

Meta level construction of ‘language’: Why monitoring scientific narratives matters.

Robert Ullrich

Comparative Developmental Psychology

Email: robert.ullrich@fu-berlin.de

Many narrative ways of human uniqueness

Tool making (Oakley, 1956)

Episodic memory (Tulving, 1985, p.1)

Recursion (Chomsky, Hauser, Fitch, 2002)

Mental time travel (Suddendorf, Busby, 2003)

Rhythm (Patel, 2006)

Language

One example: Tool making.

“Apes do not make tools.” (Oakley, 1956, p.5)

Goodall, 1964: “Sometimes tools were carefully prepared: leaves were stripped from stems or twigs with the hand or lips [...]” (Goodall, 1964, p.1265)

Louis Leakey telegram to Goodall: “Now we must redefine tool, redefine Man, or accept chimpanzees as humans.” (cited in: Frederick, 2015)

“Scientists chose to try to redefine tool by deciding exactly what constituted ‘making’” (Frederick, 2015, e.g. Povinelly, 2000: Folk Physics for Apes, p. 303)

Language: an uncontested candidate

Human unique:

Tool making (Oakley, 1956)

Episodic memory (Tulving, 1985, p.1)

Recursion (Chomsky, Hauser, Fitch, 2002)

Mental time travel (Suddendorf, Busby, 2003)

Rhythm (Patel, 2006)

Language

Challenged:

Chimpanzee (Goodall, 1964; Boesch et al, 1990)
New Caledonian Crows (Weir et al 2002)

Scrub-Jays (Clayton 1998, 2006)

Bengalese Finch (Abe, Watanabe, 2011)

Chimpanzee (Osvath, 2008)
Scrub-Jays (Clayton et al, 2003)

Sulphur-Crested Cockatoo (Patel, 2009)

“Language is the most human of all behaviors” (Meir et al, 2010, p. 267)

“It is language, more than anything else, that makes our minds different.” (Burling, 1993, p. 36)

“Language is the crucial difference between humans and other animals.”
(Maynard & Harper, 2003, p. 130)

The oral norm: A cross-cultural perspective.

“Language is human; speech is language;

therefore [*speechless animals and*] deaf people are inhuman.”

(Brueggemann, 1999, p.11)

Sign languages are natural languages. (Stokoe, 1960)

Sign languages can be learnt by primates. (Gardner & Gardner, 1969)

Louis Leakey telegram to Goodall: “Now we must redefine [xy], redefine Man, or accept chimpanzees as humans.” (cited in: Frederick, 2015)

Scientists chose to try to redefine ‘language’ as an entity not constituted by its modality.

The oral as norm in constructing language

Input

vocal behaviour

(Zuberbühler, 2015)



'Language origin'

Values

modality

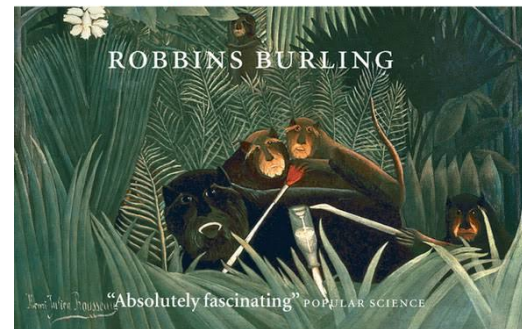
(Ullrich, 2016, in print)

Output

"Language is mainly a vocal behaviour [...] humans are enormously vocal [...], especially when compared with their nearest primate relatives" (Zuberbühler, 2015)



The Talking Ape
How Language Evolved



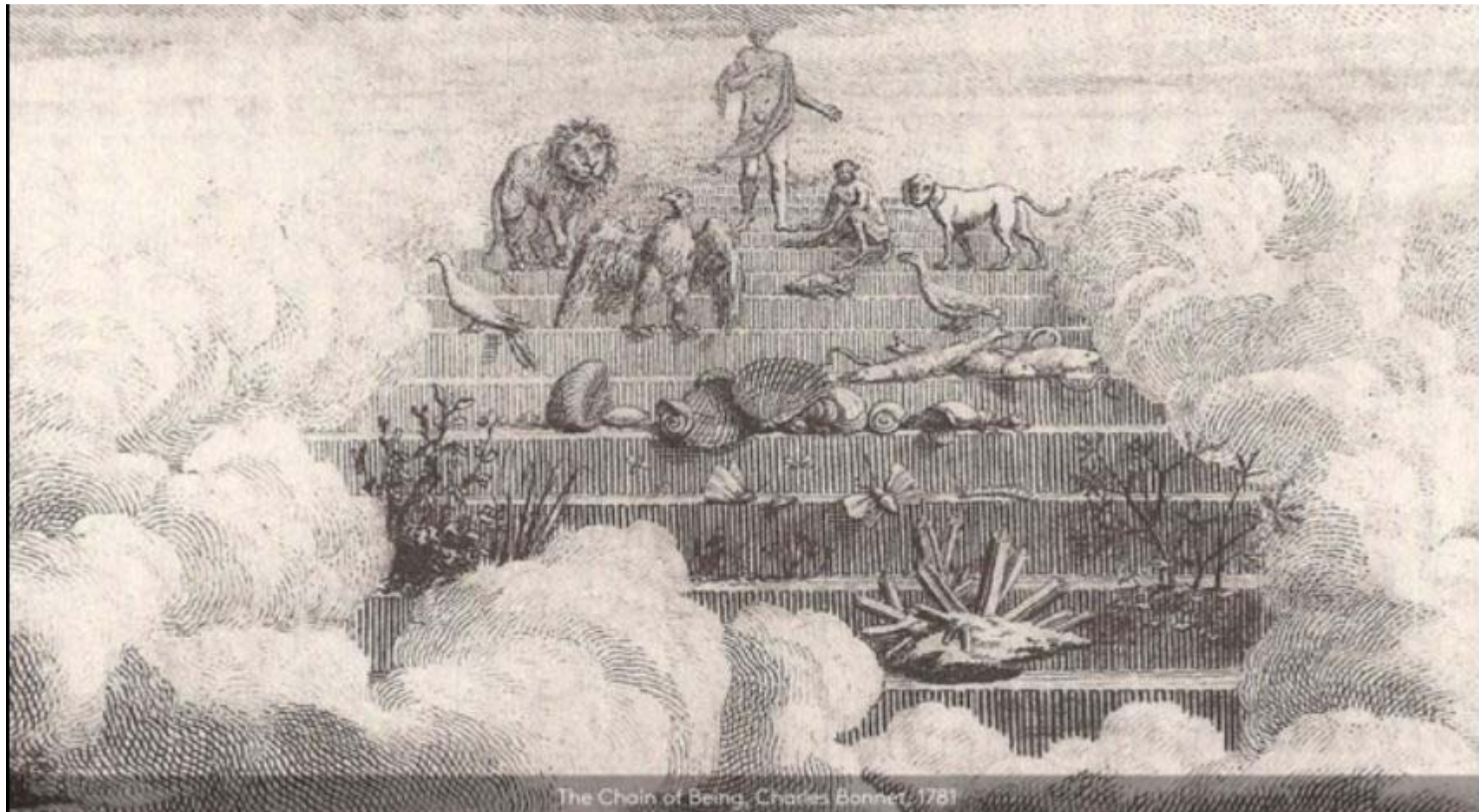
The norm of progress: A cross-species perspective.

“What is language? The ape, when properly trained, emerges as the unclear middle case: Neither wholly comparable to man (the clear positive case) nor to parrot (the *clear negative case*)...”

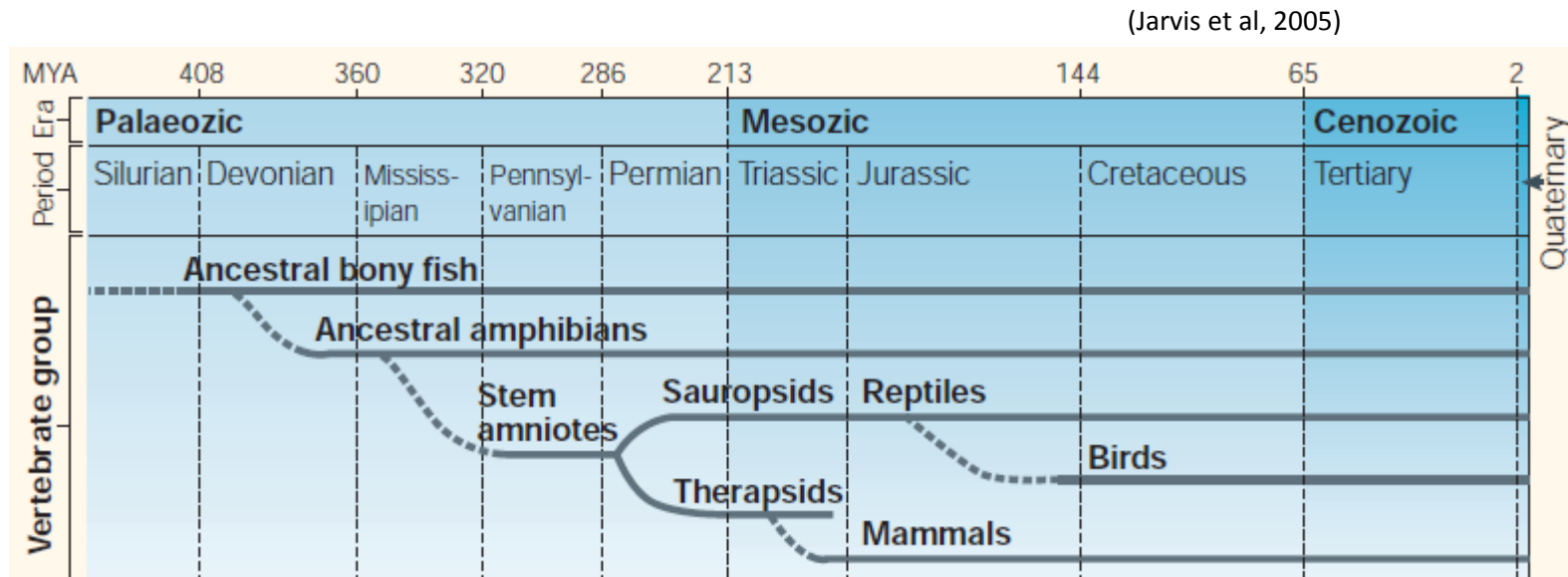
Premack, 1971

“... evolution... is an ascending development in a particular order.”

(Jackson, 1884, p. 591)



The norm of progress.



“birds possess highly complex instinctive endowments and [...] their intelligence is very limited.” (Herrick, 1924, p.213).

Learning „appears to occupy a subordinate position in general behavior“ (Maier, Schneirla, 1935, p. 235 & 261)

“...we believe with even better reason than man is a further development of tendencies found also in the lower orders.” (Hartshorne, 1958, p. 421)

Progressive telencephalization:

Functions of the brainstem were transferred to the forebrain: „Evolution is the process from the most automatic to the most voluntary“ (Jackson, 1884, p. 591)

Neocortex unique to mammals.

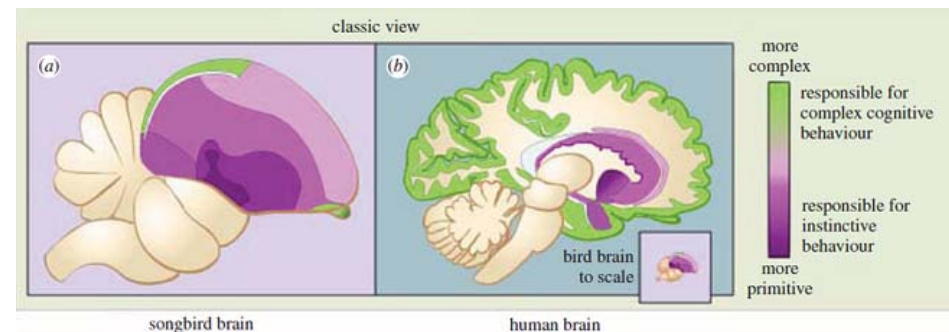
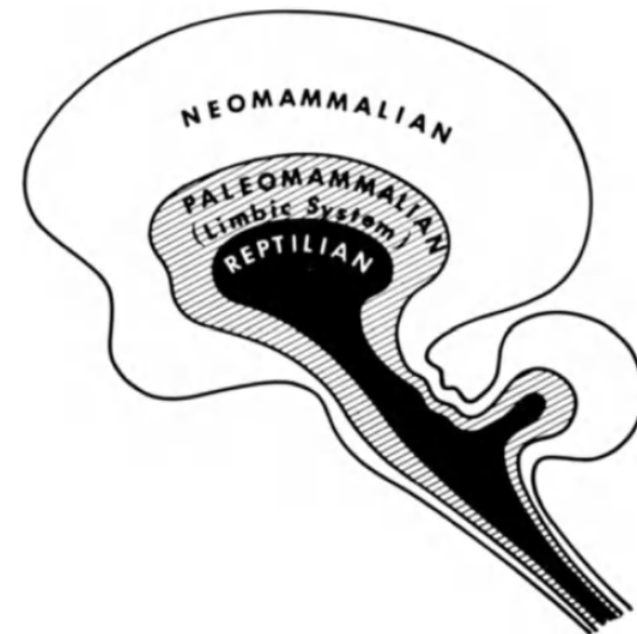
Animal communication
=> limbic system (emotions)

Human language
=> neocortex (problem solving, intelligence)

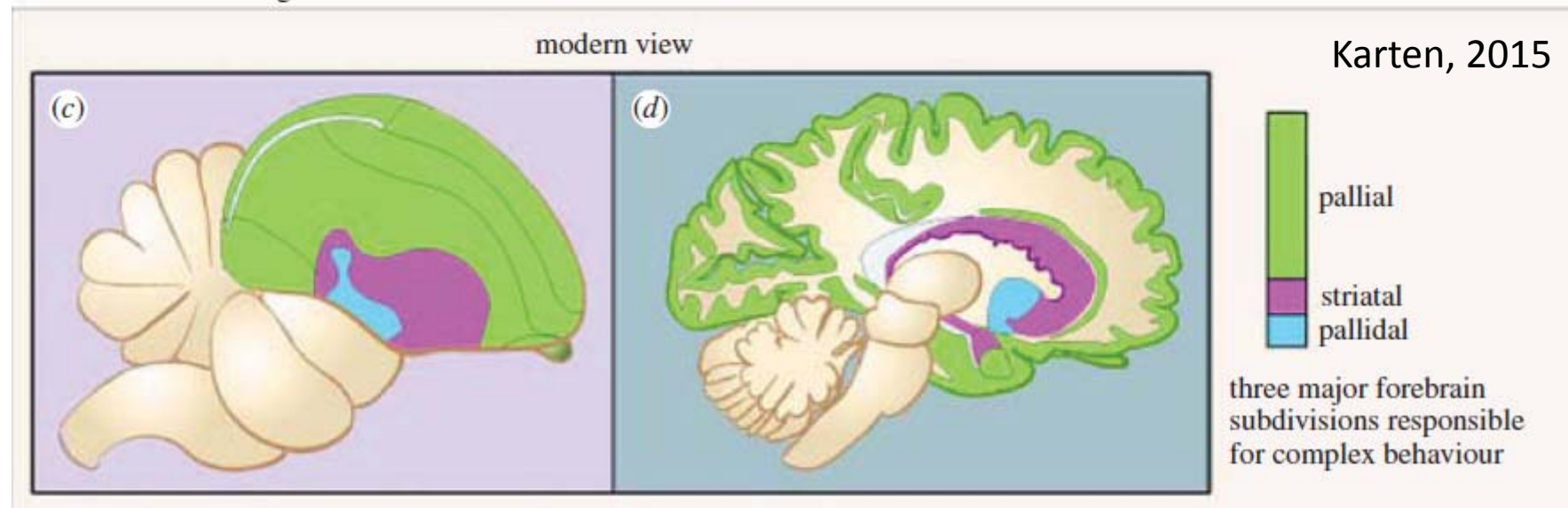
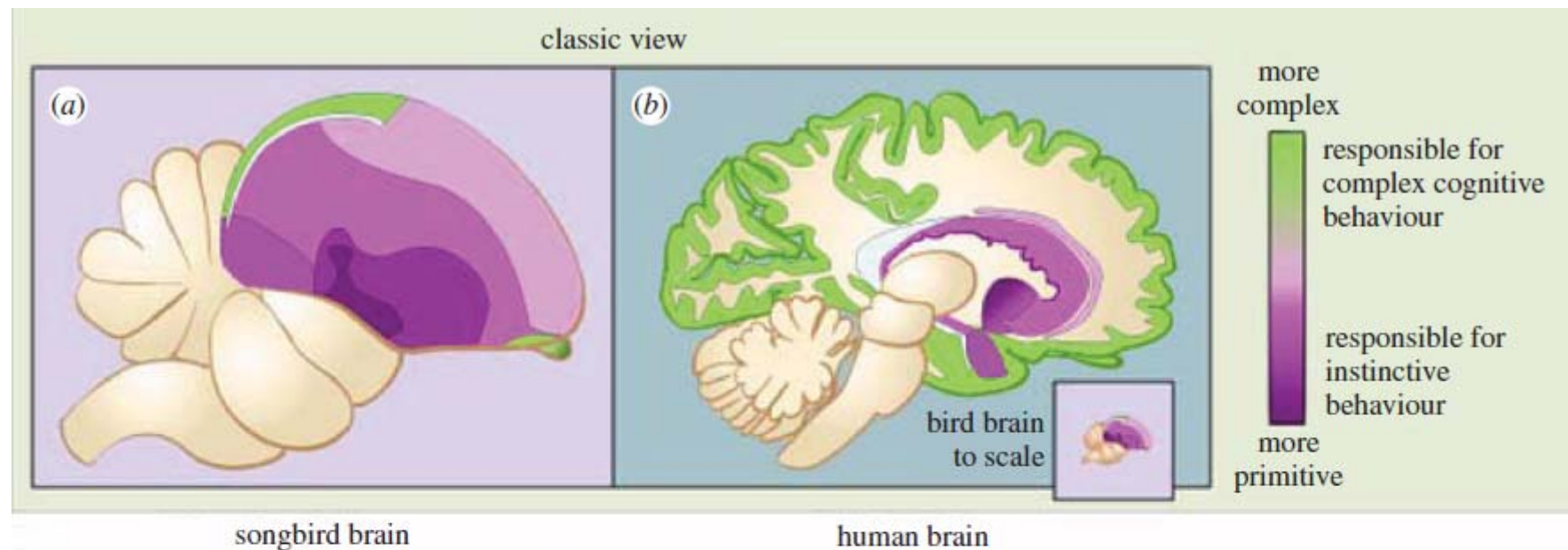
(MacLean, 1977, p. 140)

140

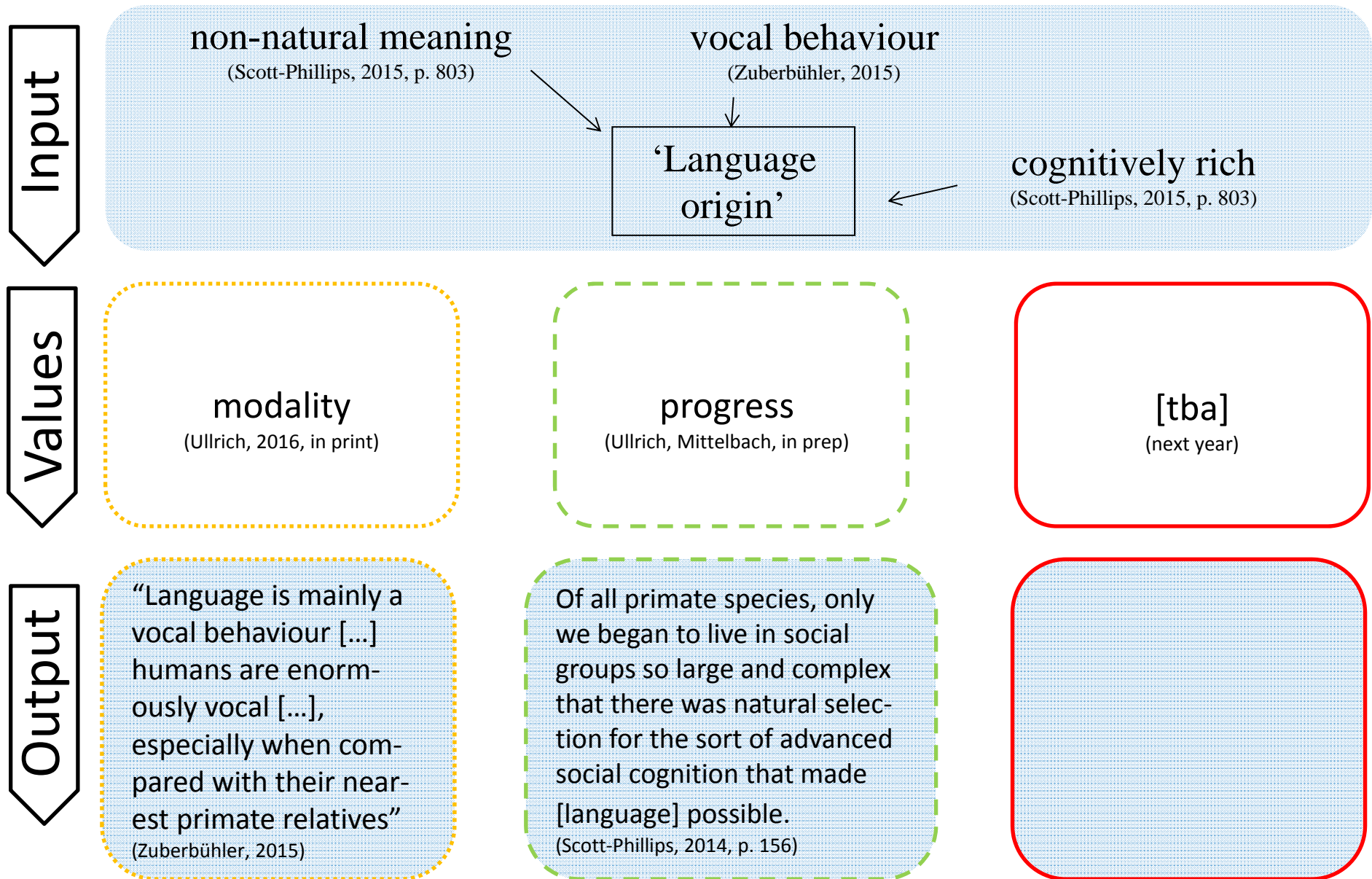
Paul D. MacLean



2005: *The Avian Brain Nomenclature Consortium*



Monitor science: Identify norms working in the background.



Thank you for your attention.

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- Abe, Kentaro, and Dai Watanabe, 'Songbirds Possess the Spontaneous Ability to Discriminate Syntactic Rules', *Nature Neuroscience*, 2011
- Baum, David A, Stacey Dewitt Smith, and Samuel S S Donovan, 'The Tree-Thinking Challenge', *Science*, 310 (2005), 979–980
- Boesch, Christophe, and Hedwige Boesch, 'Tool Use and Tool Making in Wild Chimpanzees', *Folia Primatologica*, 54 (1990), 86–99
- Brueggemann, Brenda Jo, *Lend Me Your Ear: Rhetorical Constructions of Deafness* (Washington DC: Gallaudet University Press, 1999)
- Burling, R, DF Armstrong, and BG Blount, 'Primate Calls, Human Language, and Nonverbal Communication', *Current Anthropology*, 34 (1993), 25–37
- Clayton, Nicola S, Timothy J Bussey, and Anthony Dickinson, 'Can Animals Recall the Past and Plan for the Future?', *Nature Reviews Neuroscience*, 4 (2003), 685 – 691
- Clayton, Nicola S, and Anthony Dickinson, 'Episodic-like Memory during Cache Recovery by Scrub Jays', *Nature*, 395 (1998), 287–291
- Dally, Joanna M, Nathan J Emery, and Nicola S Clayton, 'Food-Caching Western Scrub-Jays Keep Track of Who Was Watching When.', *Science (New York, N.Y.)*, 312 (2006), 1662–5
- Frederick, Robert, 'The Search for What Sets Humans Apart', *Proceedings of the National Academy of Sciences*, 112 (2015), 299–301
- Gardner, Allen, and Beatrix T. Gardner, 'Teaching Sign Language to a Chimpanzee', *Science*, 165 (1969), 664–72
- Goodall, Jane, 'Tool-Using and Aimed Throwing in a Community of Free-Living Chimpanzees', *Nature*, 201 (1964), 1264 – 1266
- Hartshorne, Charles, 'The Relation of Bird Song to Music', *Ibis*, 100 (1958), 421 – 445
- Hauser, Marc D, Noam Chomsky, and Tecumseh W. Fitch, 'The Faculty of Language: What Is It, Who Has It, and How Did It Evolve?', *Science (New York, N.Y.)*, 298 (2002), 1569–79
- Hauser, Marc et al, 'The Mystery of Language Evolution', *Frontiers in Psychology*, 5 (2014), 1–12
- Herrick, Judson, 'Neurological Foundations of Animal Behavior' (New York: Henry Holt and Company, 1924)
- Jackson, J Hughlings, 'The Croonian Lectures On Evolution And Dissolution Of The Nervous System', *The British Medical Journal*, 1 (1884), 591–593
- Jarvis, Erich et al, 'Avian Brains and a New Understanding of Vertebrate Brain Evolution.', *Nature reviews. Neuroscience*, 6 (2005), 151–159
- Karten, Harvey J, 'Vertebrate Brains and Evolutionary Connectomics: On the Origins of the Mammalian "Neocortex"', *Philosophical Transactions of the Royal Society B: Biological Sciences*, 370 (2015), MacLean, Paul, 'An Evolutionary Approach to Brain Research on Prosematic (Nonverbal) Behavior', in *Reproductive Behavior and Evolution*, ed. by Rosenblatt and Komisaruk (NY: Springer, 1977), pp. 137–164
- Maier, Norman Raymond Frederick, and Theodore C. Schneirla, *Principles of Animal Psychology* (New York, London: McGraw-Hill Book Company, Inc, 1935)
- Marler, P., and H.W. Slabbekoorn, *Nature's Music: The Science of Birdsong* (Academic Press, 2004), 1
- Maynard-Smith, John, and David Harper, 'Animal Signals' (Oxford: Oxford University Press, 2003)
- Meir, Irit, Wendy Sandler, Carol Padden, and Mark Aronoff, 'Emerging Sign Languages', in *Oxford Handbook of Deaf Studies, Language, and Education, Volume 2*, ed. by Marc Marschark and Patricia Elizabeth Spencer (Oxford: Oxford University Press, 2010), pp. 267 – 280
- Oakley, Kenneth, 'The Earliest Tool-Makers', *Antiquity*, 30 (1956), 4–8
- Osvath, Mathias, and Helena Osvath, 'Chimpanzee and Orangutan Forethought: Self-Control and Pre-Experience in the Face of Future Tool Use', *Animal Cognition*, 11 (2008), 661–674
- Patel, Aniruddh D, 'Musical Rhythm, Linguistic Rhythm, and Human Evolution', *Music Perception*, 24 (2006), 99–104
- Patel, Aniruddh D, John R Iversen, Micah R Bregman, and Irena Schulz, 'Experimental Evidence for Synchronization to a Musical Beat in a Nonhuman Animal.', *Current biology : CB*, 19 (2009), 827–30
- Povinelli, Daniel J., *Folk Physics for Apes* (Oxford, New York: Oxford University Press, 2000)
- Premack, David, 'Language in Chimpanzee?', *Science (New York, N.Y.)*, 172 (1971), 808–822
- Scott-Phillips, Thom, *Speaking Our Minds: Why Human Communication Is Different and How Language Evolved to Make It Special* (New York: Palgrave Macmillan, 2014)
- Suddendorf, Thomas, and Janie Busby, 'Mental Time Travel in Animals?', *Trends in cognitive sciences*, 7 (2003), 391–396
- Südhof, Thomas C., 'Truth in Science Publishing: A Personal Perspective', *PLOS Biology*, 14 (2016), e1002547
- Tulving, Endel, *Elements of Episodic Memory* (London, New York: Oxford University Press, 1983)
- Weir, Alex, Jackie Chappell, and Alex Kacelnik, 'Shaping of Hooks in New Caledonian Crows.', *Science*, 297 (2002), 981
- Zuberbühler, Klaus, 'Linguistic Capacity of Non-Human Animals', *Wiley Interdisciplinary Reviews: Cognitive Science*, 6 (2015), 313 – 321
- , 'Primate Communication', in *New Perspectives on the Origins of Language*, ed. by Claire Lefebvre, Bernard Comrie, and Henri Cohen (Amsterdam: John Benjamins Publishing Co., 2013), pp. 187 – 210

Email: robert.ullrich@fu-berlin.de