EVOLANG 2020 workshop proposal

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Title: Evolution of the Extended Language System

Summary of theme

Research on the neurobiological basis of language evolution has focussed to a large extent on cortical mechanisms, notably the classical language areas and a fibre tract connecting them (the arcuate fasciculus). Comparative neuroanatomical studies have tried to establish how these regions evolved by examining differences between humans and their great ape relatives[1]. However, this focus on cortical structures may be too restrictive to provide an accurate account of the neurobiology of language evolution, and new data suggest that subcortical structures and cortico-subcortical connectivity may be much more important than hitherto appreciated[2]. For example, there is growing appreciation of the contribution of the cerebellum, basal ganglia and thalamus to the control of speech and syntax, together with a more domain-general perspective on behavioural sequence control out of which linguistic syntax may have emerged[3-7]. This more domain-general approach itself has older precursors; notably, Lashley[8] proposed that language evolved from motor control mechanisms for organising sequences of behaviour, a proposal echoed by recent studies of behavioural sequencing capacities underlying the extractive foraging and tool-making skills of non-human apes and humans[9-10]. Accordingly, in addition to broadening the range of brain mechanisms considered, there is also a need to cast the comparative net wider than is typically done, in order to (i) consider the link between language evolution and more general aspects of syntactical behaviour, and (ii) to use phylogenetic comparative methods to study the deeper evolutionary history of language-related neural and cognitive adaptations. The purpose of this workshop is to synthesise these current trends and begin to develop a testable model of the cognitive neurobiology and evolution of an Extended Language System (ELS). This will involve bringing together cognitive neuroscientists working on both cortical and sub-cortical substrates of language evolution, molecular biologists studying the genotypic basis of the evolution of language-related neural phenotypes, experts in phylogenetic comparative methods, and primatologists studying cognitive mechanisms and natural behaviours with broad relevance for language evolution

How many talks and how they will be reviewed

A half-day workshop: six talks developing the concept of an ELS, followed by a one-hour round-table discussion. Abstracts to be reviewed by ourselves and two independent reviewers

Indicative list of invited speakers

1) Pascale Tremblay (Université Laval, Canada) or Anthony Dick (Universitaire en Santé Mentale de Québec, Canada) – *cognitive neurobiology of the extended language system*
2) Alan Beaton (University of Swansea, UK) or Peter Marien (Middelheim Hospital, Belgium) – *role of the cerebellum in language evolution*
3) Oren Kolodny (Stanford University, USA) or Shimon Edelman (Cornell University USA) – *exaptation of cognitive mechanisms for sequential processing and motor execution*.
4) Sonja Vernes (Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands) - *molecular basis of evolution of the extended language system*
5) Evelina Fedorenko (McGovern Institute for Brain Research and Brain and Cognitive Sciences Department, MIT, USA) – *evolutionary neurobiology of syntax*
6) Richard Byrne (School of Psychology, University of St Andrews, UK) – *evolution of syntactical behavior in apes*

Proceedings/results of the workshop

We propose a special issue of Trends in Cognitive Sciences

References

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7. Kolodny O, Edelman S. 2018 The evolution of the capacity for language: the ecological context and adaptive value of a process of cognitive hijacking. *Phil. Trans. R. Soc*. B 373: 20170052.
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