

PREFACE

Social learning theorists seek to identify, characterize, and explain the evolutionary, ecological, cognitive, and biological nature of interactions between observers and demonstrators (or models) from which observers may change their behavior. Although often largely credited to psychologists Julian Rotter and Albert Bandura, the seminal efforts of many 20th century scientists and their predecessors working in a range of disciplines helped establish theories of social learning that continue to challenge popular ideas about the role of nature and nurture in animal existence. Thinkers dating back to antiquity recognized, if not fully understood, the impact that learning in social contexts could have on humans and their culture. With application of the scientific method, early neoDarwinian ethologists, psychologists, and biologists reformulated and improved upon many of these older notions to begin to elaborate the phenomena, functions, and mechanisms of drive-, instinct-, and observational learning-based behavior modification as they pertained to the social activities of different species of vertebrates, including rearing of offspring, competing in courtship and dominance displays, climbing social hierarchies, foraging and hunting for food, and defending kin and mixed collectives from predation and conspecific aggressors. The confluence of this research with the heightening large-scale social problems of a rapidly modernizing mid-20th century world, such as global armed conflicts, ineffectual education, rampant crime, harsh authoritarian political systems, mob behavior, and economic disparity, prompted social learning theorists, including, among others, Rotter, Bandura, Jean Piaget, and Ronald Akers, to verify and employ their newer concepts on life history and development, personality, motivation, cognition, and environment in an attempt to better predict human behavior and benefit mankind. This trend in applied social learning theory dominated the area of study until field and laboratory research into animal models started to provide confirmatory evidence of sophisticated social learning skills once believed to be only within the capabilities of humans. Findings from nonhuman primates, birds, and/or insects, for example, substantiated that empathy, deception, personal identity, social eavesdropping, cultural transmission of knowledge, and other human-like social traits occur in phylogenetically diverse members of the Animal Kingdom. As a consequence, social learning theorists and their theories progressively focused less on anthropocentric personal and societal issues to gain a broader comparative view of the selective forces constaining socially learned behaviors during individual lifespans to variable evolutionary time frames. Today, greater appreciation for the emergence and evolution of sociality within and across both taxonomic and technological boundaries stresses plants, microbes, and even machines may also exploit social

learning to secure ecological advantages not conferred by solitary lifestyles. *Social Learning Theory: Phylogenetic Considerations across Animal, Plant, and Microbial Taxa* explores these and additional complex themes through a compilation of chapters written by international authorities. Readers will find this book links scientific revolutions in sociobiology to advance social learning theory towards solving current and future problems in human-machine interfaces, infectious disease and host-parasite interactions, adaptation to changing niche and social structures, the neurobiology of social learning, cognition, and behavior, and numerous other topics.

Importantly, while the contents of this multisectioned edited volume share similarities with previously published books on the subject of social learning, it departs from rival texts in several distinct ways. First, as the title indicates, the goal of the book is to present cross-taxa perspectives on the characteristics of social learning observed in members of different kingdoms. The vast majority of books devoted to social learning restrict their coverage to primates, particularly humans and great apes, other vertebrates, such as birds and marine mammals, and/or invertebrates, such as ants and bees, which express well-known social tendencies. But this kind of approach ignores a burgeoning paradigm shift and realization that social learning is an essentially endemic adaptation of both neural and aneural organisms. Therefore, by taking a more comprehensive phylogenetic approach toward social learning, including discussions involving nascent insect, cephalopod, microbe, and plant models of social learning, this book will open debate into the adequacy of current social learning theories to accurately and validly address the exact factors and mechanisms underlying convergent and divergent social learning abilities. Second, unlike other social learning theory volumes, emphasis in certain book chapters on interkingdom (e.g., plant-bacteria and human-bacteria relationships), intrakingdom (e.g., typical predator-prey relationships), and biological-technological (e.g., human-computer relationships) symbioses highlights the need of social learning theorists to perhaps radically expand upon ideas mainly arising from animal and human models of learned behavior. It should be no longer acceptable to limit ourselves to the study and prediction of "higher" vertebrate social behavior when it is clear that social organisms from other kingdoms have also evolved abilities for perception, learning, memory, ostensive and nonostensive communication, eavesdropping, mimicry, primitive social logics, and additional traits critical for the manifestation and successful use of observational learning. Investigations into the social learning phenomena of interkingdom and intrakingdom relationships likely will have immense ramifications for the development and application of theory as they relate to worldwide crises of uncontrollable infectious diseases, habitat destruction and despeciation of wildlife, and further sets of problems plaguing our planet. Similarly, our growing ingenuity and reliance upon manmade technological systems, such as robots, supercomputers, and the worldwide web, which are engineered to engage in and acquire information from social-like interactions, challenge traditional definitions of social learning, life, freedom, and society as well as practical considerations of, for instance, division of labor, intimacy, and group governance. Thus, many significant issues involving social learning face our and following generations of people. This book directly and indirectly broaches such issues with the hope of informing and motivating novice and expert alike.

Lastly, I extend my gratitude to Nova Science Publishers, Inc. for inviting me to edit this volume. I also want to thank all individuals who gave their indispensable time and effort in preparing *Social Learning Theory: Phylogenetic Considerations across Animal, Plant, and Microbial Taxa* for publication. Of special note, of course, are the chapter authors. Their

labor, insights, and openness to editorial suggestion have ensured that our undertaking will be a valued contribution to present and future generations of scientists. It was my privilege to work with each of you on this project.

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SECTION I. CONCEPTS, PROBLEMS, AND APPLICATIONS OF SOCIAL LEARNING THEORY