

Two stages in the evolution of language use

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1. Introduction

The study of language use, usually called *pragmatics*, reveals that the competence of speakers is not monolithic. It can be split into two quite distinct behaviors. The first one deals with salient events; the second one deals with problematic situations. We claim that the second ability emerged long after the first one in hominid evolutionary history. A consistent scenario is that communication about salient events is what the protolanguage hypothesized by Bickerton (1990) was used for. The detection and collective processing of problematic situations can be understood as an additional ability which gave rise to modern language.

2. The importance of studying language use

Language is marginally used to give orders or make promises. Its main use is conversation. According to Dunbar (1996), people in various cultures spend 20% of their awake time in conversation. If we want to understand the function of language, we cannot ignore the way it is actually used in spontaneous conversations. Some of the reasons why language evolved in the first place are to be found there, in the chatter resulting from everyday social interactions. Several authors have addressed the issue of the emergence of language from the point of view of phonology, syntax or semantics (Hurford *et al.* 1998, parts II & III). Others, like Dunbar, have considered the social implications of language. Surprisingly, few authors have considered that much could be learned about language origin by studying its use.

The study of spontaneous conversation shows that interlocutors behave in a few systematic ways. One of them is to draw attention to salient events, as in the following example:

[translated from French]

A1 – *Who?*

B1 – *People suffering from Alzheimer's disease. They walk aimlessly like that.*

A2 – *Alzheimer patients are not the only ones to do.*

B2 – *No, but Alzheimer patients walk miles and miles each day... It's incredible! They're exhausted.*

A3 – *Really?*

B3 – *Yes I swear! Some of them... They put a... they tested and everything. One of them, she walked at least a hundred kilometres each day. I promise, she was exhausted!*

C1 – *Yes, it's amazing!*

The behavior of Alzheimer patients is unusual enough to be signalled by A. This type of verbal interaction contrasts with another one, which is characterised by an initial puzzle and the subsequent search for explanation:

[translated from French]

D1 – *It's strange, the ticket is more expensive when you buy it in the suburbs*

E1 – *No, but when you purchase it in Paris, it's a journey extension*

D2 – *No, I think it's because it is a temporary booth. They charge 4F more because they are especially there.*

Here D expresses his surprise because he paid two different prices for the same travel. Notice that D already holds a tentative explanation (D2) and that his first utterance D1 does not really aim at solving his puzzlement, but rather at expressing it. As we will see now, there are fundamental reasons to contrast the conversational behaviours shown in the two preceding excerpts.

3. Pointing to salient events

The human behavior which consists in pointing to salient events can be quite basic. It can be performed with simple deictic gestures meaning “Look at this!”. As soon as an improbable event occurs in the vicinity (say, an elephant walking in the street in Paris), we draw our friends’ attention to it. This behavior is almost a reflex, as it is difficult to refrain from performing it when the salience of the event is high. It seems to be deeply rooted in our nature. By the age of nine months, the child begins to point to salient events like a dancing doll used for experimental purposes, or to his father arriving (Carpenter, Nagell & Tomasello 1998). What is new at that age is that the child does not desire to get the object itself, but wants to draw the mother’s attention to that object. Tomasello notices that apes are not showing such behavior. Even if their attention is drawn by salient events, they never try to *share* this attention with others.

What is salience? As the study of conversation reveals, it can have two sources (Dessalles 1992). Events considered being *a priori* improbable are perceived as salient, and their occurrence is communicated. Events considered being *a priori* desirable or undesirable, *i.e.* offering a stake, are communicated as well. Technically, salience can be defined as a combination of probability and desirability. The salience of an event of probability p and desirability d (d between -1 , the most undesirable, and 1 , the most desirable) is defined as:

$$S = \text{Log} \left(\frac{1}{p(1-|d|)} \right)$$

This is a straightforward generalisation of Shannon’s definition of information. An event of good probability (p above, say, 0.1) and which does not matter too much ($|d|$ small) has a poor salience. This formula provides us with a way to predict which events are likely to be reported in this conversational mode (Dessalles 1992).

How do interlocutors react to the mention of a salient event? C1 and A2 illustrate the two possibilities. C1 acknowledges the salience. After this kind of reaction, the conversation may stop or change to another topic. The effect of A2 is conversely to lower the salience of the reported event. A common way to do this is to mention another event similar to the reported one. A could have done this by mentioning another illness bringing patients to walk. The effect on salience is well predicted by conditional probabilities: if the events mentioned in the initial utterance and in the reply can be considered as two occurrences of the same generic event, then the reply increases the probability of this generic event and thus diminishes its salience. This second strategy may give rise to a recursive process: since the new event has to be as close as possible to the first one, it appears as salient itself. So-called story rounds (Tannen 1984) may ensue, in which the role of each story is to diminish the salience of the preceding one. This is one explanation of why conversations involve more than one or two moves.

The maxim of this conversational mode is simple to state: (1) in the first utterance, try to report a salient event; (2) when replying evaluate the salience of what is said, either (2a) directly or (2b) by reporting a salient event similar to the first one. We expect such conversations to alternate between salient events and evaluations or, because of the similarity

between (1) and (2b), to turn into story rounds. The conversational moves (1) and (2) do not require all our sophisticated linguistic abilities in order to be performed in a functional way. In particular, this mode of verbal interaction should have been within the reach of proto-human individuals who relied on protolanguage to communicate.

4. Detecting problematic issues

The second conversational mode, by contrast, requires from interlocutors the ability to detect logical incompatibilities and to find ways to solve them. In D1, D presents as inconsistent the fact that the fare is not identical in one way and the other. E1 and D2 then appear as attempts to solve these inconsistencies. Inconsistencies are not always epistemic, as in this excerpt. They can oppose incompatible desires. In the following example, F wants his doors to look nice. A solution is to remove the old paint.

[translated from French]

F1 – *I have to repaint my doors. I've burned off the old paint. [...] It's really tough work!*

[...]

G1 – *You have to use a wire brush*

F2 – *Yes, but that wrecks the wood*

Removing the old paint creates a new problem: the tough work. G's solution, the wire brush, creates a new problem: the wrecking of the wood. The alternation between problems and solutions is typical of this conversational mode. The initial problem may be to *explain* or to *avoid* some state of affairs, the mechanism is the same. We modelled this alternation between problems and tentative solutions as a surface structure generated by a simple recursive procedure (Dessalles 1998). Notice that we have here a second and independent account of the fact that verbal interactions are not limited to one or two moves, but develop into potentially infinite sequences that we call conversations.

The conversational mode illustrated in this section may be called the *argumentative* mode. It requires from participants two main abilities: (1) to detect that events are inconsistent (*e.g.* an effect without cause, a state in contradiction with your desires) and (2) to generate solutions through abduction. Both abilities can be argued to be beyond the reach of apes and, presumably, of proto-humans. This suggests that the argumentative mode emerged when our ancestors were already communicating by reporting and evaluating salient events. There are several further arguments suggesting that there were two stages in the evolution of human communication and that the argumentative is the more recent.

5. Discussion: why two conversational modes ?

It is never a good thing to postulate two systems when one is sufficient. Why should we distinguish two conversational modes, one about salient events and the other consisting of an argumentation about problematic issues? The main reason is that these two modes are to be observed in the human conversational behavior, in which they can be isolated as functional parts. Moreover, there are reasons to think that one mode was used before the other in the course of hominid evolution.

According to the protolanguage hypothesis, language in its full-fledged form, *i.e.* with constituent syntax and flexional morphology, emerged with *homo sapiens* (Bickerton 1990; Jackendoff, *to appear*). The main role of syntax is to encode the thematic roles, either by the position or through marking, in the phrases which constitutes a given sentence. Thematic roles can be shown to be necessary for the conception and the expression of inconsistencies. For example, the paradox signalled in D1 may result from a theme, the price of the ticket,

which moves (changes value) with no cause (causes, in a thematic representation, may take the form of abstract forces (Talmy 1988)). By contrast, a fully functional communication system based on salience can rely on sole protolanguage, without proper syntax and without thematic roles (Dessalles, *to appear*). This suggests that argumentative abilities emerged together with syntactic abilities with our species, while the previous species relied on protolanguage to communicate about salient events only.

Another reason to see argumentation as a new feature arising in an already established conversational ability is the functional role that can be assigned to the possibility of detecting inconsistencies. As argued in (Dessalles 2000), the ability to detect inconsistencies may have been selected as a protection against lies. In the salient mode, the evaluation procedure, which consists in making comparisons (*e.g.* “*Alzheimer patients are not the only ones to do*”), is a protection against overestimated salience. In the scenario proposed here, modern humans evolved the possibility to check the reliability of reports by means of thematic analysis and detection of inconsistencies. The argumentative ability would be the evolutionary outcome of this protection device.

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