

Are Non-Human Primates Gricean?

Intentional Communication in Language Evolution

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Abstract

The field of language evolution has recently made Gricean pragmatics central to its task, particularly within comparative studies between human and non-human primate communication. The standard model of Gricean communication requires a set of complex cognitive abilities, such as belief attribution and understanding nested higher-order mental states. On this model, non-human primate communication is then of a radically different kind to ours. Moreover, the cognitive demands in the standard view are also too high for human infants, who nevertheless do engage in communication. In this paper I critically assess the standard view and contrast it with an alternative, minimal model of Gricean communication recently advanced by Richard Moore. I then raise two objections to the minimal model. The upshot is that this model is conceptually unstable and fails to constitute a suitable alternative as a middle ground between full-fledged human communication and simpler forms of non-human animal communication.

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Introduction

Primatologist Frans de Waal has argued throughout his career that for any ability put forward as uniquely and exceptionally human, there is at least one species, and often several, that display this same ability. This goes for tool-use, social dominance alliances, empathy and fairness, and the transmission of habits and learned skills through generations (De Waal 2016; 2013). But even De Waal acknowledges that human language does set us apart:

“We honestly have no evidence for symbolic communication, equally rich and multifunctional as ours, outside our species.” (De Waal 2016, p. 106)

Current research in language evolution is thus concerned with the question: what makes human communication different from communication in other species, and how did it evolve? One current approach taken by several leading theorists to help tackle this question is the Gricean pragmatics approach to communication. On this view, part of the task of an evolutionary theory resides in explaining the emergence of the cognitive abilities that support a Gricean communication model of human language. Comparative studies between human and non-human primate communication can shed light on this evolutionary story.

The core notion for pragmatics, first advanced by Paul Grice, is that human communication involves the expression and recognition of intentions (Grice 1959, 1969, 1975; Bach & Harnish 1979; Sperber & Wilson 1995). In this paper I will concentrate on the role of this special kind of Gricean communicative intention in the phylogeny of language. One pervasive view is that non-human primates are incapable of entertaining communicative intentions (Tomasello *et al.*, 2005; Hurford, 2007; Bar-On, 2013; Scott-Phillips, 2014, 2015, 2016). This can be termed the *strong* view of Gricean communication. A different, *minimal* view allows for the possibility of a weaker form of Gricean communication, in which non-human primates are capable of engaging (Gómez 2007; Moore 2015, 2017; Townsend *et al.* 2016). In the first section I will review Scott-Phillips’ (2014, 2015) position, as exemplary of the strong view of Gricean communication in the language evolution literature. I will

identify three related theses or assumptions that ground the strong view. This will help to clarify the points with which a minimal view of Gricean communication disagrees.

I will then examine the feasibility of a weaker model, as expounded in the work of Richard Moore (2015, 2016). Finally, I raise two objections for the minimal model of Gricean communication. The upshot is that the weak model is unstable. On the one hand, it collapses into non-Gricean forms of communication, and on the other hand it does not fully explain how it can support the development of a stronger Gricean model.

Standard interpretation of Gricean communication

In order to best consider the merits of the strong and minimal views of Gricean communication, is it helpful to contrast them, as Scott-Phillips himself does, with a third model of communication, usually termed the *code model* (Sperber & Wilson 1995, p. 3-15). In the code model, communication occurs when a sender encodes a message according to the rules of a shared code and sends it to the receiver, who then decodes the message. A defining feature of the code model is that of a twofold association. First, signallers associate certain states of the world with a particular signal. Second, receivers associate such signal with a particular behaviour (Scott-Phillips 2014, p. 21). It should be noted that a code-based model of communication may simply involve manipulative behaviours that impose little or no cognitive demands at all. Honeybee communication, for example, can be explained on this model. Upon returning to the hive, scout bees perform a waggle dance that can encode information about the direction, distance, and odour of the food, which forager bees then successfully decode in order to locate the food source.

As noted in the introduction, in the Gricean model communication is achieved not by the transmission of information and association of the linguistic code, but rather by the expression and inferences of intentions. The pragmatic or Gricean model starts from the fact that in human communication the meaning of an utterance is *underdetermined* by the syntactic and semantic rules of the language. For example, in saying the sentence “Thank you” I can express gratitude, or I could show disdain at your action, or annoyance. Even the degree of gratitude that I am expressing, and that I intend you infer, can vary widely depending of factors outside

the literal sentence “Thank you”. This feature of human communication is widely known as the linguistic underdeterminacy thesis (Huang 2014, p. 7).

It highlights the gap between the literal meaning of a sentence and the proposition intended to be communicated by uttering said sentence. This gap cannot be filled by attending to the meaning of words alone, but, according to Gricean pragmatics, by attending to the intentions of the speaker.

Here I adopt a version of the Gricean model which slightly departs from Grice’s original, after the refinements and modifications by Neale (1992), and Sperber and Wilson (1995, 2002), but which is largely taken as a starting point for the strong/minimal debate (Scott-Phillips 2014; Moore 2017). For a speaker *S* to mean something by uttering (or gesturing) *x* the Gricean model requires that, by uttering *x*:

- (1) *S* intends to induce a response *r* in hearer *H*
- (2) *S* intends that *H* recognizes that *S* has intention (1)
- (3) *S* does not aim to deceive *H* regarding (1) and (2)²

Mainly following the work of Sperber and Wilson (1995), intention (1) has also been termed *informative intention*, and intention (2) *communicative intention*. For ease of exposition I will follow this convention, although it is necessary to be aware that these are defined technical terms, and can be somewhat misleading. In using the term *informative intention*, it should be noted that the communicative act may not be one of informing. Grice (1982) already was aware that though his exposition used indicative informative intentions as examples, this did not preclude intentions other than informative.³ This is an important point, to which I will come back later when assessing the minimal Gricean model.

As Scott-Phillips (2014, p. 26) puts it, an informative intention (clause 1) is the intention that the audience recognizes *what* one wants to communicate. Yet this

² This formulation of the third clause is from Neale (1992), supplanting Grice’s original formulation after several criticisms (e.g. Strawson 1964). The nuances of this clause will not concern us here. In what follows it will be assumed that *S* is acting with honest intent, and that clauses (1) and (2) suffice for Gricean communication.

³ In fact, for Grice (1967) one (communicative) intention encompasses the whole complex of intentions (1), (2) and (3). Thus, the communicative act is one which has an underlying complex intention. I will follow Sperber’s and Wilson’s (1995) use of the term *communicative intention* exclusively to identify intention (2), as much of the debate necessitates to identify intentions (1) and (2) as functionally separate though related intentions.

intention alone, even if successful, does not necessarily result in communication. To illustrate: suppose I am a guest at your party, and I would like to refill my glass. I can achieve this by conspicuously placing my glass in a spot you will notice.

This action will count as an informative intention, that is, that I intend to produce a certain response in you by my actions. However, in this scenario, it can easily be the case that you don't recognize that I have such intentions, and also that I don't intend that you should (as when you don't know it was me who put the empty glass there). I will still accomplish my goal, but this would not be a case of communication. For communication to take place, it should be overtly manifest to you that I have the intention to get a refill, *and* that I want you to be aware of such intention. In other words, the audience must recognize not just *what* one wants to communicate, but also *that* one wants to communicate. Communicative intentions (clause 2 above) show that the speaker is trying to communicate at all.

Scott-Phillips relies on three closely related theses that will later help elucidate the points on which a weak view of Gricean communication will differ. The first thesis is that *informative intentions are intentions to affect mental states*. In other words, an informative intention is an intention to affect the audience behaviour *by virtue of* affecting their mental states:

“An *informative intention* is a signaller's intention that the receiver change their representation of the world in response to the signaller's behaviour.” (2014, p. 25)

Thus, both the expression and recognition of first-order intentions in the communicative act require that communicators be able to attribute mental-states to others, particularly states of beliefs.

The second, related, thesis is that *a communicative intention is a higher-order intention meant to affect the audience mental states*. A higher-order mental state is one whose object or representation is another mental state. A communicative intention is a higher-order state with a nested structure, as its object is the informative intention: *S* intends to create in *H* a mental representation of the fact that *S* has the intention to produce a response *r* in *H* (Scott-Phillips 2014 2015; Sperber & Wilson 1995, ch.1).

Combined with the first thesis, this nested structure of communicative intentions can be spelled out as follows (Sperber 2000):

S intends that

H should believe that

S intends that

H should believe that *p*

For this reason, Gricean communication requires the ability to entertain and understand higher order representations of such sophisticated structure. This brings us to the third thesis, which assumes that *both intentions are present in the same communicative action*, that is, the same signal (Scott-Phillips 2014, p. 105). To express and recognize a communicative intention is, then, to simultaneously express and recognize an informative intention.

Under this interpretation of Gricean communication, communicative intentions require a sophisticated ability for mental-state attribution and the expression and recognition of higher-order intentionality. Scott-Phillips admits that there are currently no empirical studies directly targeting the comprehension of communicative intentions in non-human primates. Yet he remains sceptical of whether they might succeed. For, although there is evidence that some non-human primates are capable of tracking the goals and perceptual states of others, and perhaps entertain first-order representations, there is so far a broad consensus that they are not capable of entertaining a concept of belief, including false beliefs, and neither engage in complex nested higher-order mental states (see Call & Tomasello 2008 for an overview; cf. Tomasello et al. 1997). Scott-Phillips concludes that non-human primates are incapable of Gricean communicative intentions. Ape communication is instead a sophisticated code-based communication model, modelled by code-based associations, and possibly augmented by the flexibility of gestural signals (Scott-Phillips 2015, p. 64).

In conclusion, the communication systems used by apes and humans are different in kind and not in degree, and thus have different cognitive requirements.

The upshot is that the origin of language in hominins must have occurred by an evolutionary increase in the cognitive abilities required for Gricean communication: mental-state attribution, particularly of belief-like states (also termed “mind-reading” or “theory of mind”), and inference of complex higher-order intentions.⁴

However, there are some pressing concerns with the emphasis on these cognitive abilities, particularly on mind-reading and the understanding of higher-order intentions. In particular, there are two worries with this emphasis. The first is that it may put the bar too high not only for great apes, but for human infants as well, who will likewise fail to communicate on a pragmatic model under the standard reading (Liddle & Nettle 2006; Townsend et al. 2016). On the hypothesis that communication itself plays some role in the development of cognitive abilities, particularly in belief-attribution and in entertaining higher-order mental states, Scott-Phillips’ view will lead to a problematic circularity, since those same abilities have been singled out as necessary for communication in the first place (Breheny 2006; cf. Davidson 1975; Dennett 1996). Secondly, it is not clear how our hominin ancestor developed the abilities of mind-reading without engaging in some level of (proto)Gricean communication. The strong Gricean model account will have to explain how our pre-linguistic ancestors came to possess all the cognitive abilities for Gricean propositional thoughts. This task seems no less demanding than explaining language evolution itself (see Bar-On 2013b for a similar point). Given the high cognitive demands imposed by standard Gricean communication, it then seems dubious whether the pragmatic-first approach is the best explanatory approach to the evolution of human language communication.

Minimal model of Gricean communication

Given these problems with the strong view, there is no lack of motivation to explore a suitable alternative. Richard Moore (2015, 2017; see also Townsend et al. 2016) has recently advanced a minimal model of Gricean communication in which the prerequisite cognitive abilities are weaker, and thus may lead to the development of the complex abilities outlined in the previous section.

⁴ Although comparisons between humans and contemporary non-human primates do not necessarily carry over to comparisons with extinct species of non-human animals in our evolutionary line, nor to humans’ and contemporary primates’ last common ancestor (see Bar-On 2013a).

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In brief, Moore's model challenges the three theses identified above. I will first consider the arguments against the first thesis in detail. This thesis claims that an informative intention requires affecting *H*'s mental states and in particular, *H*'s beliefs. This is the standard idea (shared among others, by Bach & Harnish 1979; Dennett 1983; Sperber & Wilson 2002; Hurford 2007) that Gricean communication requires a concept of belief, and the understanding of false beliefs. A reply to the belief thesis can start with the claim that, in some cases, the observed *behaviour* of communicators can be described without appeal to beliefs at all. Which are these cases? Here it should be recalled that *informative* intentions, despite the terminology used, is a technical term which only singles out the first clause in the Gricean structure: *what* the utterer intends to accomplish with the utterance. Informative intentions need not be confined only to acts of conveying information. It is helpful to differentiate between informative acts and directive acts (already noted in Grice 1957). The intention to affect others' beliefs may surely be necessary for complex communicative acts, such as eliciting information about third parties, for example. However, Moore suggests that in acts of communication involving a simple range of directives, (e.g. "look here", "give me the food", "go away", etc.), communicators need not comprehend the actions of others in terms of beliefs. When the speaker's goal is to directly affect the audience's behaviour, beliefs and the understanding of false beliefs may play no functional role. In such cases, since the object of the first-order informative intention is to produce a behavioural response *r* in *H*, there is no reason to suppose that this must be only done by first affecting *H*'s beliefs. Instead, we can rethink the Gricean "informative" intention as an intention to produce a response in *H*, by virtue of affecting *H*'s goals or goal-directed behaviour.

Nevertheless, this intention will require some comprehension that the addressee is an agent, capable of responding to the utterance. Specifically, it requires that communicators possess an understanding of others as subjects who act in the world with their own goals. On this view, the intentions involved in the Gricean structure can be recast in terms of goals, and in having the ability to track the goal-directed actions of others. In a traditional conception of the intentions that underlie actions, including communication, to understand one's and others' intentions one must represent them as propositional attitudes, or as a combination of beliefs and desires (e.g. Davidson 1969), or as forming part of rational planning. On the other

hand, having goals and tracking the goals of others may not involve the representation of propositional attitudes.

This modest way of understanding others in terms of their goal-directed action will not require attribution of a complex psychology, nor an understanding of false beliefs (see Butterfill and Apperly 2013).⁵ A creature with this minimal understanding of others will of course fail to comprehend communicative scenarios involving false beliefs. But, Moore (2017) suggests, they will be competent in many acts of communication which display a Gricean structure. In this manner, the (minimal) Gricean informative intention will not be captured in terms of beliefs, as:

S intends that *H* should believe that *p*

But rather as:

S intends that *H* should respond with behaviour *r*

In some cases, this minimal form of understanding others as agents may also require the ability to keep track of what others have and have not seen, and to understand that others' perceptions are different than one's own. There is mounting evidence that great apes, especially chimpanzees, appear capable of both abilities: understating the goals of others, and their perceptual perspectives (Call & Tomasello 2008; Tomasello 2008, ch.2). In short, Moore's reply to the first thesis of the strong view depends on three claims being true. First, that intentions can be suitably cashed out in terms of goals, which do not involve rational planning, nor representations of beliefs and desire. Second, that *S* has the ability to track the goals of others. Third, in some cases, that *S* has the ability to track others' perceptual states. A basic understanding of goal-directed action which does not require planning, nor representations of one's own and other's beliefs, is thus able to sustain a minimal form of intentional communication that retains the Gricean structure. In this manner, the assumption in the first thesis, that *informative intentions are intentions to affect mental states*, is dropped.

⁵ When discussing Moore's minimal model in the remainder of this paper, the terms goals and intentions will be used interchangeably in this minimal sense, and without involving the understating of beliefs, desires or rational planning.

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The second and third theses are challenged by a further innovation in Moore's model. He suggests that the two intentions constitutive of Gricean communication can be enacted in two separate actions.

To spell this out, let's first recall the Gricean schema:

- (1) *S* intends to induce a response *r* in hearer *H*
- (2) *S* intends that *H* recognizes that *S* has intention (1)

According to Moore, these two clauses are not necessarily always accomplished in the same action. Using Moore's terms, a behaviour of "sign production" enacts the first clause, and a (previous) "act of address" enacts the second clause. (2017, p. 316). This new frame directly challenges the third thesis identified above, that *both intentions are present in the same communicative action*. Moore admits this minimal model of separate behaviours is sufficiently but not necessarily Gricean, since it does not preclude that the same action can fulfil both clauses, as in the standard approach.

As Sperber and Wilson (2002, p. 16) note, an overt behaviour "manifestly intended to attract the other's attention" is a pre-requisite for engaging in Gricean communication. In Moore's view, an act of address is a functional pre-requisite towards accomplishing a communicative intention (2), since it signals that *S* has manifestly overt intentions, and that whatever follows is intended to be directed at *H*'s attention. An act of address may include attention-getting and persistence behaviours such as ostensive eye contact, name calling, slapping the ground or thumping the chest. Once *S* has *H*'s attention, a subsequent action will suffice to accomplish an informative intention (1). An act of address, by itself, is not necessarily communicative. But it will ensure that the subsequent action is sufficiently overt between the two subjects. The nested structure of higher-order states identified above can then be replaced as follows:

- *S* intends that
- *H* attend to *S*'s behaviour
- *S* intends that

- *H* respond with behaviour *r*

These intentions are both first order intentions, since each is elicited in two separate actions. In this model, the representational burden of entertaining nested higher-order intentions and beliefs is greatly reduced. Thus, the thesis that *a communicative intention is a higher-order intention meant to affect the audience mental states* is dropped.

To recap, Moore's weak model of Gricean communication makes several alterations to the standard reading. Both informative and communicative intentions are not made to affect the audience's mental states, but can be described as affecting behaviour without the need to do this *in virtue of* affecting mental representations. Informative and communicative intentions may not be both embedded in the same action or utterance. An act of address elicits a communicative intention, and the following signal production elicits an informative intention, in order to provoke a response in the audience. Communication on this minimal model will require a basic understanding of goal-directed action in others, and the ability to comprehend others' attentional states.

If Moore is right in dismissing the three theses of the strong model, a minimal model of Gricean communication may provide a suitable alternative for theorizing about the evolutionary development of full-blown Gricean communication and its sophisticated cognitive demands. However, I have some doubts that Moore's model succeeds.

Issues with a minimal Gricean framework

In this section I raise two objections for the minimal model just outlined. If these objections are on target, then the minimal model is conceptually unstable: either it collapses into a strong version of Gricean communication, or it remains too close to non-Gricean code-based communication, such that it is unable to explain the development of communicative acts beyond a fixed and limited set of directive actions.

The first objection starts from Scott-Phillips' (2015, p. 76) observation that a description of first-order intentions in terms of intentions to affect behaviour is too broad, in that it encompasses some behaviours that are clearly not communicative. To use an example of Scott-Phillips', suppose I say "Stop hitting me" and at the same time move away from you to a place where you cannot hit me. In this case

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both actions can affect your behaviour, even though only the first is communicative. We can distinguish communication from different social behaviours only in terms of intentions to affect representational mental states. Scott-Phillips' objection relies on the assumption that understanding belief or belief-like states is a necessary condition of Gricean communication. This is the first thesis of the strong model and, as we have seen, a proponent of the minimal model can overcome this assumption by focusing on a limited set of directives, availing of the notion of goal-attribution, and appealing to the interplay of an act of address and an act of signal production. However, I think there is a way to recast Scott-Phillips' objection that meets the proponent of the minimal model on her own ground.

The problem arises from the minimal model's stipulation that the nested structure of communicative intentions can be broken down into separate acts. The key question is whether we can account for the connection between these acts in a way that can still allow us to distinguish communicative from non-communicative behaviours. For example, in trying to get you to stop hitting me, I could engage your attention through ostensive eye contact, and then move away to a place where you cannot hit me. Even if the informative intention, if there is actually one, is preceded by an act of address to engage the audience attention, this is not a case of communication. Yet it seems to satisfy the minimal Gricean view. The problem here is that there is no principled connection between the act of address and the subsequent behaviour meant to elicit an informative intention.

Attention-getting acts, including persistence and elaboration of a gesture by tracking the audience response, for example, may indicate that *S* understands that *H* is an agent with his or her own goals. But having the goal to get the audience's attention is not necessarily the same thing as having the goal to make it overt to the audience that one has an informative intention. Similarly, acts of address also do not guarantee that *H* will make the inference that the following signal is one of communication. It will be necessary to establish that both *S* and *H* can comprehend the connection between the two (or more) actions corresponding each to the expression of a communicative intention and the expression of an informative intention. In order to spell out a suitable connection between these acts, we can amend Moore's formulation above as follows:

S intends that

H should attend to *S*'s gesture *and thereby recognize (be able to track) that*

S intends that

H should respond with behaviour *r*

This formulation can capture the insight of the original Gricean schema while preserving some elements of Moore's minimal model. In this way, even if communicative and informative intentions are performed by different acts, both *H* and *S* should be aware of that these two acts are suitably connected. However, this requires reintroducing higher-order states in the picture. In short, the minimal model collapses back into a stronger version of Gricean communication, as it necessitates the more sophisticated cognitive capacities to express and infer higher-order states.

The second objection to the minimal model concerns the shift from mind-reading abilities to abilities of recognizing goal-oriented behaviour. The weak model of communicative intentionality does have the advantage that it posits lower cognitive requirements for communication which are perhaps shared by adult humans, infants and non-human apes, something which indicates that an evolutionary difference of degree may be at play in the phylogeny of language. The pressing difficulty, however, is that these proto-Gricean conditions, and lower cognitive requirements, might not be enough to support the minimal model of communication, as opposed to merely a code-base communication.

As noted, in the minimal model Gricean communication requires making inferences about a speaker's goals. One could hold that making inferences of complex communicative goals do require inferential knowledge of others' mental states (Tomasello 2008, ch.1; Bar-On 2013b). Moore replies to this objection by limiting the model's applicability to simple communicative goals. This limited range of simple goals can include basic directives: producing a signal to initiate play, request food or grooming.⁶ Thus, the requisites for a minimal mode of Gricean communication are that communicators be able "entertain and identify in others only a limited range of goal-directed behaviours" (Moore 2017, p. 324). Moreover, according to Moore, a limited set communicative goals can only be used when utterances are used in fixed and predictable ways. The concern about a set of utterances that is fixed, predictable and limited to certain environmental conditions,

⁶ Cf. Tomasello's observation that apes' gestural communication "is aimed exclusively at making demands/requests" (2008, p. 332).

is that an inflexible system is probably not a Gricean system, neither strong nor minimal, even when we do away with the requirement of belief attribution.

Liebal et al. (2013, p. 187) define functional flexibility of signals in the literature of non-human primate communication as “the production of a single signal across a variety of functional contexts and the production of several signals in the same functional context.” Functional flexibility is one characteristic of human infant vocalizations (Tomasello et al. 2005; Oller et al. 2005).

Similarly, there is growing evidence and studies that show that some species of non-human primates display functional flexibility in communication (Liebal et al. 2013; Ackermann et al. 2014; Clay et al. 2015). This evidence suggests that non-human primates’ communicative system is flexible when involving simple goals. The key question here is whether this limited functional flexibility implies that communicators make inferences according to the Gricean structure. I suggest that it does not.

We have seen that it is useful to distinguish between directive acts and informative acts in communication. Ideally, however, we should be able to sketch a Gricean framework that can encompass both, or at least account for the transition from directives to informative acts. The transition from simple goals involving a limited range of directives, to more complex ones involving intentional communicative goals to share information, is still to be explained. This transition is not as straightforward as it may seem at first.

In this respect, Tomasello (2014) makes a distinction between communication of demands, and the intentional communication of cooperative information. On this view, the transition from minimal to strong Gricean communication may be understood as a transition from simple goal-directed behaviour aimed to make requests and demands, to the complex behaviour of intentionally sharing cooperative information. In this transition, the attribution of communicative goals to others may not be a simple cognitive ability, as Moore seems to presuppose.

In order to share information, communicators will have to intentionally express their goals, and their audience will have to suitably infer not just what those goals are, but also what they are meant to inform. For example, suppose that *S* wants to communicate to *H* that there are tubers they can dig under a certain spot in the ground. In order to achieve this goal, *S* can get *H*’s attention, via an act of address,

and then point (or perform any other suitable action, such as stumping her feet on the spot) to lead *H*'s perception toward the correct spot on the ground. Concerning *S* this situation could perhaps count as an instance of a minimal Gricean communicative act conveying information.⁷ But it is not clear that *H* is a similar Gricean communicator. To count as one, *H* will have to infer that *S*'s goal is to look at the ground and infer that *S*'s goal is to make *H* realize that by looking at the ground *H* will understand that there are tubers they can dig in that spot.

Moore seems to suggest that *H* need not understand that this is in fact *S*'s goal. It is only required that *H* be suitably affected to look at the correct spot in the ground. But the problem here is that, as there is no understanding of intentions involved, it is implausible to say that *H* understands what the reference of *S*'s signal is: the tubers under the ground. In this scenario, it suffices that *H*'s behaviour is manipulated by certain basic associations (stomping of feet, looking at that spot in the ground, etc.). These associations do not necessarily involve grasping *S*'s communicative goal, let alone *S*'s information that there are tubers under the ground. In contrast, *H*'s role may be equally accounted for in terms of a sophisticated code-based communication model.

In short, a minimal Gricean framework will have to provide a richer account of the cognitive requirements for communicative goal-attribution and inference. However, this seems to put us back where we left Scott-Phillips: the worry is that the cognitive demands of Gricean communication are such that it is hard to see how they evolved from a code-based system.

Conclusion

In the strong view of Gricean communication, three assumptions can be identified. First, informative intentions involve affecting mental states, particularly beliefs, and thus require a sophisticated ability of attributing mental states to others. Second, communicative intentions are higher-order intentions. Third, informative and communicative intentions are understood as united within a sole complex intention present in a single communicative action. In contrast, a weak framework of communicative intentions does away with these three assumptions. Intentions are described in terms of goal-directed actions to affect the behaviours and goals of

⁷ Assuming, for the sake of argument, that the first objection above does not hold.

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others. Communicative intentions are performed by overt acts of address that serve to get the audience's attention and may be separate from the signal itself. I have argued that this separation of communicative and informative intentions as enacted in two different actions is problematic, unless communicators are able to grasp the connection between the acts in a principled manner. But this brings us back to a strong version of Gricean communication involving higher-order mental states.

One important feature in the minimal conception of Gricean communication is that expressing and inferring intentions involves only the tracking of goal-directed behaviour in oneself and others. Of course, such a shift brings its own problems.

At least on the current formulation of the minimal model, it is not clear that tracking goal-oriented behaviours can support pragmatic communicative acts and avoid collapsing into a version of the code model. If this difficulty holds, the minimal Gricean model is not a preferable alternative, and we are back at the problems that beset Scott-Phillips' strong Gricean model, including the need to explain the evolutionary gap between code-based systems and full-fledged Gricean systems.

We seem to be left with two options. We can accept something along the lines of Scott-Phillips' view, and admit that the best way forward is to identify the emergent development of sophisticated mind-reading competence without appealing to language-use. Or we can abandon the project of providing a pragmatic-first approach to the emergence of language in phylogeny. Instead, I will briefly suggest a third option. We can adopt some of the innovations of Moore's minimal model, such as the emphasis on the ability to understand the goals and perceptual states of others. This minimal understanding of other minds fails to support a Gricean communication system. Yet the analysis of intentions in terms of this minimal understanding is nevertheless compatible with non-Gricean alternatives to language development which take into account the cognitive import of expressive behaviours and affective cues (Bar-On 2013b; Green 2007). In fact, these accounts may be complementary, and a more pluralistic approach may constitute a third option for progress in language evolution.

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