

Computational Social Sciences

Anamaria Berea

Emergence of Communication in Socio- Biological Networks

 Springer

Computational Social Sciences

Computational Social Sciences

A series of authored and edited monographs that utilize quantitative and computational methods to model, analyze and interpret large-scale social phenomena. Titles within the series contain methods and practices that test and develop theories of complex social processes through bottom-up modeling of social interactions. Of particular interest is the study of the coevolution of modern communication technology and social behavior and norms, in connection with emerging issues such as trust, risk, security and privacy in novel socio-technical environments.

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Chapter 1

Introduction

The unifying theme of this book is that communication is an underlying fabric of life, as fundamental as matter and energy are to our world and, more importantly, to our understanding of the world.

This book is also a non-exhaustive account of interesting, out of pattern communication and social behaviors that we can observe in animals, or in the biological world and among us, humans, and between us humans and other species.

While we know that communication is fundamental to life, in any form or shape it comes on our planet, the goal of this book is to show that there are aspects of communication that can be universal and transferable from one species to another and that it is what enables collective behavior in social animals and humans. At the same time, there are aspects of communication that are unique to each species or ecosystem, that communication has evolved both alongside the genetic evolution, the social evolution that is characteristic to a subset of living species, and the cultural evolution that is characteristic not only to humans, but also to whales, dolphins, primates, elephants, and many more.

Moreover, this book points towards the need of a more fundamental theory of communication. In order to understand the future of languages, the development of artificial intelligence and perhaps even the development of interspecies communication, we need to pay attention to the fundamentals of communication in a way that is usable and transferable into practice, by trying to dance around tautologies and ubiquitousness of this phenomenon that is so universal, yet so poorly described in universal terms, and that is so fundamental, yet lacking a robust fundamental theory or fundamental platform of research.

Many researchers are drawn to exploring and researching one of the hardest questions in science: which are the origins of human language? I am not looking at this question here. This project started with some seemingly simple set of questions: what is the difference between the communication embodied in silicone, in our inanimate computers, and communication that is embodied in carbon, in our