



EVOLINGUISTICS

2018 Evolution of language and communication



No registration / No entrance fee required

PROGRAM-1 : Keynote lecture 1

- August 1st Wed, 14:00-16:00
- [Lecture Theater, Komaba I campus, The University of Tokyo](#)

Origins of Human Communication

Michael Tomasello (Int'l Advisory Board·Max Planck Institute for Evolutionary Anthropology/Duke University)

From a psychological point of view, the basic structure of human communication – how it works pragmatically in terms of the intentions and inferences involved - is totally independent of language. The most important data here are acts of human communication that do not employ conventions. In situations in which language is for some reason not an option, people often produce spontaneous, non-conventionalized gestures, including most prominently pointing (deictic gestures) and pantomiming (iconic gestures). These gestures are universal among humans and unique to the species, and in human evolution they almost certainly preceded conventional communication, either signed or vocal. For prelinguistic infants to communicate effectively via pointing and pantomiming, they must already possess species-unique and very powerful skills and motivations for shared intentionality as pragmatic infrastructure. Conventional linguistic communication is then built on top of this infrastructure.

PROGRAM-2 : Origins and evolution of language in search of archaeological and anthropological perspectives [Invited symposium in JSLs 2018]

- August 2nd Thu, 16:15-18:15
- [W310, West Bldg., Fujimino campus, Bunkyo Gakuin University](#)

This symposium approaches the question of when and how language emerged in the course of human evolution. Artifacts and fossils, together with ancient DNAs, of human ancestors are most direct records from which we can infer the timing and underlying mechanisms of the emergence of the language faculty, or its component sub-functions. Recent studies have begun to combine these data with the accumulating knowledge of brain functions. The symposium aims to discuss recent developments in the field and their implications to the more focused study on two defining aspects of human language: hierarchical structure and intention sharing.

Richer fossils

Cedric Boeckx (Int'l Advisory Board · A01 Research Collaborator · ICREA/Universitat de Barcelona)

It is hard to capture adequately the game-changing nature of research in paleogenomics. Having access to the genomes of extinct relatives like *Homo neanderthalensis* enables us to ask questions about tissues that were until recently thought to be gone from the fossil record forever. Of course, genes don't immediately lead to cognitive traits like language, but they provide us with the unprecedented opportunity to frame testable hypotheses from the bottom-up: from genes to cells to circuits to cognition. Each level of analysis requires the articulation of detailed interdisciplinary links that have important consequences for each field involved.

Building on joint work with Martin Kuhlwilm, I will review what we have come to learn about genetic differences between humans and other hominins that plausibly contribute to the "human condition", and the modern human language faculty. I will place special emphasis on the implications these differences have for the "Globularity hypothesis", according to which the specific brain growth trajectory adopted by our species played an important role in making the human brain fully language-ready. I will seek to clarify, and refine, the content of the Globularization hypothesis, and in so doing adduce additional evidence in support of it.

Evolution of brain endocast and human language capacity

Osamu Kondo (B02 Co-project Leader · The University of Tokyo)

Reviewing the recent developments in two fields of fossil human brains and of modern human brains, we can feel a hint for exploring evolution of human language capacity. Paleo-anthropological approach clarifies the morphological changes in fossil human brains through evolutionary time scale. Otherwise, modern brain sciences provide anatomical connections between the neural complexity and the human language capacity. We here introduce preliminary attention to the cerebellum, the morphology of which exhibits inter- and intra-specific changes among human fossil groups and intraspecific groups of *Homo sapiens*, the neural connectivity of which may indicate a link of the cerebellar anatomy and the human language capacity.

Stone tools and language evolution: the technological pedagogy hypothesis

Dietrich Stout (B02 Research Collaborator · Emory University)

Comparative approaches to language evolution are essential but cannot by themselves resolve the timing and context of evolutionary events since the last common ancestor with chimpanzees. Archaeology can help to fill this gap, but only if properly integrated with evolutionary theory and the ethnographic, ethological, and experimental analogies required to reconstruct the broader social, behavioral, and neurocognitive implications of ancient artifacts. The current contribution elaborates a technological pedagogy hypothesis of language origins by developing the concept of an evolving human technological niche and applying it to investigate two key evolutionary transitions: 1) from complex praxis to intentional communication, and 2) from intentional communication to language.

Discussant: **Harumi Kobayashi** (B03 Project Leader · Tokyo Denki University)

Moderator: **Yasuo Ihara** (B02 Project Leader, The University of Tokyo)

PROGRAM-3 : On moral development

- August 2nd Thu, 14:00-16:00
- [N206, North Lecture Hall, Tokyo Gakugei University](#)

Early development of social understanding and prosocial behavior

Margarita L. Svetlova (Duke University)

Humans are a highly cooperative species. Human children begin to behave prosocially (i.e. act with others' wellbeing in mind) in the 2nd year of life, and the complexity of prosocial behaviors, based on empathy, fairness and other considerations, grows over preschool years. To be an efficient helper, one needs to be able to read others' verbal and non-verbal communicative cues, infer others' internal states appropriately, and balance one's own and others' needs. This talk will present a series of studies exploring young children's emerging prosociality with the focus on (a) children's developing abilities to interpret communicative cues, and (b) their evaluation of recipients' various needs in relation to their own. Implications for theories of social and moral development will be discussed.

PROGRAM-4 : Keynote lecture 2

- August 3rd Fri, 15:00-17:00
- [K212, 21 KOMCEE East, Komaba I campus, The University of Tokyo](#)

From the logical to the biological

Cedric Boeckx (Int'l Advisory Board · A01 Research Collaborator · ICREA/Universitat de Barcelona)

In this talk (the basis of which is a new book I am currently writing) I will revisit the powerful narrative in modern linguistics that strongly points towards "biology" to account for our capacity to master grammatical systems whose properties go well beyond what the primary linguistic data seem to offer ("poverty of stimulus"; "logical problem of language acquisition"). I will provide reasons why it is not a good idea to combine "poverty of stimulus" considerations with "poverty of inheritance" considerations (of the sort found in Berwick and Chomsky's book "why only us"). I will argue that it is "poverty of inheritance" considerations that contribute to the distance between linguistics and biology, and show that linking hypotheses from the logical to the biological can be articulated if we are willing to exploit the range of evidence that biology makes available (and if we resist the temptation to appeal to vague 'third factor' considerations)

PROGRAM-5 : Intention Sharing and Language Evolution

- August 4th Sat, 10:00-18:00
- [Lecture Hall, 21 KOMCEE West, Komaba I campus, The University of Tokyo](#)

Reading Mind / Assuming Mind in Human Communication: A Developmental Perspective

Kazuhide Hashiya (B03 Research Collaborator · Kyushu University)

"Mind" is an unobservable but useful concept that enables compressing huge information regarding social interactive process among individuals in an integrative way, for the mind as a software composed through evolution (whether chimps have such a concept, or theory, was the original question raised by Premack &

Woodruff (1978) summarized as TOM). In the current talk, I would like to introduce our studies on evolution and early development (6- to 7-MO) of human gaze as a communicative signal, in relation to evolution of mind. The second half of the talk will focus on the studies demonstrating that the pointing by 1.5-YO infants may reflect their spontaneous tendency to inform for others, and a level of understanding about the partner's epistemic states. On these bases, developmental pathways of the mind that assumes mind, and the mind that reads mind, will be discussed.

Developmental plasticity of the sensitivity to communicative signals

Atsushi Senju (University of London)

Large numbers of studies have demonstrated that young infants preferentially orient to faces, especially to the eyes. Such spontaneous allocation of attention would help infants to detect communicative signals from adults conveyed through the visual channel. In this talk, I will summarise several lines of studies demonstrating that early development of such social orienting is a plastic process and is affected by social communicative experience. These studies suggest that young infants actively learn to adapt their visual attention to optimise social communication to given communicative partners. The implication of these findings on our understanding of infants' social motivation will be discussed.

Use and comprehension of pointing as a means of intention sharing

Harumi Kobayashi (B03 Project Leader·Tokyo Denki University)

Pointing gesture is an important cue for specifying a referent in ostensive communication. Unlike eye gaze, pointing can convey more exact information about the referent, e.g., parts of objects that are embedded in whole objects. Because of this specifying function, pointing may be closely linked to language both in ontogeny and phylogeny. Previous studies on pointing mostly focused on the functions of typical index finger pointing, however, a variety of pointing gestures seem to be also used to help ostensive communication. In this talk, I report young children spontaneously use and comprehend such specifying pointing for sharing referential intention.

Children's understanding of higher-order intentions in verbal communication

Tomoko Matsui (B03 Co-project Leader·Tokyo Gakugei University)

Most developmental studies on irony comprehension explain children's comprehension of irony in terms of their higher-order mental state understanding. Comprehension of irony and that of deliberate lies are analogous in many ways and both processes are likely to involve mind-reading ability and 'epistemic vigilance', the capacity to defend oneself against being accidentally or intentionally misinformed by communicators (Sperber et al. 2010). In this talk, I will first discuss how epistemic vigilance and mind-reading ability may contribute to children's understanding of tacitly conveyed speaker's intentions and attitudes in irony. On the basis of existing developmental studies, I will then suggest that children's interpretation of irony as a deliberate lie may be best accounted for by the interaction among the processes to identify how the utterance achieves relevance, their already functioning epistemic vigilance, and mind-reading ability to infer the speaker's intentions.

Shared intentionality and early language acquisition

Michael Tomasello (Int'l Advisory Board·Max Planck Institute for Evolutionary Anthropology/Duke University)

Children's early language acquisition is often portrayed as a process of association learning and/or innate principles. Of course children are prepared for the language acquisition process, but that preparation is not for specific linguistic structures, but rather for sharing intentions and attention with others more generally. Studies of children's early gestural communication and word learning suggests that the process reflects humans species-unique forms of aligning psychological states with others. Constructing a language involves many, if not most, of humans most powerful cognitive and social processes.

PROGRAM-6 : Kyoto Conference on Evolving Linguistics 2018

- August 6th Mon, 13:30-17:30
- [Clock Tower Centennial Hall, Kyoto University](#)

A plea for evolutionary mosaicism: A gradual perspective on language evolution

Cedric Boeckx (Int'l Advisory Board·A01 Research Collaborator·ICREA/Universitat de Barcelona)

It is clear that language is not just one thing, and there is a growing consensus that different parts followed different evolutionary trajectories. But in some influential corners of the language sciences there is still some reluctance to give up on the capstone scenario---the claim that there was just a single part that provided the spark and that is unique to us. I will argue that capstone scenarios, taken to extremes (single mutation, single brain circuit rewiring, single operation), don't fare well with the existing evidence that can be gathered from adjacent disciplines (neuroscience, archeology, genetics).

Tool-making and language: neuro-computational models of action syntax in human evolution

Dietrich Stout (B02 Research Collaborator·Emory University)

Distinctive human behaviors from tool-making to language are thought to rely on a uniquely evolved capacity for hierarchical action sequencing. Unfortunately, testing of this idea has been hampered by a lack of objective, generalizable methods for measuring the structural complexity and associated processing demands of real-world behaviors. Here I discuss ongoing efforts to address this challenge by extracting action grammars and computing complexity metrics from tool-making behavior sequences using basic ethograms. This approach allows direct comparison with neuro-computational models and data from the cognitive neuroscience of language. By applying this method to the evolutionarily-relevant and archaeologically-visible behavior of stone tool-making, we can begin to test longstanding hypotheses regarding the co-evolution of tool-making and language and provide some empirical constraint on the timing and context of key events.

Communication before language

Michael Tomasello (Int'l Advisory Board·Max Planck Institute for Evolutionary Anthropology/ Duke University)

For obvious and very good reasons the study of human communication is dominated by the study of language. But from a psychological point of view, the basic structure of human communication – how it works pragmatically in terms of the intentions and inferences involved - is totally independent of language. The most important data here are acts of human communication that do not employ conventions. In situations in which language is for some reason not an option, people often produce spontaneous, non-conventionalized gestures, including most prominently pointing (deictic gestures) and pantomiming (iconic gestures). These gestures are universal among humans and unique to the species, and in human evolution they almost certainly preceded conventional communication, either signed or vocal. For prelinguistic infants to communicate effectively via pointing and pantomiming, they must already possess species-unique and very powerful skills and motivations for shared intentionality as pragmatic infrastructure. Conventional communication is then built on top of this infrastructure - or so I will argue.

PROGRAM-7 : Kyoto International Psychology Seminar [co-sponsored]

- August 9th Thu, 17:30-
- [Seminar Room 2, Sirankaikan Annex , Kyoto University](#)

Human Collaboration

Michael Tomasello (Int'l Advisory Board·Max Planck Institute for Evolutionary Anthropology / Duke University)

Although great apes collaborate for some purposes, recent studies comparing chimpanzees and human children suggest that human collaboration is unique both cognitively and motivationally. In particular humans seem adapted for collaborative foraging, as even young children display numerous relevant mechanisms, from special ways of coordinating and communicating to special ways of sharing food to special forms of social evaluation. The Shared Intentionality hypothesis specifies the ontogeny of these underlying mechanisms and their consequences for both human cognition and human social life.

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