

Towards a logic of communicative intention*

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1. Grice's M-intentions

The analysis of communicative intentions arose from Grice's analysis of M-intentions. In Grice (1969) he offers this definition:

“‘ U meant something by uttering x ’ is true iff, for some audience A , U uttered x intending:

- (1) A to produce a particular response r
- (2) A to think (recognize) that U intends (1)
- (3) A to fulfill (1) on the basis of his fulfillment of (2).” Grice (1969, 1989), p. 92.

It is well known that this analysis, dubbed as the iterative approach, received some important criticisms and counterexamples most notoriously by Strawson (1964), Searle (1969), and Schiffer (1972). However, Grice himself had earlier proposed another definition of M-intention as a reflexive intention:

“‘ A meant something by x ’ is (roughly) equivalent to ‘ A intended the utterance of x to produce some effect in an audience by means of the recognition of this intention’”. Grice (1957, 1989), p. 220.

The discussion on communicative intentions, on their reflexive or iterative nature is still open (see Recanati (1986) and Bach (1987)). In this paper, we will not enter into the discussion on the merits of either approach. We will adopt, without further argument, the idea of communication intention as a reflexive intention; i.e., the thesis that Recanati (1986) calls ‘the Strong Neo-Gricean Claim’, which could be summarized in the following lemma:

“its fulfilment *consists* in its recognition.” Bach (1987), p. 142.

The aim of this paper is to make some advance towards a logical characterization of this notion of communicative intention. We want to clarify the notion trying to define it as a modal operator in a (multi-)modal logic of mental states such as intention, belief and mutual belief.

The plan of the paper is as follows. In the next section we will discuss some possibilities for the definition of a modal operator of communicative intention. The third section will be devoted to the discussion of different proposals by Airenti et al. (1993) and Colombetti (1999). The fourth section is an answer to Colombetti's (2000) attack to mentalistic approaches to communication. And, finally, we will draw some conclusions and our plan for future work.

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2. The definition of communicative intention

Communicative intentions are intentions of a particular kind. Like all intentions they are individual, but they are also ‘social’, in the sense that they are directed by an individual to another. More precisely, communicative acts are intended by the speaker to change the mental states of the addressee. The first possibility coming to our minds could be that, e.g., in making assertions the point is to induce the addressee to believe a proposition. Thus, we could propose a definition like the following:

$$(1) \text{CINT}_{xy} p \equiv \text{INT}_x \text{BEL}_y p$$

In plain English, speaker x has the intention to communicate p to addressee y if and only if she intends to make y believe that p . However, nobody would accept a definition like this. First, because it is clearly incomplete. In fact, this would lead to restrict communicative intentions to the first clause in Grice’s iterative approach. And second, because it seems too strong: the fulfillment of communicative intentions would require communicative acts to be convincing, persuasive by definition. Similar arguments can be applied to other alternatives such as

$$(2) \text{CINT}_{xy} p \equiv \text{INT}_x \text{BEL}_y \text{BEL}_x p$$

The following one seems a better proposal:

$$(3) \text{CINT}_{xy} p \equiv \text{INT}_x \text{MB}_{yx} \text{CINT}_{xy} p$$

The merits of this definition are, first, that it requires neither sincerity nor persuasiveness of communicative acts. Second, it accounts for the change of mental state of the addressee intended by the speaker. The mental state in question is a belief of the addressee, but a belief he thinks he shares with the speaker. That is, he should arrive not only to $\text{B}_y \text{CINT}_{xy} p$ but also to $\text{B}_y \text{B}_x \text{CINT}_{xy} p$ and so on, i.e. to $\text{MB}_{yx} \text{CINT}_{xy} p$ (see Colombetti (1993)). Third, this seems to capture exactly the idea that the fulfillment of a communicative intention consists in its recognition by the addressee; or, from another point of view, the reflexiveness of communicative intentions is reflected in the circularity of the definition.

Unfortunately, the demerits of (3) are more important. First, it does not make clear what is the content of communicative intentions. Intentions are causes of, and are fulfilled by, actions. Performing a communicative act consists in doing what? The second problem is even more serious: If we define the semantics of this operator in a modal propositional logic, using the traditional fix point approach, we would have that the accessibility relation related to the CINT_{xy} operator R , should be the smallest relation satisfying the following equation: $R = \text{INT}^x \circ \text{MB}^{yx} \circ R$. The empty relation, $R = \emptyset$, is a solution to this equation and, clearly, the smallest one.

A definition answering to our conceptual worries is the following one:

$$(4) \text{CINT}_{xy} p \equiv \text{INT}_x \text{by} (\text{express}(S_x p), \text{MB}_{yx} \text{CINT}_{xy} p)$$

According to this definition, communicative intention is an intention—intended to be recognized by the addressee, as before—which consists in expressing a basic attitude S on a proposition p , e.g., a belief in the case of an assertion or a desire in the case of a request:

“It is sufficient that H recognize S’s R[eflexive]-intention, S’s expressed attitudes; anything more is more than just communication.” Bach and Harnish (1979), p. 16.

However, (4) requires a higher-order modal predicate language, whose foreseen complexity clearly exceeds the limits of our present research.

3. Some other proposals

As far as we know, the logical analyses of communicative intention are very few. One of this is by Airenti et al. (1993). They define a circular operator for which they stipulate a number of default rules. Their definition is the following one:

$$(5) \text{CINT}_{xy} p \equiv \text{INT}_x \text{MB}_{yx} (p \wedge \text{CINT}_{xy} p).$$

One immediate objection to this definition should be clear by now: it implies the persuasiveness of communicate intentions. In other words, assuming basic substitution rules, (6) below follows logically from (5):

$$(6) \text{CINT}_{xy} p \rightarrow \text{INT}_x \text{BEL}_y p$$

which, from a conceptual point of view is clearly wrong: the fulfillment of the communicative intention requires the addressee to believe p .

Colombetti himself rejects (5) because

“[Airenti et al.’] treatment, however, has a number of technical shortcomings. The first is the system proposed by Airenti et al. is not fully normal, and in particular is not endowed with formal semantics. The second is that the fixpoint axiom, as we shall see, does not completely characterize communicative intention. The third is that the definition of intentional communication appears to be more general and flexible if one separates the intentional component from the communicative one.” (Colombetti (1999), p. 174.)

Consequently, he proposes a circular definition of communication, ‘separated’ from the notion of communicative intention:

$$(F_C) C_a p \equiv B_*(p \wedge \text{INT}_a C_a p)$$

Whatever its other merits, Colombetti himself acknowledges some of its most important shortcomings: It is too strong, that is, first, like (5), it implies that for communication to be successful it must be convincing, the audience must arrive to believe that p ; and second, the speaker herself is sincere, i.e., believes that p . The weaker variants he considers still imply strong conditions that, though sufficient for successful communication, are not necessary.

And finally, from a conceptual point of view, we have some doubts about the precise status of the concepts in his analysis. As we have said before, Colombetti tries to separate the communicative component from the intentional one. What is communication then? An action, a common belief? What does ‘a intends to perform B_*p ’ mean? We suspect that it is due to formal easyness that he abandons the notions of communicative intention and (one-sided) mutual belief, mental states crucial to understand communication in mentalistic terms,

for adopting communication and common belief, which are not mental states. But what he gains in logical clarity, he loses from the conceptual side.

It is important to note that Colombetti has recently left aside mentalistic approaches to communication to attempt a very interesting approach based on the notion of commitment. We will defend those approaches from his attacks in the next section.

4. In defense of mentalistic approaches

Colombetti (2000) justifies the commitment-based approach to communication presenting some shortcomings allegedly common and intrinsic to all mentalistic approaches. We want to argue that his overall criticism is basically wrong. He says:

“...by themselves, mental states are intrinsically insufficient to define illocutionary acts.”
(Colombetti (2000), p. 2.)

He draws these conclusions from four problems he ascribes to every mentalistic approach. In our view, three of them are problems of some, but not all, mentalistic approaches; and the fourth is not a problem, but an intrinsic characteristic of human communication. The problem of not distinguishing between the communicative act itself and its perlocutionary effects (linked to the conditions of sincerity and persuasiveness) is a common problem to many approaches to communication, included the one by Colombetti mentioned in the previous section, but it is not a feature of all mentalistic approaches. Our present approach based on the (Strong Neo-Gricean) concept of communicative intention is a proof of a purely mentalistic approach that distinguishes scrupulously between the fulfillment of the communicative intention (by means of its recognition by the addressee) and any accompanying perlocutionary intention. Hence, Colombetti’s problems 1, 2 and 4 do not apply to our approach and, thus, they are not intrinsic to mentalistic approaches.

His problem 3 is that

“mental states are not observable. Therefore, an agent has to rely on its own attributions of mental states to other agents, a process for we do not have reliable methods.” (*ibid.*)

First, it is not true that we do not have reliable methods for the attributions of mental states to other agents. We do have them, and we use them every time in communication and in the interpretation of rational action by humans. But, anyhow, this is not an intrinsic problem of mentalistic approaches to communication but an essential characteristic of communication itself. In communicative acts—verbal and nonverbal—speaker and addressee rely on their mutual attributions of mental states, and success in communications is dependent on the correctness of these attributions. But this is a fact about communication, and thus, not a problem of mentalistic approaches, but a fact that all approaches to communication have to account for.

So, we can also repeat the old saying: ‘If it ain’ broke, don’t fix it’ (cited by Bach (1987), p. 141.)

5. Conclusion and future work

We have presented different alternatives for a circular operator of communicative intention, trying to capture the Strong Neo-Gricean concept of reflexive intention, whose fulfillment consists in its recognition. We have also seen that our approach is not subject to the sort of

criticisms made to other formal mentalistic approaches. The definition of communicative intention conceptually more faithful to this notion (def. 4) seems at the moment logically too complex. The weaker alternative (def. 3) is not operational. Our future proposal must surely lie somewhere between these two.

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