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What has changed in the last 30 years in cognitive development

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Directeur du laboratoire *Language, Cognition and Development* à l'Ecole Internationale Supérieure des Etudes Avancées de Trieste (SISSA), Jacques Mehler est un psychologue cognitiviste spécialisé dans l'acquisition du langage. Après avoir effectué sa formation à l'Université d'Oxford et à l'*University College* de Londres, il obtient en 1964 son doctorat en psychologie à l'Université de Harvard. Il est directeur de recherche émérite à l'Ecole des Hautes Etudes en Sciences Sociales (Paris) où il a dirigé de 1982 à 2001 le laboratoire de Sciences Cognitives et Psycholinguistique. Depuis 2001, il est membre étranger honoraire de l'*American Academy of Arts and Sciences*. Il est également depuis 2009 membre de l'*American Philosophical Society*. Depuis 1972, il est éditeur en

chef de la revue *Cognition, International Journal of Cognitive Science*. Il est docteur *honoris causa* de l'Université Libre de Bruxelles et de l'Université d'Utrecht.

Résumé de la conférence

The last forty years in developmental cognitive science, a science that J. Piaget had literally invented things, have seen great changes. Piaget studied infancy once he launched the "épistémologie génétique" framework. Piaget's experiments were pristine and most of the published results were easily replicated. However, Tom Bever and I discovered that some of Piaget's conservation experiments can be replicated if one tests 3.6 year-olds. We replicated that older children would conserve the numerosity of arrays despite the experimenter's change of the density of one of the lines.

Bever and I were influenced by Noam Chomsky who suggested that there is a language acquisition device (LAD) that is part of humans' endowment. In Paris I was using the non-nutritive sucking device (NND) or High Amplitude Sucking (HAS). This behavioral method was extremely useful. We used HAS from the mid-seventies until the end of the century. I will give a short summary of our findings, which were about the precursors of language and about newborns discriminating small numerosity.



[Résumé de la conférence de J. Mehler, suite]

By the end of the century we turned to brain-imaging methods with newborns. We were very impressed with the Near-Infra-Red Spectroscopy (NIRS) because it is a silent, non-invasive and much cheaper device than fMRI. At the very beginning of the new millenium we acquired a Japanese NIRS (ETG-4000) and our team began to produce simultaneously brain and mind data. I will describe experiments that showed:

- 1) Newborns prefer natural speech as compared to the same utterances played backwards.
- 2) Newborns detect simple speech structures over similar speech items without a structure.
- 3) Newborns remember simple words for several minutes.
- 4) Newborns prefer to listen to syllables that honor the sonority hierarchy as compared to items that violate the sonority hierarchy.

We also have studied with other methods the importance of language acquisition in very young infants. I will also describe several experiments that suggest that infants tend to rely on mechanisms that are universal.