

The Dawn of Oral Language: Infant Melodies may Contribute to the Whole Story.

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At a very early phase of language evolution, our hominine ancestors were compelled to abandon an already well-developed multimodal communication system (facial, gestural, bodily and sound signals) and had to “invent” a new mono-modal acoustic communication system that led finally to the development of spoken language. This process included the challenge to express a complex social and natural environment (a multi-dimensional diversity) in a linear phonatory phrasing (a one dimensional sound stream). The origin of this revolutionary invention by courtesy of evolution remains still enigmatic. In infant vocalization, we found highly remarkable traces of this phrasing process in the early unfolding of melody structures. Based on our longitudinal studies and on an inventory of more than 20,000 analysed vocalizations, we could identify an inborn program of melody development, which is strongly coupled to emotional driving forces and mother-infant interaction during the first year of life. This unfolding process seems to be relatively independent of the language to be learnt and the specific cultural environment. Moreover, our investigations of crying, cooing, babbling and first word productions revealed a continuous coherent unfolding of melodic properties as prototypic intonation components.

In our presentation, we will sketch early vocalization development in terms of frequency modulation as essential component of tone, of combinatorial complexification of melody structure and of increasing interaction between laryngeal and supra-laryngeal sound production. We will describe the amazingly fast and unidirectional unfolding of frequency modulation and segmentation during the fastest brain growing phase in infancy - processes which are rarely equalled in subhuman primates. The development of melodic skills precedes by far any symbolic word use and rule-based grammar constructions and is a rich inventory for a later assimilation of intonation prototypes in speech. In qualifying our conceptions of what makes human language special, it seems to be essential to investigate what precisely allows the human infant to acquire so quickly and effortlessly such a complex faculty as language and what is the function of frequency modulation in gestalt of melody within this process.

Where does language come from? To answer this question, human infants may be very good candidates: They share early roots of vocal language evolution with other primates, i.e. reflect developmental continuity, but at the same time humans have accumulated genetic and life-history experience with respect to language over several million years.