Introduction

The aim of this book is to discover the mechanism underlying the creation, evolution, and transmission of human cultures and apply this knowledge to cultural beliefs and prejudices to correct their fallacies and imperfections. The hope is that such effort and understanding can help us build a better future.

In our age it is clear that culture is fast replacing biology as the dominant force in human evolution. Today an individual's survival and reproductive success depend more on inner beliefs and outward behavior than on genetic endowments or phenotypic expression. We are no longer the cave-dwelling brutes who rely on physical prowess to prevail; instead, mental cunning and social skills determine our success in a high-tech and mechanized society. The crawling pace of biological evolution is simply too inadequate to keep pace with our evolutionary needs in this rapidly changing modernity.

Cultural and biological evolution follow certain fixed and universal principles, albeit toward different goals and by different means. Both follow Universal Darwinism, creating variants under selection pressures to reach the fittest adaptation in a given environment. But the goal of biological evolution is survival and reproductive success, and it relies on the human reproductive system to generate variants and natural selection to cull the winning adaptations. Cultural evolution is not encumbered by unwieldy biological mechanisms but relies on the human brain to generate variants, selecting the winners by purely psychological criteria. Cultural evolution, often at odds with biological evolution, is capable of producing human behavior such as voluntary celibacy or kamikaze suicide that runs contrary to a person's biological interests.

This book explains the differences and similarities between the two human evolutionary systems, first by hypothesizing the underlying

mechanism guiding cultural evolution and then comparing it closely to its parallel in biological evolution.

In the most rudimentary sense, culture represents information held in individuals' minds and passed among one another and to future generations. Because cultural information is conceived, processed, and transmitted by the human mind, to understand culture we must first understand how the human brain conceives and processes information. This is a daunting task, because up to this date we don't really understand how the human brain does this, and it remains one of the biggest hurdles preventing the proper analysis of human culture. In the past, theorists have adopted the behaviorist approach of Skinner and Watson and treated the human brain as an irrelevant black box. According to this view, what goes on in the mind is ultimately inconsequential: what matters are the output manifest behaviors of such a black box and the conditioned stimulus-response patterns that we can elicit from it. Yet such a perspective runs grossly contrary to our introspective experiences. At every waking moment, each of us can experience a rich inner mental life; and we know intuitively that our inner thoughts, beliefs, and emotional biases often play a significant role in the decisions we make and the behaviors we exhibit. Any theory that denies the reality of such mental experiences or their significance is simply not plausible.

It is undeniable that humans, like most other higher animals, possess an instinctive capacity to imitate others. Certain innate mimicking circuitry or "mirror neurons" are necessarily hardwired into our brain, so babies can learn language and other social skills, making culture possible. Yet humans seem to be able to do more than just mindless copying. We seem to be able to gauge the intention and purpose of others' actions and co-opt those for our own use. For instance, when one primitive person sees another using a coconut shell to collect morning dew for drinking water, he knows that what matters in the technique is not the specific container used, but any kind of device that will accomplish the same purpose—for example, he could use leaves or tree branches to increase his yield. In the majority of cases, humans are not simply unthinking copycats. In learning from others, somehow we possess the ability to extract the deep structure or the underlying concept of an observation while ignoring the distracting surface features, something undoubtedly enabled only by our evolved cognitive faculties

and our ability to develop a theory of mind and empathy about other humans. Much more goes on in the mind than simply the act of imitation.

There is no way around it. To understand human culture, we must understand how the human mind works. To understand how the human mind works, we must be able to break it down into purely mechanical components and processes and analyze it in such a manner. There is no way to properly analyze cultural evolution without understanding the machinery—the human mind—driving it. And there is no room for the existence of any mysterious extraphysical or supernatural entity in the operation of the mind that would defy its complete analysis.

This book therefore takes a materialistic and reductionistic approach to the analysis of the human mind/brain. It begins with the premise that all human mental activities and subjective experiences are rendered by the roughly three-pound mass of biological tissue called the human brain; and further, all brain operations are implemented by processes explainable using extant knowledge in the physical, chemical, and biological sciences, without the need to resort to any mysterious force or extra-scientific principle. Essential brain operations are carried out by neurons and the connections among neurons, an assumption well supported by biomedical evidence. Any attempt to view the mind or the brain by other than implementable mechanical processes amounts to nothing more than egocentric and anthropocentric hubris. Such bias is probably the biggest obstacle human beings need to overcome in order to look at themselves honestly and analyze themselves properly.

Starting with these basic assumptions, one can then proceed to construct a theory of brain operations to explain mental activities. It is an attempt to piece together a plausible solution to a very complicated jigsaw puzzle, and I hope to do this by using knowledge gleaned from our introspective experiences and from results of neuroscience research, critically examining the logic and presumptions used every step along the way. I will then use the theory as a framework to decipher how information is conceived and processed by individual human minds and, from that, how information is selected and transmitted in a society of minds. Next, the general principles of cultural evolution are formulated and compared to biological evolution in its various aspects. These in turn are used to explain the phenomena of morality, ideology, and religion in human life. The book concludes with a brief remark on the nature-versus-nurture

debate and the future of human evolution. This outlines the basic approach of the text.

This book is organized into two parts. Part I, How to Build a Conscious Robot with Feelings, investigates information processing in the mind and how it can be implemented mechanically. Part II, Cultural Evolution, uses the information from Part I to formulate a theory of cultural evolution and applies that to investigate many cultural phenomena.

Chapter 1 starts the discussion with a brief overview of what culture is. In Chapter 2, I argue that human beings have an intrinsic need for explanations to help them deal with the challenges of their lives and that people would actively invent cause-and-effect connections even when none can be found. Chapter 3 uses observations about split-brain patients to show that most of human knowledge is nothing more than interpreted inferences. Chapter 4 proposes to divide the mindscape into two parts, a conscious part and an unconscious part, and proceeds to compare their differences. It further proposes that the human conscious and unconscious communicate by means of thoughts and feelings. Chapter 5 seeks to analyze what a thought is by breaking it down into its component parts. It concludes with a discussion of what we mean by understanding and how meanings are attached to mental representations. Similarly, Chapter 6 endeavors to demystify feelings by breaking them down and analyzing them in their component parts. It concludes with a few comments about how to build machines with feelings. In Chapter 7, I return to solve the problem of consciousness by showing that consciousness is nothing but a human perception. Altered consciousness in dreaming is discussed as an example. The chapter also comments on the development of self and self-awareness. Chapter 8 is a brief discussion on the illusion of epiphenomenalism. Chapter 9 investigates the processes of human deductive and inductive reasoning and the differences between the two. It also analyzes the mechanism of generalization. Chapters 10 and 11 investigate how concepts become beliefs in the human mind. They seek to answer the question, "What would make a person believe in certain things and not others?" Many important concepts are introduced in these two chapters, including the credence and emotional assessments of concepts for believability, the conditioning processes of secondary credence and emotional attachments, and the opera-

tion and maintenance of belief systems. The discussion ends by analyzing the problem of free will. Chapter 12 continues the discussions in Chapters 10 and 11 by investigating conscious versus unconscious belief complexes. It also offers suggestions about how we can change our unconscious beliefs consciously. Chapter 13 is about the motivation of thinking. It analyzes human goals and desires and the nature of happiness. In Chapter 14, I propose that the mind can be viewed as a hedonic problem-solving engine and discuss the many strategies it can use to solve a problem. The chapter ends with a discussion of creativity. Chapter 15 is about mental representations. Included is a proposal to implement thinking and problem solving by fuzzy rule-based computations. Chapter 16 analyzes in detail human empathy and sympathy. As a related aside, it also argues how these innate tendencies can be used to justify universal human rights. Chapter 17 investigates the origin of cultural beliefs. Finally, Chapter 18 concludes Part I of the book with an analysis of the biological and cultural origins of altruism.

Part II launches into a full-scale discussion of information processing in cultural evolution. Chapter 19 begins by showing how, in the game of evolution, an individual can be viewed as the totality of his or her expressed genes and beliefs. Chapter 20 demonstrates how the principles of Universal Darwinism can be applied to both biological evolution and cultural evolution. Chapter 21 introduces the use of "concept" as a replicating information unit in cultural evolution. In Chapter 22, I formally present a theory of cultural evolution, using "concept" as the information replicator. The creation, variation, expression, and transmission of concepts under selection pressures are analyzed in detail. I also discuss the goal of cultural evolution and the selection pressures that can exist at many levels of analysis, both intra-individually and extra-individually. Biological evolution and cultural evolution are compared side by side to show their similarities and differences. The chapter concludes with a brief comment on the future of human evolution. In Chapters 23, 24, and 25, I use the proposed model of cultural evolution to investigate the phenomena of morality, ideology, and religion in human society: their origins, goals, underlying evolutionary mechanisms, and futures. Chapter 26 stakes out my position in the nature-versus-nurture debate by arguing for the malleability of the human mind in higher cognitive operations. Chapter 27 presents some concluding remarks on the state of human evolution today and what we can anticipate in the future.

It is said that writing a book is like taking a journey—you never know where you will end up until it is finished. In the course of writing this book, there have been many detours and diversions, leading frequently to exotic ventures and serendipitous finds, which have made the experience all the more interesting and gratifying. Along the way, a few sacred cows were confronted and defrocked, as were many of my cherished beliefs and certainties. The motivation of this book has been to dig deeply into the nature of human beings and to use such knowledge to answer many of the puzzling questions of humanity. It is based on the belief that only by understanding ourselves as human beings, the kind of creatures we really are, can we hope to find valid answers to extricate ourselves from the many self-inflicted miseries and quagmires in the world today. The book is also an attempt to answer many of the big questions of life that have always perplexed me since childhood, and I hope in it readers will find some valuable suggestions on how to tackle these important and perennial problems. Once in a while it behooves us to face ourselves honestly and risk turning our world topsy-turvy so we may gain the insights that can only come from seeing ourselves from a different perspective. I believe a good book should raise more questions than it can hope to answer, and I hope this book will stimulate many others to undertake their own personal journey of self-discovery.