INTRODUCTION

As a species, who are we? Why are we like that? What can we become? And do we have a choice?

This book builds a framework for addressing these questions. In doing so, it aims to solve a major scientific puzzle: how humans evolve, and why this process differs from Darwinian natural selection that accounts for the evolution of all other species, including our hominid ancestors.

From the perspective of our everyday lives the world often appears messy, rambling along in no discernible direction. Even the course of human history can seem like a sequence of folly compounded by folly. Civilizations rise, then fracture and fall, often to the benefit of no one, including those who advocate the fracture or cause the collapse.

Nevertheless, when we step back to gain perspective we see that our world is not ordered by random events. Human lives are usually fairly well-organized; there is structure to the societies in which we abide. *E pluribus unum.*

The same may be said of human history. Conflicts may pervade, but chaos does not. Patterns emerge. Bronze succeeds stone, iron succeeds bronze. From small kin-based tribal societies of hunter-gatherers come large agricultural civilizations with bonds far beyond kinship. Money is introduced, revolutionizing economic systems previously dependent on barter. Systems of government are transformed, sometimes slowly, sometimes by revolution. Systems of writing are devised; education is formalized to spread the word. A myriad of local deities presiding over local events of specific people are fused into universal religions, governing all events and available to all people. These and many other patterns have been repeated, often independently, in many parts of the world.

The specific historical sequences are in each case unique. Nevertheless, through lurches, lapses, and more lurches, large civilizations have emerged, spread and displaced, until a relatively few cultural forms predominate.

These are the broadest patterns of the history of the modern human species over the last several thousands of years. They have been accompanied by another: human population has grown immensely. From perhaps a few million human inhabitants not too many thousands of years ago, the Earth now holds around seven billion.

Population growth, in turn, corresponds with another stark pattern: a remarkable expansion in resources extracted, produced and consumed. Anthropologist Marvin Harris

summarized the direction of human evolution: "Anthropologists have long recognized that in broadest perspective cultural evolution has had three main characteristics: escalating energy budgets, increased productivity, and accelerating population growth." (Harris 1988, p. 395).

Why?

That this has been the natural course of human events can be taken for granted. But from the Garden of Eden, to Plato's Republic, to Rousseau, Buddha, Marx and More's Utopia, people have imagined a vast array of ways in which the human world might be ordered and the direction it might take. Of all the imaginable possibilities, why has the human story unfolded as it has?

And, in particular, why has the relentless growth in people, productivity and resources been the evolutionary trajectory of our species? Projecting forward to the future: is it inevitable that this trajectory will continue? From a population of 2.5 billion when I was born, to six billion when I began writing this book, to nearly seven billion as I write this: if continuing this trajectory threatened the extinction of our species, would it be possible for humans to act in concert to alter that trajectory?

These questions have been pondered by many others, so I expected that the social sciences would have developed some theoretical framework for addressing them. I was therefore surprised to find the literature devoid of any such framework. Philosophy, history, psychology, sociology, anthropology and sociobiology—these disciplines are rich in their understanding of the nuances of human conduct, approached from a multitude of angles. None, however, presents a coherent theory as to why relentless growth has been the human trajectory.

But these disciplines have put pieces of the puzzle in place. We know that population growth and resource exploitation have accompanied the shift from hunters and gatherers to agricultural, industrial and post-industrial civilizations. We know that this shift has been enabled by the remarkable evolution of human culture, which Tylor defined as "that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society." (Tylor 1871). We know that the remarkable human brain, the pride of our species, has been responsible for devising the technologies, systems of government, and all the other cultural attributes involved in this shift. We know that the human capacities for language—speech and hearing, along with writing, and other media that have been invented by human minds—enable the swift spread of these cultural attributes. We store much of our cultural knowledge and beliefs in libraries, so that they are widely available. We teach them in schools, so that our children learn them.

We know that the big brain, speech and hearing, and other capacities for culture evolved biologically through natural selection in our ancestors. These capacities are

written into our DNA.

If we observed another species evolve as dramatically as modern humans have over past many thousands of years, we would presume that the change was genetic—the natural selection of genetic variation must be involved. But this has not played a significant role in the evolution from hunters and gatherers to the modern culture. We know this because, over time, we see little or no change in human biology, including the capacities for culture. The evolution of irrigation agriculture did not require genes for irrigation agriculture. When modern hunters and gatherers emigrate to an industrial culture, they can adapt, and vice-versa.

The cause of the evolution from stone to bronze to iron and beyond—and thus the trajectory towards more, more and more—must therefore rest in the capacities for culture, as they evolved in our pre-cultural ancestors. Hence, if we can identify what has caused our capacities for culture to be put towards these ends, and understand the process by which culture evolves, we might also be able to ascertain whether we are able to control our future evolutionary trajectory.

That is the object of this book: to elaborate a theory of human cultural evolution. This theory builds on certain key concepts of anthropology and sociobiology, rejects others, and fills in gaps.

This is an evolutionary approach. Such an approach offers a broad perspective. It helps us to step back from daily life, from our own observations of humans during our own brief lives, and view the human species in the larger scheme of things. For the questions I was asking, it wasn't necessary to determine why one group of people was nomadic while a neighboring group was agrarian, or why Rome rose and fell. Instead, it was necessary to identify the broad patterns of human evolution and tease these apart from the interesting vagaries of human history.

Moreover, the human evolutionary direction corresponds with the evolution of life itself: from some simple beginning, towards more, more and more. That seemed unlikely to be a coincidence. Indeed, if we judge our own species by the same standard we set for others, we would regard it as a remarkable evolutionary success—thus far.

An evolutionary approach is made possible by Darwin. Our pre-cultural ancestors evolved through Darwinian natural selection. Since our biology is more or less the same as theirs, there should be some ongoing connection to our Darwinian roots. In fact, Darwin's theory explains some very basic aspects of human behavior: why we eat, drink, sleep, avoid death, enjoy sex and love our children, as well as the competitive spirit that animates much of human interaction. These can be taken for granted, but they should not be. Until Darwin, philosophers and scientists either had to defer to theology or just start in the middle with the observation that humans in fact do these things. Darwin's theory explains *why* we do them, and does so with ease.

There is a connection between Darwin's theory and modern humans, but it is not straightforward—as evidenced by the absence of significant biological change, while culture has evolved enormously. "[N]o evidence exists that the human genome is changing in any overall new direction." (Wilson 1998, p. 271). And although genetic variation exists among individual humans, between societies these differences "wash out." (Id., p. 143).

Thus, a theory of cultural evolution must carefully delineate the relationship among culture, human biology and natural selection. Criteria for such a theory include:

- Explain the general direction of cultural evolution, the long arc.
- Account for diversity among cultures.
- Describe the process by which culture evolves.
- Accomplish all of this while holding human biology constant.
- Explain how natural selection of genetic variation could give rise to the biological capacities for culture, yet does not appear to be significantly implicated in cultural evolution for the past many thousands of years.

I will add one additional criterion. A previous book, Dynastic Theory: The Evolution of Altruism in Animal Societies, set forth a theory of the biological evolution of group adaptations in all other species—including our pre-cultural, hominid ancestors. A key component of this theory is that animal societies are structured through natal philopatry—what I call dynastic structure. Members of an animal society are related by descent to a common founder of the society. Human societies are not structured dynastically. Although families are central to social structures in all societies, group bonds in large modern societies extend far beyond kinship. A theory of cultural evolution must explain why human societies are an exception to the rule in other animal societies.

The theory is called epigenetic evolution: a theory of cultural evolution through directed creativity. In brief, the theory holds that human minds create, select and build the "library" of culture, which exists above the level of individual humans. Because culture is communicated from minds to minds through language, culture evolves separate from the pathway of biological reproduction and inheritance—and, thus, is decoupled from natural selection. But as minds create, select and build culture, they are biased in a Darwinian direction. This is because, as the human brain evolved through natural selection in our pre-cultural ancestors, the psychology that motivates the brain to action co-evolved with it.

For this theory to work, however, it is necessary to jettison certain core axioms of sociobiology. These include: i) all individual organisms are entirely biologically selfish; ii) group adaptations, including altruism, cannot evolve; iii) natural selection hones individual organisms to maximize reproduction. The effort of jettisoning and replacing

these axioms was laid out in Dynastic Theory and, in this book, dynastic theory will be linked to the psychology of modern humans.

It is also necessary to replace the neo-Darwinian model of an organism as a string of genes that program the organism's phenotype. It is necessary to do so because this model misleadingly implies that biology fixes an individual's phenotype, which is a barrier to understanding how humans have evolved diverse cultures while our biology has remained more or less constant. In fact, an organism's DNA contains a wide, flexible repertoire of adaptive possibilities. This adaptive flexibility is embodied in the epigenetic model of an organism, which began to be developed in Dynastic Theory, and will be elaborated here.

Dynastic theory led to a revised theory of non-human nature, applicable to all other species, including our pre-cultural ancestors. The present book will show how, with the advent of cultural evolution, the nature of humans has shifted. This will result in a theory—an evolutionary theory—of human nature.

I will then turn to the question of whether our species can choose to control our evolutionary trajectory. This invokes the knotty issue of free will. And this means addressing the scientific premise of determinism, which has been viewed as preventing free will—and as preventing directed creativity.

The conclusion will then return to the question that motivated these theories: if the continued evolutionary trajectory of more, more and more threatens extinction, would it be possible for humans to act in concert to choose an alternate course—especially if this required sustained sacrifice in reproductive and economic potential?

The theories set forth in this book will not provide a crystal ball with which to answer this question. The more modest aims are to solve significant scientific puzzles and, in doing so, set forth a framework for understanding how and why our species has evolved as it has. The end hope is that this framework will then advance the understanding of what we are capable of becoming.