# FROM POINTING TO LANGUAGE

**Hélène Lœvenbruck** – The meaning I give now to what I'm working on is to try and answer an old question, that dates back to when I was a child: the question why I am myself, why the other is another, or the question how I know that I am myself, and how we know that the other is another. It's only quite late that a child, when looking in the mirror, knows that s/he's looking at her/himself. And it's only quite late that the child can make the difference between her/himself and her/his mother, that the child knows that s/he is her/himself and that the other is another. A crucial means to draw the attention of the other towards oneself and to make the other understand what one has in mind, is… pointing! When we point, we try to orient the other's attention. The fact that a 10-month-old infant can use pointing suggests that the infant is then equipped with a mechanism that allows her or him to feel that « I am different from the other and I am able to communicate with that other, using my hands ».We know that about two months after their first pointing gestures, infants start uttering their first words, there is an obvious link between pointing and language acquisition. Pointing gestures are ubiquitous. They are depicted in statues, in paintings. Leonardo da Vinci for instance is one of the major pointing painters, but you can also observe points in the Bayeux tapestry, which tells the Norman conquest of England in 1066. Or if you visit the Ancient Egypt section in the Louvre museum, you will see a small Egyptian model of a boat, with a boatman pointing forward. This continuity between pointing and language in children is also found in the human brain, in adults. In a functional magnetic resonance imaging study (fMRI) we asked adult participants to point with their hand or to point using their voice (intonation). The brain areas that were more active during the pointing tasks, be it with the hand or with the voice, are anatomically very close. So it looks like there is an anatomical continuity between pointing and language.

Then we can try to understand what happens in our brain when we are monitoring ourselves. In a very recent study, we examined electromyographic activity in the lip muscles of participants who were asked to generate the definition of simple words, such as « table ». So for instance, participants mentally pronounced « a table, is something that has four feet ». We measured lip muscle activity while they were pronouncing such definitions, and we observed tiny bursts of activity, tiny, because of course, there is not lip movement. When I speak overtly, I know that I am speaking myself, because I have a monitoring system that tells me it's me speaking. And this is also true when I speak covertly, in my mind. But sometimes, this mechanism is deficient, and you can then hear voices, and you get the impression that there are external voices talking to you. You become like Joan of Arc, you hear voices. This is what we call auditory verbal hallucination. Studying this phenomenon, allows us researchers to better understand how one

knows one is oneself and how one knows the person speaking (loud or innerly) is oneself.

Jean-Pierre Vernant said that to the ancient Greeks, one first existed in the other's gaze. Without the other, it is difficult to have self-awareness, so the boundary between self and other is sometimes hard to grasp. Others have had this intuition too, the French poet Arthur Rimbaud, for instance. When Rimbaud says « I is another » he seizes the moment of the loss of boundary between oneself and the other. So perhaps Rimbaud had reached this moment in a modified state of consciousness, in which he could not tell the boundary between me, I, and the other, or perhaps on the contrary, he had in fact clearly perceived that fundamentally, I, oneself, and the other, belong to the same entity, that the boundary is in fact hard to delineate.

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