# Contents

Preface v  
Panel of Reviewers vii  

**Part I: Papers**  

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is Grammaticalization Glossogenetic?</td>
<td>3</td>
</tr>
<tr>
<td><em>Giorgos P. Argyropoulos</em></td>
<td></td>
</tr>
<tr>
<td>Mythology and the Evolution of Language</td>
<td>11</td>
</tr>
<tr>
<td><em>Alan Barnard</em></td>
<td></td>
</tr>
<tr>
<td>Symmetrical Artefacts, Internal Reward and Language Precursors in the Head</td>
<td>19</td>
</tr>
<tr>
<td><em>Brian Bayly</em></td>
<td></td>
</tr>
<tr>
<td>Linguistic Adaptation at Work? The Change of Word Order and Case System from Latin to the Romance Languages</td>
<td>26</td>
</tr>
<tr>
<td><em>Christian Bentz, Morten H. Christiansen</em></td>
<td></td>
</tr>
<tr>
<td>Invariants and Variation in Biology and Language Evolution</td>
<td>34</td>
</tr>
<tr>
<td><em>Robert C. Berwick</em></td>
<td></td>
</tr>
<tr>
<td>From Neurons to Signs</td>
<td>42</td>
</tr>
<tr>
<td><em>Denis Bouchard</em></td>
<td></td>
</tr>
<tr>
<td>Cultural Ratcheting Results Primarily from Semantic Compression</td>
<td>50</td>
</tr>
<tr>
<td><em>Joanna J. Bryson</em></td>
<td></td>
</tr>
<tr>
<td>Iterated Learning of Multiple Languages from Multiple Teachers</td>
<td>58</td>
</tr>
<tr>
<td><em>David Burkett, Thomas L. Griffiths</em></td>
<td></td>
</tr>
<tr>
<td>On Protolinguistic ‘Fossils’: Subject-Verb vs. Verb-Subject Structures</td>
<td>66</td>
</tr>
<tr>
<td><em>Eugenia Casielles, Ljiljana Progovac</em></td>
<td></td>
</tr>
<tr>
<td>Numerosity, Abstraction, and the Emergence of Metaphor in Language</td>
<td>74</td>
</tr>
<tr>
<td><em>Frederick L. Coolidge, Thomas Wynn</em></td>
<td></td>
</tr>
<tr>
<td>Self-Organization and Emergence in Language, a Case Study for Color</td>
<td>83</td>
</tr>
<tr>
<td><em>Joachim De Beule, Joris Bleys</em></td>
<td></td>
</tr>
<tr>
<td>Prosodic Features in Northern Muriquis Vocalizations</td>
<td>91</td>
</tr>
<tr>
<td><em>Didier Demolin, César Ades, Francisco D.C. Mendes</em></td>
<td></td>
</tr>
</tbody>
</table>
Have You Anything Unexpected to Say? The Human Propensity to Communicate Surprise and Its Role in the Emergence of Language
Jean-Louis Dessalles

The Innateness of Language: a View from Genetics
Karl C. Diller, Rebecca L. Cann

A New Theory of Language and its Implications for the Question of Evolution
Daniel Dor, Eva Jablonka

Horizontal Transmission of Call Features in Killer Whale Dialects
Olga A. Filatova, Erich Hoyt, Alexandr M. Burdin

Information and Influence in Animal Communication
Julia Fischer, Kurt Hammerschmidt

A Molecular Genetic Framework for Testing Hypotheses about Language Evolution
W. Tecumseh Fitch, Michael A. Arbib, Merlin Donald

Emergence of Aktionsarten: The First Step towards Aspect
Kateryna Gerasymova

Talking About Birds, Bees, and Primates Too. Implications for Language Evolution
Kathleen R. Gibson

The Effect of Social Popularities on Linguistic Categorization
Tao Gong

Exploring the Roles of Major Forms of Cultural Transmission in Language Evolution
Tao Gong

How To Identify the Units, Levels and Mechanisms of Language Evolution
Nathalie Gontier

Linguistic Analogy for Creativity and the Origin of Language
Takashi Hashimoto, Masaya Nakatsuka, Takeshi Konno

Applications of the Price Equation to Language Evolution
Gerhard Jäger

Interplay between Language, Navigation and Kin Selection
Dimitar Kazakov

Children Learn Sound Symbolic Words Better: Evolutionary Vestige of Sound Symbolic Protolanguage
Sotaro Kita, Katerina Kantartzis, Mutsumi Imai
A Sensorimotor Characterisation of Syntax, and its Implications for Models of Language Evolution
   
   Alistair Knott

Why Robots?
   
   Martin Loetzsch, Michael Spranger

Linguistic Arguments Probably Antedate Linguistic Predicates
   
   Erkki Luuk

Towards a Simulation Model of Dialogical Alignment
   
   Alexander Mehler, Petra Weiß, Peter Menke, Andy Lücking

Evolution of Grammatical Forms
   
   Mieko Ogura, William S-Y Wang

The Silence of the Stones: On the Archaeological Record for (Neandertal) Language
   
   Wil Roebroeks

Minimum Description Length and Generalization in the Evolution of Language
   
   Giancarlo Schrementi, Michael Gasser

Thoughts on Evolution of Language from the Point of View of Brain Neuroanatomy and Development, and Object-Oriented Programming
   
   H. Lee Seldon

The Evolution of Segmentation and Sequencing: Evidence from Homesign and Nicaraguan Sign Language
   
   Ann Senghas, Asli Özyürek, Susan Goldin-Meadow

Exploring the Nature of a Systematicity Bias: an Experimental Study
   
   Andrew D.M. Smith, Barbora Skarabela, Mónica Tamariz

Open-Ended Semantics Co-Evolving with Spatial Language
   
   Michael Spranger, Simon Pauw, Martin Loetzsch

Lost in a Linguistic Jungle: What's in the Language Faculty?
   
   Maggie Tallerman

The Role of Practice and Literacy in the Evolution of Linguistic Structure
   
   Mónica Tamariz, J. Erin Brown, Keelin M. Murray

Acquisition Preferences for Negative Concord
   
   Jacqueline van Kampen

The Predicability Tree. How, and Why?
   
   Robert van Rooij

Remi van Trijp

Priming Through Constructional Dependencies: A Case Study in Fluid Construction Grammar 344

Pieter Wellens, Joachim De Beule

The Moving Target Argument and the Speed of Evolution 352

Bodo Winter

Part II: Abstracts

What is Special About the Language Faculty, and How Did It Get That Way? 363

Stephen R. Anderson

On the Origin of Universal Categorization Patterns: An In-Silica Experiment 365

Andrea Baronchelli, Tao Gong, Vittorio Loreto, Andrea Puglisi

Coordination of Language Strategies based on Communicative Fitness 367

Joris Bleys

Samplers, Maximisers and the Cultural Evolutionary Dynamics of Language 369

Richard A. Blythe

Acoustic Variability in Nonhuman Primates: Individuality and Social Context 371

Hélène Bouchet, Catherine Blois-Heulin, Alban Lemasson

Contexts of Language Diversity 373

Ingar Brinck

Coordinated Multi-Modal Expression and Embodied Meaning in the Emergence of Symbolic Communication 375

J. Erin Brown

Do Ape Gestures Have Specific Meanings? Shifting the Focus from Flexibility to Semanticity 377

Erica A. Cartmill, Richard W. Byrne

Brains, Genes and Language Evolution 379

Morten H. Christiansen

Could Evo-devo Save Chomsky from the Evolutionary Paradox? 381

Hangjun Chu
Gestural Communication in Human Children: Ontogenetic Perspective in Favour of the Gestural Hypothesis of Language Origin

Hélène Cochet, Jacques Vauclair

383

The Path from Point A to Point B: How Gestures Became Language in Nicaraguan Signing

Marie Coppola, Ann Senghas

385

The Emergence of Structure from Sequence Memory Constraints in Cultural Transmission

Hannah Cornish, Morten H. Christiansen, Simon Kirby

387

Cross-modality: Reviving Iconicity in the Evolution of Language

Christine Cuskley, Simon Kirby, Julia Simner

389

Squiggle: Large-Scale Social Emergence of Simple Symbols

Rick Dale, Gary Lupyan

391

Using Software Agents to Investigate the Interactive Origins of Communication Systems

Pieter de Bie, Thomas Scott-Phillips, Simon Kirby, Bart Verheij

393

The Perceptual Effect of Air Sacs

Bart de Boer

395

The Influence of Language on Concept Formation in Artificial Agents

Joachim de Greeff, Frédéric Delaunay, Tony Belpaeme

397

Recreating Duality of Patterning in the Laboratory: A New Experimental Paradigm for Studying Emergence of Sublexical Structure

Alex del Giudice, Simon Kirby, Carol Padden

399

From Hand to Mouth: An Experimental Simulation of Language Origin

Nicolas Fay, Stephanie Lim

401

Does Input Matter?: Gesture and Homesign in Nicaragua, China, Turkey, and the USA

Molly Flaherty, Susan Goldin-Meadow

403

Deception, Tells, and the Evolution of Combinatorial Communication

Jacob G. Foster, Matthew Slayton

405

The Evolution of Semantics: a Meeting of Minds

Peter Gärdenfors

407

Does Deixis Precede Vocabulary Development in Language-Trained Apes?

Kristen Gillespie-Lynch, Yunping Feng, Patricia M. Greenfield, Sue Savage-Rumbaugh, Heidi Lyn, Christina Khou

411
Why Ape-Human Similarities and Learning Mechanisms Are Important: A Developmental and Cladistic Approach to the Evolution of Language

Patricia M. Greenfield

Evolving Linguistic Competence in the Absence of Performance

Marc D. Hauser

Simulating Creole and Dialect Formation

Zena Hira, Mark Bartlett

Ecological and Sexual Explanations for Larynx Lowering

Jean-Marie Hombert

Observing the Birth of Phonology

Assaf Israel, Wendy Sandler

Relaxation of Selection Can Lead to Signal Variations: An Example in Birdsong

Hiroko Kagawa, Hiroko Yamada, Ruey-Singh Lin, Kazuo Okanoya

The Co-Involvement of Hands and Mouth in Utterance Construction: Implications for Language Origins Theories.

Adam Kendon

Relationship Between Iconic Gestures and Sound Symbolic Words: Evidence for Multimodal Protolanguage

Sotaro Kita, Asli Özyürek, Shanley Allen, Tomoko Ishizuka

Cooperative Breeding Models: Implications for the Evolution of Language

Chris Knight, Camilla Power

Contributions of Aphasiology to Language Evolution Research

Andreas Kyriacou, Sverker Johansson

How Important Are Words for Conceptual Coordination?

Cyprian Laskowski, Martin Pickering

Vocal Abilities in a Group of Nonhuman Primates

Alban Lemasson, Klaus Zuberbühler

Vocal Deception From a Hunter-Gatherer Perspective

Jerome Lewis, Chris Knight

The Emergence Of Self-Organization In Language: Evidence From English Word Formation

Mark Lindsay, Mark Aronoff

Beyond Communication: Language Modulates Visual Processing

Gary Lupyan
Declaratives in Apes: Impact of Environment on Purely Informational Communications
Heidi Lyn, Patricia M. Greenfield, Sue Savage-Rumbaugh, Jamie Russell, Kristen Gillespie-Lynch, William Hopkins

Languages As Evolutionary Aggregates
Luke McCrohon

3D-Morphometric and Acoustic Analysis of Chimpanzee and Human Vocal Tracts, and Their Use in the Reconstruction of Neanderthal Vocal Tracts and Their Acoustic Potential
Sandra Martelli, Antoine Serrurier, Anna Barney, James Steele

The Cultural Evolution of Language in a World of Continuous Meanings
Cristina Matthews, Simon Kirby, Hannah Cornish

Investigation of Gestural vs Vocal Origins of Language in Nonhuman Primates: Distinguishing Comprehension and Production of Signals
Adrien Meguerditchian, Jacques Vauclair

The Interaction of Animacy and Word Order in Human Languages: A Study of Strategies in a Novel Communication Task
Irit Meir, Adi Lifshitz, Deniz Ilkbasaran, Carol Padden

On the Track of the Origin of Language: A Comparative Study Quantifying Hand Preference in Object Manipulation and Gestural Communication in Non Human Primates
Hélène Meunier, Jacques Vauclair

A Functional Transcranial Doppler Ultrasound Study of Brain Lateralisation in Stone Tool Making and Language
Georg Meyer, Sophie Wuerger, Natalie Uomini

The Evolution of Information Structure
Vanessa Micelli

A Missing Link in the Cultural Evolution of Language: Connecting Sequential Learning and Language Empirically
Jennifer Misyak, Morten H. Christiansen, J. Bruce Tomblin

Balancing Arbitrariness and Systematicity in Language Evolution
Padraic Monaghan, Morten H. Christiansen, Stanka Fitneva

Speaker-Independent Perception of Human Speech by Zebra Finches
Verena R. Ohms, Arike Gill, Caroline A.A. van Heijningen, Gabriel J.L. Beckers, Carel ten Cate

An Avian Model for Language Evolution
Irene Pepperberg
Grooming Gestures of Chimpanzees in the Wild: First Insights Into Meaning and Function

Simone Pika, Chris Knight

The Relevance of the Developmental Stress Hypothesis to the Evolution of Language

Anne Pritchard

Co-Evolution of Language and Social Network Structure through Cultural Transmission

Justin Quilllan, Simon Kirby, Kenny Smith

The Origins of Sociolinguistic Marking and its Role in Language Divergence: an Experimental Study

Gareth Roberts

Considering Language Evolution from Birdsong Development

Kazutoshi Sasahara, Miki Takahasi, Kenta Suzuki, Olga Féher, Ofer Tchernichovski, Kazuo Okanoya

Semantic Bootstrapping of Grammar in Embodied Robots

Yo Sato, Joe Saunders

Why Do Wild Chimpanzees Produce Food-Associated Calls: A Case of Vocal Grooming?

Anne Schel, Klaus Zuberbühler, Katie E. Slocombe

The Importance of Exploring Non-Linguistic Functions of Human Brain Language Areas for Explaining Language Evolution

P. Thomas Schoenemann

Language Evolution: The View from Adult Second Language Learners

Marieke Schouwstra

The Evolution of Communication and Relevance

Thomas Scott-Phillips

Pragmatics Not Semantics As the Basis for Clause Structure

Thomas Scott-Phillips, James R. Hurford, Gareth Roberts, Sean Roberts

Production Of The Vowels /a, i, u/ Based on an Articulatory Model of Feeding

Antoine Serrurier, Anna Barney

Vocal Or Gestural? What Empirical Comparative Evidence Can and Cannot Currently Tell Us about Language Evolution

Katie E. Slocombe, Bridget Waller, Katja Liebal
Regularisation of Unpredictable Variation Through Iterated Learning

Kenny Smith, Elizabeth Wonnacott

Implausibly Cooperative Robots Meet Their Selfish Gene Counterparts

Luc Steels, Chris Knight

Identifying Selective Pressures in Language Evolution: Pólya Urns and the Price Equation

Mónica Tamariz

What Are The Analogues of Genotype and Phenotype in the Cultural Evolution of Language?

Mónica Tamariz

Acoustic Potential For Reference-Like Communication in Wild Indris

Valeria Torti, Viviana Sorrentino, Cristina Giacoma, Marco Gamba

Simple Rules Can Explain Discrimination of Putative Recursive Syntactic Structures by Songbirds: a Case Study on Zebra Finches

Caroline A.A. van Heijningen, Jos de Visser, Willem Zuidema, Carel Ten Cate

The Critical Period and Preservation of Emerged Vowel Systems

Tessa Verhoef, Bart de Boer

Simulations of Socio-Linguistic Change: Implications for Unidirectionality

Maarten Versteegh, Federico Sangati, Willem Zuidema

Lessons for Evolution from First Language Development

Marilyn Vihman

The Relevance of Body Language to Evolution of Language Research

Slawomir Wacewicz, Przemysław Żywiczyński

Vocal and Facial Productions in Nonhuman Primates: Do They Express Emotions or Language Related Treatments?

Catherine Wallez, Jacques Vauclair

Language As Extended Phenotype?

Dennis Waters

Reconsidering the Code Model of Communication for Simulations of Language Evolution

Matthijs Westera

Cultural Evolution of Bird Song and Genetic Degradation of Learning Bias

Hajime Yamauchi, Terrence W. Deacon, Kazuo Okanoya

Optimality and Teleomatic Causes in the Faculty of Language

Hajime Yamauchi, Kazuo Okanoya
From Body to Mouth (and Body)

Jordan Zlatev, Merlin Donald, Göran Sonesson

Author Index