way (which would amount to my finding out that I was wrong about the meaning of *horse* in this language). So conventionality is predicated on the basic willingness to cooperate in solving coordination problems (Lewis 1969). Thus, some "design features" (Hockett 1960) of language – referentiality, arbitrariness – are directly linked to distinctive characteristics of the human species. The same basic willingness to cooperate also underlies the universal property of language use that in actual utterances more is communicated than what is encoded in

the conventional meanings of the signals used (first formulated in philosophy by Grice 1975, now more and more an empirical science, cf. Noveck and Sperber 2004), which in turn makes linguistic systems constantly subject to change (e.g., Keller 1998).

In this chapter, we will explore the connections between the overall structure of human cooperative communication and its cognitive "infrastructure" (Tomasello 2008; this work covers a wealth of empirical evidence concerning both) on the one hand, and distinct types of linguistic meaning on the other. The argument will be that a number of basic conceptual domains that are commonly encoded in the grammars of human languages – deixis ("grounding"), "descriptive" categorization ("frames"), "logical" operations like negation – pertain to particular features of human cooperative communication.

2. Argumentative language use

From the point of view of modern linguistic pragmatics, there is a certain irony in the emphasis on sharing information as a dominant feature of human communication in evolutionary approaches. Especially speech act theory started with the recognition that an important part of ordinary language use consists of all kinds of acts that *cannot* be properly characterized as descriptive statements about the world, i.e., as sharing information (Austin 1962; see Senft 2014, ch.1, for a concise overview). Undertaking commitments (*I promise*), transferring ownership (*It's yours*), issuing requests (*Please stay off the grass*) are ways of *doing* things in the (social) world, not of describing it. Specifically, issuing commands and asking questions – in general: directive speech acts – are attempts to influence the behaviour and mental states of addressees, and thus fit the biological processes of regulating and assessing that Owings and Morton identify as characteristic for animal communication. Indeed, the authors draw this parallel themselves:

> [...] signals are not most usefully thought of as statements of fact that can be judged true or false; signals are more like human [...] speech acts [...] – outputs that serve to achieve some effect on targets. [...] According to this approach, signals are not statements of fact, that can be judged to be true or false, but are efforts to produce certain effects. (Owings and Morton 1998: 211)

Focussing on the *effects* of using certain words and constructions, all kinds of language use that can be described as "argumentative" or "rhetorical" may be seen as serving basic and general biological functions of communicative behaviour. Clear cases are provided by situations in which the choice of words itself becomes an issue of controversy. For example, immediately after the attacks of September 11, 2001 on the New York World Trade Center and other prominent buildings in the USA, several commentators were searching for terminology to talk about the events; these events were felt to be unique, never experienced before, and thus lacking obvious words to describe them. Many people hit upon the notion of "crime" (usually accompanied by adjectives such as *horrendous* to indicate its extreme nature), while some (also) soon started to use the terminology of "war" ("This is an act of war", "America is at war", etc.). While the two terms are not incompatible (and were in fact sometimes used side by side), several commentaries clearly tended more to the use of one term rather than the other, and this

became an issue of debate. The Dutch prime minister's initial reaction was in terms of "war", but he soon withdrew this term and apologized for having used it, after several members of parliament had criticized him for it. A few of the critics argued that the events lacked too many characteristics of "ordinary" acts of war (there was no conflict between states, the perpetrators were not an army, etc.), but the absolutely general point of the criticisms was that this terminology might easily lead to a kind of response that was bad or at least undesirable: retaliating with military force, possibly against people who had nothing to do with the terrorists.

So what was at stake was not so much whether the descriptive value of the terms *crime* or *war* fitted the situation better. Those who criticized the use of the term *war* certainly agreed that it was not an ordinary "crime" either. What was at stake was whether the situation at hand justified the *consequences* associated with the terms used: *crime* invites one to think that some kind of *police* force should be deployed, and that the *culprits* should be brought to *trial*, so that *justice* may be done, etc.; *war* on the other hand, invites one to think that the use of *military* force is called for, in order to *defeat* the *enemy*, in a large scale operation that will inevitably also affect others than the perpetrators themselves (*collateral damage*). That is to say, they differ systematically in the kind of *inferences* they invite, and in that sense they are clearly oriented towards specific effects on addressees.

These are phenomena known in cognitive linguistics under such labels as "frames", "(idealized) cognitive models", or "cultural models" (I will return to reasons for preferring the latter term later). Such concepts comprise both criteria for their application ("What features make a situation suitable to be labelled with this term?"), as well as a basis for inviting inferences (see Holleman and Pander Maat 2009; Thibodeau and Boroditsky 2011, for discussion and experimental evidence). It is interesting to notice that controversy easily arises over the applicability of the terms to a situation (what we may call "backward oriented meaning"), but hardly over the invited inferences ("forward oriented meaning"); precisely because of *agreement* over the inferences invited by the terms *crime* and *war*, people *dis*agree whether the 9/11 events are best called one or the other. Thus, we may say that knowing the meaning of category denoting terms like *war* and *crime* includes knowing culturally accepted inferences associated with them, i.e., their argumentative values.

A recent example from (Dutch) political language concerns the terms *religion* and *ideology*. The right-wing politician Geert Wilders, leader of the "Party for Freedom", claims that Islam is not a religion but an ideology, whereas other parties, including the Christian-Democrats, continue to call Islam a religion. In this case, it is especially clear that it would be hard, if not impossible, to specify objective criteria distinguishing a religion from an ideology, but nobody has the feeling that this implies that the meaning of the words is unclear or vague. On the contrary, everybody understands these meanings perfectly well, viz. as suggesting that the strict guarantees for the freedom of religion in The Netherlands, laid down in the country's constitution, should not apply to Islam according to Wilders, while they should according to others; by the same token, Wilders' opponents accuse him of undermining the constitutional state (as he proposes to withhold certain constitutional rights from the adherents of a religion), while Wilders himself uses his opinion[2] to refute this accusation – again: all clearly a matter of inferences being invited by the words, in a way that competent users of the language agree on.

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[2]   In the context of negotiations about a coalition government in 2010, the 'Party for Freedom' and two other parties had declared that they 'agree to disagree' in their views of the categorial

These cases demonstrate the need for taking argumentation into account as a component of the meaning of at least *some* linguistic expressions. Usually, analysts characterize a discourse as argumentative only if many of the utterances in it are presented and understood as reasons for and/or justifications of *another* explicitly stated opinion of which the addressee is to be persuaded, so if they appear in a context of a (real or virtual) dispute. This is the domain of (classical) rhetoric and (modern) argumentation theory (cf. Van Eemeren et al. 2014), as an approach to a presumably special type of language use. However, in a linguistic perspective, there are good reasons to adopt the position that the very same mechanisms operate in language use *in general*; the point is that both words and grammatical constructions work in the same way in "overt" argumentation in disputes and in everyday language use.

It was a profound insight of Ducrot (see Anscombre and Ducrot 1983; Ducrot 1996) that argumentativity does not constitute a special case of language use, but rather a common component of linguistic meaning. Ducrot's example (cf. Verhagen 2005: 11) involves a consideration of the seemingly purely informative statement *There are seats in this room*. He observes that this sentence can be felicitously followed by something like *But they are uncomfortable*, with a contrastive connective, but not by *And moreover, they are uncomfortable*, with an additive one. The use of the term *seats* is in itself sufficient to evoke a certain conclusion about the degree of comfort in the room: expectations about it are raised. But inferences cannot be licensed by a single proposition, so there must be another one functioning as the second premise in an implicit syllogism. This consists in the fact that for members of our culture, knowing what seats are (knowing the concept SEAT, denoted by *seat*) *includes* knowing that as a rule, they contribute positively to comfort (the "frame", or "cultural cognitive model"). As a consequence, mentioning the presence of seats intrinsically provides justification, an argument, for thinking that the room will provide more than a minimum of comfort. It is this invited inference that is countered by the subsequent assertion that the seats are uncomfortable; and it is this contrast that is marked by *But*, and that is incompatible with the use of *And moreover*. Schematically:

Tab. 11.1: Utterances as arguments: utterances provide specific premises which, together with an associated model providing a general premise, evoke inferences

Utterances	"There are seats in this room"	"But they are uncomfortable"
Cultural cognitive model	↓ ← NORMALLY, SEATS CONTRIBUTE POSITIVELY TO COMFORT →↓	
Inferences	a) Raise expectations about degree of room-comfort	b) Cancel a) (i.e., lower the expectations again)

The felicity or infelicity of discourse connectives (in particular *but*) in combination with relevant continuations can thus be used as diagnostics for the argumentative value of the

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status of Islam (religion or ideology), clearly recognizing that the use of the terms is not a matter of facts. By the same token, though, this declaration makes it appear as if the use of terms then is a matter of choice (a kind of Humpty-Dumpty view of meaning), not recognizing the conventional, thus supra-individual and normative character of linguistic meaning (cf. Tomasello 2008: 290–292).

first utterance; *but* does not mark a contrast at the level of objective information (in fact, this seems inherent in the notion of contrast: uncomfortable seats are perfectly possible as part of reality; cf. Sweetser 1990: 103–4). Indeed, connectives function in exactly the same way in apparently innocent claims about seats (*There are seats in this room, but they are uncomfortable*) as in emotionally or politically charged claims about Islam (*There are adherents of Islam in this country, but they do not enjoy freedom of religion*). It may be harder to disagree about the applicability of some terms (like *seat*) than others (like *religion*), but this is not a difference in the structure and working of the semantic machinery: knowing a conceptual category denoted by a linguistic item involves knowing one or more cultural cognitive models that license conclusions of certain kinds. Linguistically, less and more controversial terms do not represent different types of meanings (say, descriptive versus argumentative); they are just less or more controversial.

The power of argumentativity as a systematic property of language was already demonstrated experimentally by Lundquist and Jarvella (1994), and is also highlighted by the fact that it turns out to be the unifying factor underlying the similarity in grammatical behaviour of a number of lexical items and grammatical patterns. The content of argumentation in the examples above comes from the lexical items, but the connective *but* has the very schematic role of countering the rhetorical force of the first conjunct, whatever its content: *The house is very nice but expensive* differs from *The house is expensive but very nice* precisely because the second conjunct rhetorically "wins" in both cases. Similarly, the feature that unifies the grammatical behaviour of different negation operators and perspectival predicates in a language is their effect on the argumentative character of the relevant utterances. The similarity in co-occurrence of *not* and *barely* with respect to the *let alone* construction, for example, reduces to the similarity of their roles as argumentative operators, and the same holds for the grammatical similarities of verbs of communication (*say, promise*) and cognition (*think, know*) with respect to complementation constructions across different person and tense markings and with respect to discourse connectives (cf. Verhagen 2005, 2008a; Fausey and Boroditsky 2010 and Fausey and Matlock 2010 are experimental studies of the argumentative force of different grammatical constructions).

So we now have both reasons to characterize language use as crucially different from animal communication (information sharing being normal) and as similar to it (efforts to produce effects being normal as well). The way to resolve this paradox is to undertake both a more thorough analysis of the types of meaning of the different linguistic expressions involved, and of the structure of communicative events.

3. Cooperative communication and joint cognition

Human cooperative communication involves a large amount of joint knowledge. Much of this functions as "common ground" (Clark 1996), and is a necessary condition for communication to succeed; at the same time, joint knowledge is also updated and expanded as communication proceeds. In section 4, we will look at the first dimension and its linguistic reflexes; section 5 will be concerned with the second dimension. As a basis for both, this section provides a conceptual analysis of what is involved in joint knowledge, in terms of a group of people acting as a cognitive unit.
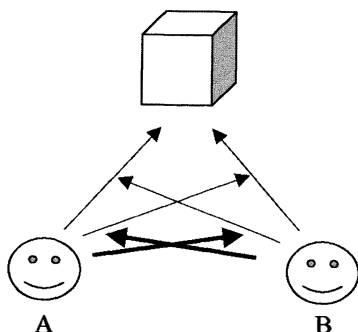
Fig. 11.1: Mutually shared attention

The role of common ground comes out clearly in the case of the – for humans – simple act of pointing. "Outside of any shared context, pointing means nothing. But if we are in the midst of a collaborative activity (say, gathering nuts), the pointing gesture is most often immediately and unambiguously meaningful ('there's a nut')" (Tomasello 2009: 73). It is because we both *know* that we are engaged in a joint activity – and moreover know that each of us knows – that establishing joint attention through a pointing gesture can provide the basis for a rich and specific inference, as well as the belief that this was precisely what the pointer intended. The point is that it must be obvious, transparent to all of us that we are engaged in a joint activity and what it consists in.

One way of thinking about this is in terms of the mental states of each participant about the mental states of others. According to Zlatev (2008: 227), joint attention, i.e., *mutually* shared attention rather than just shared attention, comprises an embedding of three levels of attention. Consider figure 11.1.

The idea is that both A and B (1) attend to the same object, (2) know that the other does, and (3) know that the other knows. Without the third level, they can be said to share their attention for some object, but not to *mutually* share it. However, what this way of thinking does not capture, is the insight that A and B form a *group*, are organized into a higher level entity that constrains and co-determines the roles and the mental states of the participants (figure 11.1 does not distinguish between competitive and cooperative situations). Humans have what philosophers call intentionality – ideas, goals, desires, etc.: mental states directed at objects and other individuals. They share this with other animals, certainly other primates. However, humans not only entertain such mental states as individual subjects, but also jointly, i.e., *inter*subjectively. They exhibit what Searle (1995) calls "*we*-intentionality". When two individuals are coordinating their activities in a collaborating group, they are not just two individuals engaged in their own projects (possibly including attention to others), but a "team" that is collectively engaged in a single project, part of which is joint attention for some entity. Recognizing this group-level is crucial for the proper characterization of certain forms of cognition. This becomes especially apparent in the light of tasks that are distributed over members of a group in such a way that coordination allows the group to produce results that no individual could produce on its own; from extensive empirical research into ship navigation (Hutchins 1995), Hutchins (2006: 377) concludes: "social groups can have cognitive properties that are distinct from the cognitive properties of the individuals who compose
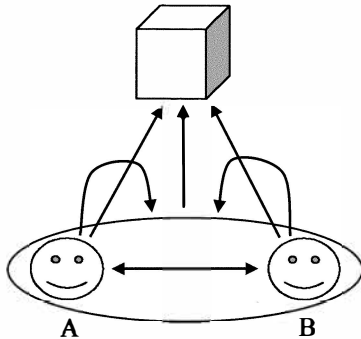
Fig. 11.2: Coordinated group cognition

the group" (Hull 1988 provides a lot of empirical evidence that the same holds for scientific research teams). So let us consider a "group-level" conception of joint cognition as represented in figure 11.2, the ellipse indicating the group of (in this case) two individuals that jointly attend to an object.

In this figure, the upward pointing arrows point to the object of attention, the horizontal bi-directional arrow represents the relationship of coordination, and the two bent arrows point from an individual to what the group is jointly attending to rather than to what each single other individual is attending to as in figure 11.1. The group of coordinating individuals is a cognitive unit, an information processing entity the boundaries of which happen not to coincide with a skull; the group is defined by a set of concepts and assumptions – common ground – which all members believe each other to have access to, allowing them to coordinate, which captures the idea of the "transparency" of mutual knowledge in the group. Indeed, this characterization not only applies to joint attention, but also to other joint mental states, like beliefs and goals. In particular, it also applies to the knowledge of conventions, including linguistic ones (Lewis 1969), and thus is in fact a general characterization of "joint cognition".

First of all, this idea provides an intuitively more direct representation of joint ("we", "you and I together") as opposed to shared ("you as well as I") attention, in a way that fits well with insights into conversation and other "joint projects" (Clark 1996, 2006 – below, I will return to Clark's proposals about the *structure* of joint projects), as well as with recently developed insights into specifically human forms of cooperation (Tomasello 2009, 2014).

Secondly, this way of conceptualizing joint cognition has interesting consequences when we realize that figure 11.2 represents an "outside" view. For a single member *inside* a group involved in joint cognition, it primarily looks as in figure 11.3.

Coordination comprises assigning to others the same mental capacities one has oneself (what Tomasello and Rakoczy 2003 eloquently call "self-other equivalence"); we can therefore allow projection from the group to individual members ("downward percolation"), i.e., deriving inferences about what an individual attends to, knows, believes, etc., from the assumption that s/he is a member of a group involved in attending to object X. Most elementary, it follows that B is attending to the same object and to the group, i.e., the "outside" view depicted in figure 11.2. It also follows that A may assume that B assumes that A is attending to X, and vice versa, i.e., configurations like the one
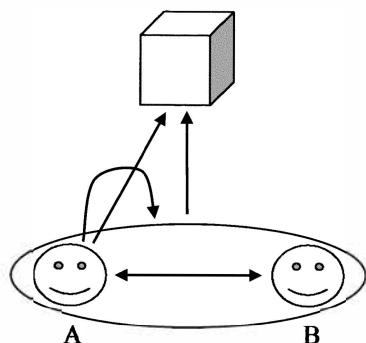
Fig. 11.3: Joint cognition, from individual point of view

depicted in figure 11.1, or ones with even more levels of embedding, applying the perco-
lation rule over and over again. The same is true for meta-cognitive awareness: A may
apply the rule to any group member, so also to ones involving A (e.g., "I know I am
looking at X", "I believe that I understand why John thinks we have a problem"). Indeed,
the ideas of "self" and subjectivity only make sense in the context of some awareness
of *others* and their intentional stances – realizing that one can be the object of another's
attention, and that there are different points of view, one of which is one's own (cf.
Tomasello 1994). But processes of "recursive mind-reading", to use Tomasello's (2014)
term, do not as such enter into the characterization of mutual knowledge, and since this
is cognitively unrealistic (as recognized since Lewis 1969; cf. Campbell 2005), the
group-level view of *we*-intentionality provides a better characterization than the multiple
individuals view.

4. Three types of common ground and three types of meaning

A primary example of linguistic elements that can only be understood against the back-
ground of common ground, is constituted by so-called deictic elements. These are el-
ements whose interpretation systematically and crucially is to be computed with know-
ledge of the communicative situation and its participants, what Langacker calls the
"Ground" of an utterance (Langacker 1990, and various other publications). The refer-
ence of *I* and *you* is determined in terms of the roles defined by the communicative
event: the producer of the utterance (more precisely: who is to be considered responsible
for it; think of quotes, but also of a secretary typing a letter for the boss, the message
box saying *I accept the conditions* that is to be clicked before installing software, etc.),
and the addressee. The interpretation of third person pronouns cannot be determined
positively in terms of elements of the common ground, but their semantics still makes
crucial reference to it; they indicate that the referent is uniquely identifiable on the basis
of joint knowledge of the ongoing communicative event. So it is for good reasons that
Tomasello (2008: 5) invokes pronouns to illustrate his point about the special character
of human communication:

> The ability to create common conceptual ground [...] is an absolutely critical dimension of all human communication, including linguistic communication with all of its *he*'s, *she*'s, and *it*'s.

Deictic meanings occur in all kinds of linguistic items. The present tense and expressions like *now* or *at this point in time* (due to the element *this*) denote situations that are co-extensive in time with some (first) person's speech act. Here too, we find "negative" deixis as in third person pronouns; although the time of a situation presented in a past tense clause cannot be positively determined, its semantics still makes crucial reference to the Ground: "a non-actual (e.g., remembered or imagined) situation, one that does not directly impinge on present issues". The exact characterization of different elements (in different languages) will differ, but the general point is that their conventional meaning makes essential reference to the Ground.

The consequence is that deictic elements can only be felicitously used when the relevant knowledge of the Ground (and its elements) is in fact mutually shared (at the very least: *made* shared by an additional communicative act, such as a pointing gesture); they *presuppose* sharedness. Suppose I say something like *Please hand me that screwdriver*. My use of the demonstrative *that* – a deictic element – indicates that you and I mutually agree on the same, single, specific exemplar of the category SCREWDRIVER in our present common environment that is the object of my request. This may be for a host of reasons: you may be holding one in your hand, there may be only one screwdriver in our common visual field, or only one that I used most recently (as you know), or there may be only one (mutually obvious to you and me) that is suited for the job I have to do, or whatever. But if the one you hand me turns out not to be the one I want, then something has gone wrong; we have to conclude (with hindsight) that the things co-present to us in the speech situation did not in fact make the same object uniquely salient to both of us – I may have mistakenly thought that you had one in your hand, for example, and then you hand me the one I had just been using myself. In general terms: When a deictic element is used and the relevant knowledge is in fact not mutually shared, communication fails.

Notice that this failure happens at a different level than that of conventional meanings. The problem is not that we do not share knowledge of the conventional function of the element *that*. Such situations occur too, e.g., in conversations between native and non-native speakers of English, such as speakers of Slavic languages, which do not have a system of definite and indefinite determiners like Western European languages. The latter kind of miscommunication is of the same type as when you say *Please hand me the pliers* and I hand you the pincers, resulting from us not sharing knowledge of the conventional rules for using the sound *pliers*. Here, the cause of the misunderstanding does exist at the level of conventional meaning, viz. the meaning of the sound *pliers*. The kind of misunderstanding described above (resulting from lack of joint knowledge of the speech event) cannot occur with a non-deictic term like *pliers*, as its meaning does not refer to, thus does not invoke, shared knowledge of the *present*, specific communicative situation.

This important distinction between levels is not always made fully explicit. For example, Tomasello and Rakoczy (2003: 128), discussing the emergence of a shared symbol when a child imitates an adult's use of some signal, write:

> [...] the child uses the new symbol to direct another person's attention precisely as they have used it to direct her attention (the role reversal comes out especially clearly in deictic terms such a[s] *I* and *you*, *here* and *there*). [...]. We may think of this bi-directionality or intersubjectivity of linguistic symbols as simply the quality of being socially "shared".

While this is not incorrect, it may suggest that deixis is just an extreme case of role reversal, as if this were a continuum on which linguistic items may take different positions. But that masks the categorical difference between these *types* of meanings:

a) all linguistic signals, consisting of (combinations of) conventional pairings of form and function, are understood on the basis of mutually shared knowledge, in a way that can in general be described in terms of role-reversal (I utter the form X to achieve the same effect in you as you achieve in me when you utter X);

b) *on top of that*, for *some* linguistic items, the very *content* of the effect being achieved by a form X is (partly) defined in terms of mutually shared mental states with respect to the specific communicative situation at hand, and may involve role reversal in that specific situation; for example: B utters the sound *I* to make A attend to B, which is the same effect – but only with role reversal – as when A uses the sound *I* to make B attend to A.

In other words: all linguistic items are being understood "intersubjectively" in the sense of being based on mutually shared knowledge of the connection between sound and meaning, but for only *some* of them, the meaning itself refers to mutually shared knowledge of the situation of use.[3] The latter are deictic terms, or more generally, in Langacker's terminology: "grounding predicates" (not all deictic terms have to involve true role reversal; recall the remarks on the past tense and third person pronouns above). The notion "intersubjectivity" is thus applied at different levels of linguistic analysis: generally ("All linguistic communication is based on mutually shared knowledge") and more specifically ("The meaning of some linguistic elements invokes mutually shared knowledge of the communicative situation"). We will see later that there is at least yet one more way to apply "intersubjectivity" in semantics.

Clark and Marshall (1981) relate the distinction between deictic elements and content elements, as well as their common basis in shared intentionality, to different types of *sources of evidence* for mutual knowledge. Based on their discussion, we can distinguish three major types. First, the most immediate source of evidence for mutual knowledge of participants in a communicative event is, of course, that event itself (Langacker's Ground). It is this source of evidence that is tapped by deictic elements.

The second type of evidence consists of the common personal history of interlocutors. In terms of linguistic categories, this is especially what allows the use of proper names to succeed in picking out unique referents. There may be many people by the name of *Andrew*, but if I use this name in a conversation with my wife, I can rely on her picking out a unique individual (not necessarily present in the speech situation) who is mutually

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3   This difference corresponds to the two types of signals in the evolutionary story of Tomasello (2008). On the one hand pointing, which may be seen as a precursor of linguistic deixis as it basically involves the same cognitive infrastructure not shared by apes; on the other hand pantomiming, i.e., iconic gesturing, which *is* shared with great apes, and can be seen as a precursor of descriptive terms.

the most salient one for us in our shared history (e.g., our son). And I can use exactly the same name to successfully refer to *another* individual in a conversation with *another* interlocutor, invoking the same mechanism of mutual knowledge of common personal history.

Finally, a third source of evidence for mutual knowledge is membership of the same community: a shared culture. Even before I start a conversation, even with someone I have never met before, I can and will assume all kinds of information to be mutually known to me and my interlocutor on the basis of the assumption that s/he is also Dutch, a linguist, an employee of the same company, etc. Shared knowledge of a language, i.e., of conventions for using certain vocal or visual signals, is another kind of community based mutual knowledge. For example, on the basis of some evidence that my interlocutor is a linguist, I will assume mutual knowledge of a specific meaning of the terms *subject* and *paradigm*. On the basis of evidence that he is Dutch, I assume mutual knowledge about a huge variety of things, such as the system of parliamentary elections in The Netherlands, the name of the Dutch king, the location (roughly) of the airport named *Schiphol*, the fact that the country's capital is not the seat of its government, and also such lexical items as *betekenis* (roughly: 'conventional meaning', as in *This word meant something totally different 200 years ago*) and *bedoeling* (roughly: 'intended meaning', as in *He meant something totally different than what you were thinking*), a conceptual distinction not conventionally associated with formally distinct lexical signals in English, for example. On the basis of evidence that my interlocutor is American, I will not be justified in assuming these pieces of information to be mutually known, but I will be in assigning some others that status, including the lexical items *commitment* and *obligation*, a conceptual distinction not conventionally associated with formally distinct lexical signals in Dutch.

So we have now established a distinction between three major types of meaning based on three major types of evidence for mutual knowledge: deictics invoke the most immediate evidence available to interlocutors, the speech event itself; proper names invoke a wider source of evidence: shared personal history; common nouns and verbs invoke the widest source: a shared culture.[4] The latter two types correspond to the episodic and semantic long term memory, respectively, while the first type corresponds to short term memory.

It is the third kind of meanings, conveyed by descriptive items denoting conceptual categories, which also provide access to knowledge about the kind of inferences conventionally licensed by the concepts involved. It is because of their basis in the shared culture of a community that the term "cultural models" is especially appropriate for knowledge of this kind. Deictic elements do not activate specific conceptual *content* licensing certain inferences. Proper names activate shared experience with the referents involved. This might in specific cases evoke certain inferences (the effect of uttering *Andrew gave me a pill for this problem* when Andrew is known to be a medical doctor may be different from when he is known to be an electronics engineer), but they do not

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4   Definite descriptions – the main topic of Clark and Marshall (1981) – do not invoke a specific source of evidence. The construction [*the* X] only indicates identifiability within *some* part of the common ground, be it the speech event (*Hand me the screwdriver*), shared personal history (*I went to see the doctor this morning*), or shared culture (*The king is coming to visit next week*).

do so conventionally, while common nouns do.[5] It is these culturally shared concepts that provide the implicit second premises underlying the *general* argumentative impact of "statements of fact" (cf. section 2).

5. Hierarchy in joint projects: the niche for argumentation

We have now seen how human communication in general is based on common ground, and how specific types of linguistic meaning are in turn grounded in different sources of evidence. Now how does argumentation relate to cooperative communication? The answer has to take into account that human activities exhibit a hierarchical structure, and that this has some special consequences when the project is a joint one (Clark 1996, 2006). Hierarchical structure is an elementary property of any goal-directed project. To use Clark's (2006) example, if I plan to construct the do-it-yourself TV-stand that I bought at the furniture store, that constitutes my main project; I then have to decide how to divide the job into subparts – What shall I build first: the top part or the lower part? And again, for the top part: which panels to attach first? And so on. Similarly, when Ann and Burton agree to construct the TV-stand *together*, they divide this entire project into smaller subprojects, each of which is split into smaller ones again, and so on.

With each step partitioning a project into subprojects, one is committed to the higher level project – the subproject is executed in order to achieve the goal of the project one-level higher in the hierarchy, and the latter is thus necessarily "on the agenda", presupposed. However, when this is a *joint* project, such commitments are much more strongly *binding* than when it is an individual project. In the latter case, it is no problem to drop a particular subproject midway and decide to change the order of execution of certain subprojects. But in the joint case, several serious risks are connected to such a course of action. The reason is that in a joint project, each participant's commitment is conditional upon *both* participants' commitment to the joint project: I commit myself to you to do my part so long as you commit yourself to do yours, and vice versa (Clark 2006: 130). My commitment therefore does not disappear when I conclude that another course of action would be better. If I abandon an ongoing subproject in the same way as I might in the case of an individual project, this is likely to cause serious harm, in the short run both to myself (because you will continue to do your part, and because it threatens the entire project) and to you (because you cannot do your part properly if I don't do mine, and again: because the entire project is put at risk), and also in the long run, because it threatens my relationship with you, and possibly my general reputation.

This provides additional support for the proposal in section 2 to view joint cognition as a group-level phenomenon rather than as just a phenomenon of a collection of individuals entertaining assumptions about the others and *their* individual cognition. But what is important for our purposes here, is the insight that the strongly binding commitments in joint projects, as long as a person is engaged in one, exist at the higher levels of the

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[5]   This also explains, at least partly, the referentially redundant use of descriptive lexical noun phrases in discourse, such as the use of *the president* where *he* would have been referentially sufficient in *Obama reformed the health insurance system; the president considered it his most important achievement* (cf. Maes 1990).

joint project but not (yet) at the lowest level that the participants are actually engaged in, because this is where a joint commitment for the further course of action has to be *established*.

It is here that argumentation is crucial for cooperation. Participants have to probe each other's conception of the current state of affairs (each other's mental model of the relevant part of the world), identify points of potential difference between them, and communicate ways of resolving such differences – if they are to achieve their joint goal of successfully executing this step, allowing them to go on to the next step. Consider the following partial exchange in one particular instance of a joint TV-stand-building project (Clark 2006: 128):

(1) A: So, you wanna stick the ((screws in)). Or wait is, is, are these these things, or?
     B: That's these things I bet. Because there's no screws.
     A: Yeah, you're right. Yeah, probably. If they'll stay in.
     B: I don't know how they'll stay in ((but))

At the point where A produces the utterance in the first line, the joint goal is to attach two pieces to each other. A starts with checking if her collaborator's plan is to use "the screws" (taken to be mutually salient). But before a response is forthcoming, A notices something else, within the joint field of attention (*these things*), that provide an alternative (*or*); so now there is an issue, a potential difference, which she puts on stage with her utterance.

B's response is a proposal for resolution, by picking one side of the alternatives presented (*these things*) and motivating it. The latter is done with the negative sentence *there's no screws*, so a proposal to A to change her mental model of the situation (THERE ARE SCREWS) and instead adopt B's; in the present context, given mutual knowledge about the joint project and its components, this also constitutes an argument for the proposal to use *these things*; the argument status is marked by the conjunction *because* (it does not mark the cause of *these things* being present).

A's acceptance (*you're right*) of the proposal to change her mental world model thus also constitutes acceptance of the argument status of the second part of B's utterance, and – again, given the joint commitment to the higher level project – of the conclusion as well. This constitutes reaching agreement on the course of action to be taken in the present subproject. Notice that the modal adverb *probably* does not count as a rejection of the conclusion (*We should use these things to attach the pieces*), but at most as a limitation of the personal responsibility of A for the choice of the course of action, and thus as at most an *opportunity* for B to provide more support or to reconsider; this "weakening" of the acceptance is motivated by A in the form of a conditional implying uncertainty about the functionality of *these things*. B expresses agreement with the uncertainty, but indicates that he is still in favour of the same course of action (*but*).

So what we can say is that the argumentative moves (marked by negation, several connectives (*or, because, but*), a modal adverb, conditionals) contribute to establishing coordination within the lowest subproject being executed, against the background of the joint commitments previously established on higher (sub)projects. It is the recognition of hierarchical structure of joint projects, which presupposes that joint commitments are in place at higher levels and at the same time have to be established for the present

subproject, that provides us with the "niche" for argumentation *within* the general frame-
work of human cooperative communication.

Argumentation definitely is a subtype of the kind of processes defining animal com-
munication – "regulating" and "assessing" behaviour – but their character is crucially
transformed by their being embedded in cooperative practices. In lexical semantic terms:
Argumentation is not a synonym for regulating and assessing, it is a hyponym – a
subordinate concept, a special case with special properties of its own, not inherited from
its hyperonyms. It *is* directed at influencing an addressee, but the way it works is not by
manipulating him or evoke the desired behavioural response directly, but by attempting
to cause him to adopt a certain mental state: to be convinced himself, by the arguments
provided, that a particular course of action is the optimal one in the given circumstances,
to allow the present joint project to proceed. The benefits of that highly indirect way of
influencing another person in the context of cooperation, are that it guarantees the most
reliable execution of each participant's role, and also little loss of reputation or readiness
to cooperate with each other in the future in case the course of action turns out not to
work well after all, because responsibility is distributed and shared.

This is not to say that any argument is always a *good* argument, nor that manipulation
is absent from human communication. People are most easily persuaded by arguments
that they already believe, as these are least costly to introduce or to change.[6] Joint
commitments, once established, may also be exploited by one participant to get the other
to continue playing his part even if the latter would prefer not to (*You agreed that we
were going to build this thing now, didn't you? So do your part!*).[7] But that does not
alter the fact that argumentation constitutes an attempt to get the addressee to form the
opinion, strengthened by the arguments provided, that X is the best thing to do and/or
to believe, and to thereby make precisely this opinion – i.e., the addressee's own, not
the sender's signalling behaviour – the *immediate* cause of the addressee's behaviour
and/or belief.

If the chosen course of action in the present subproject fails, or the attempt to decide
on a joint course of action fails, then this may be a reason to return to the higher level –
which then by definition becomes the present subproject for which (new) agreement has
to be established (*Maybe it is a better idea to build the bottom part first, after all*),[8] and
argumentation is relevant. But as Clark's analysis demonstrates, the higher the level of
a joint project with respect to the one presently being executed (the "deeper" one gets
into a joint project), the harder it becomes to renegotiate it. Joint commitments at very
high levels may thus appear virtually impossible to (re)negotiate, as the risks of harm
being done are simply too large to be considered (cf. the force of a threat of the type
You don't want to be excluded from the group, do you?). Indeed, the fact that it is

[6]   Drawing on a large body of empirical studies on inferential fallacies like confirmation bias,
      Mercier and Sperber (2011) use precisely this view of argumentation-in-service-of-human-
      cooperation to argue that it evolutionarily precedes and underlies human reasoning.

[7]   This is one important risk of joint commitments that Clark (2006) discusses in connection with
      the "Milgram experiments" (designed as psychological experiments on obedience), where the
      experimenter, when refusing to renegotiate higher level joint commitments, may be said to
      perform such an exploitation.

[8]   One of the conventional functions of an expression like *after all* is to mark such a return to a
      previously established higher subproject.

impossible to volitionally "choose" or change the meaning of linguistic expressions is a special case of this phenomenon; it would effectively result in all cooperation with other members of the community breaking down, i.e., abandoning the joint project of one's culture that makes all other, specific joint projects possible.[9]

Returning to the issue of linguistic meanings, the special role of negation (and other argumentative operators) and of connectives within a specific joint subproject, is to modify the argumentative value of an utterance and to relate such values of discourse segments to each other, respectively. In section 4, we established three types of linguistic meaning, all of which are characterizable as understood "intersubjectively", viz. as invoking the shared communicative situation, the shared personal histories, or the shared culture. The signs discussed here are not of one these "sharing" kinds of intersubjectivity, but they relate to intersubjectivity in yet another way: in order to establish cognitive coordination, participants have to explore, negotiate, and ultimately resolve potential differences, and it is this particular function that negation and other argumentative constructions are dedicated to.

But in service of this primary coordinating function, linguistic negation and other argumentative items invoke common ground as well. Marking an utterance as argumentative indicates a (potential) difference in epistemic stance or attitude towards some object of conceptualization; so there are always two distinct "mental spaces" involved. However, these mental spaces have to *share* an implicit background assumption for the argumentation to work. If I say to you *John didn't pass the first course* or *John barely passed the first course,* I can only thereby intentionally communicate to you that you should give up hope of John being successful in college, if the cultural model that passing a test normally strengthens the assumption that one will be successful is in our common ground. As we saw at the end of section 4, it is descriptive lexical items *(pass, course)* that provide access to such cultural models, and without these being jointly available, negation and other argumentative operators do not work in actual communication.

The projection of a mental space representing a stance different from the speaker's also makes this other stance *relevant* in the common ground; when saying *Mary is not happy,* the speaker presents "Mary is happy" as relevant.[10] As a consequence, utterances with (syntactic) negations may in a subtle way convey judgments about their topic; when someone says about a student *John did not give the right answer,* he presents "John gave

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[9]   Building on Mercier and Sperber (2011), Tomasello (2014: 110–112) develops a notion of "cooperative argumentation" that is conceptually quite similar to the one elaborated here, but he limits its applicability to the second major step in his account of the evolution of human thinking: that of collective on top of joint intentionality. In section 2 above however, I argued, in line with Verhagen (2005, 2008a, 2008b) that from a linguistic point of view, this limitation does not seem motivated. The structure and expression of overtly recognized justifications and implicit ones are the same; the two allegedly distinct domains do not differ in terms of grammatical properties. For instance, negation and contrast markers work in the same way across both domains. Another telling observation in this connection is, in my view, that negation is acquired very early – admittedly not immediately in all of its adult functions, but certainly with its modal force, about what "ought" not to happen (cf. Dimroth 2010).

[10]   A recognition he is not committed to when using morphological negation (*Mary is unhappy*). Cf. Verhagen (2005: 70–75) for arguments and a discussion of some consequences, especially so-called double negations of the *not un*-Adjective type (*Mary is not unhappy*).

the right answer" as relevant, while he does not evoke that idea when saying *John gave a wrong answer*. In a series of experiments, Beukeboom et al (2010) show that readers of negative sentences of the first type actually get a more positive image of John's qualities as a student than readers of non-negated sentences of the second type; the sentence with negation implicitly conveys the idea that John normally gives correct answers, i.e., is a good student.

In short, two related systematic properties of natural language negation in usage – the necessity of a shared cultural background model and the joint relevance of a mental space representing a different epistemic stance – confirm that argumentative elements are adapted to cooperative communication just like deictic elements are, although their primary functions relate to different levels in the hierarchical structure of a joint project.

6. Conclusion

The fundamentally cooperative nature of human communication and the cognitive infrastructure associated with it underlie a typology of basic semantic dimensions of natural language expressions. First, the hierarchical nature of joint projects underlies the distinction between two types of expressions, each of which may be said to mark and presuppose intersubjectivity, in different ways. One type is exemplified by *deictics*, invoking mutual knowledge of the communication event to pick out objects for joint attention in agreed-upon subprojects. The other type consists of *argumentative* elements (negation, argumentative connectors, and the like) oriented towards coordination: establishing mutual agreement in the present subproject. These items presuppose possible differences (distinct mental spaces), but they also invoke mutual knowledge – of cultural models associated with "content words" – in order to allow such differences to be removed or resolved, and the project to proceed; the shared models provide the implicit premises necessary to allow conclusions to be drawn from the arguments that are presented explicitly. Although specific items of both types may well provide *some* information about the world they may relate to (think of male vs. female pronouns, for example), their distinctive deictic or argumentative character cannot be characterized in terms of features of objects of conceptualization, but has to be understood in terms of the structure of cooperative communication.

Second, mutual knowledge (common ground) is assumed on the basis of a number of systematically different *sources of evidence*, and these constitute another dimension of types of meanings, orthogonal to the first one. Co-presence in the communication event itself is the most direct source of evidence for what is mutually known, and it defines deictics. Shared personal histories constitute a wider source of evidence, and it especially underlies the use of proper names. The widest source of evidence for mutual knowledge is a shared culture; this underlies the argumentative value of, i.a., common nouns and verbs.

Further refinements and divisions may certainly be envisaged, and they are definitely necessary in studying the way this general conceptual space of cooperative communication is structured in different languages. The rich empirical study of items "attracted" or "repelled" by negative operators in Israel (2011), for example, reveals both detailed structure in the rhetoric of scalar argumentation, as well as intricate patterns of conven-

tional associations between several expressions in English. Or take the difference be-
tween pronouns of "distance" and "solidarity", or the nature of honorifics in languages
that have them; such markers operate in the dimension of intersubjective relations as
well, but they pertain to these *without* a link to the object of conceptualization – the use
of a second person pronoun of respect ("your$_{[+respect]}$ house") does not affect the constru-
al of a clause's objective content, very much unlike negation, in particular.[11]

Apart from this, the point of this chapter is that generally recognized *major* types of
meanings in human languages may insightfully be characterized in terms of their specific
role with respect to the general structure of human cooperative communication. Sharing
information and common ground have traditionally been recognized as distinctive char-
acteristics of language use, and they underlie some of these types. When we take the
hierarchical nature of joint projects into account as well, we find that the distinction
between higher, agreed-upon levels and the current subproject where coordination has to
be established, provides the niche where argumentation, and linguistic items structuring
argumentation, play a specific role in the coordination process. Cooperation is generally
recognized as a necessary condition for human communication, and human meaning, to
evolve. The point is strongly reinforced by the close correspondence between major
types of meaning and the basic structure of human cooperative communication. Detailed
understanding of the structure of cooperation also allows us to see how, alongside sharing
information, "managing others" – typical for animal communication – is also a compo-
nent of human (linguistic) communication, transformed into argumentation for coordina-
tion in ongoing joint projects.

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[11] We have seen before that the notion of "intersubjectivity" can be applied in semantic analyses
      in several ways, and this ("managing interpersonal relations totally independently of the object
      of conceptualization") is another one. This variability has sometimes caused confusion in the
      use of the term. Two insightful recent attempts to clarify these matters are Ghesquière et al
      (2012) and especially Nuyts (2012).

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