

Randy Thornhill · Corey L. Fincher

The Parasite- Stress Theory of Values and Sociality

Infectious Disease, History and Human
Values Worldwide

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and Human Values Worldwide

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Thornhill dedicates this book to the loving memories of the women of his family who encouraged his boyhood dreams and visions for his life course: Bessie Mae Norton, Lillie Flora Pickens, Rebecca Pickens, Mattie Polk, Clara Jestenia Thornhill, Mary Teresa Thornhill, and Willie Raiford Thornhill.

Fincher dedicates this book to his children, Ashlyn, Peyton and Lane, and his wife, Lisa.

Preface

This book grew out of our intensive research collaboration over the last 9 years. The order of the book's authorship could have been determined by a coin flip. Shared interests in the causes of human cultural behavior as well as its variation across regions and times fostered our collaboration. Our shared interests also include the long-standing, unsolved scientific problem in the social and behavioral sciences of the causes of social prejudice and its flipside, equalitarianism. Our book, in part, provides a novel solution to this problem. The central ideas and empirical evidence in the book comprise what we have called "the parasite-stress theory of values" or "the parasite-stress theory of sociality." This theory is a general theory of human culture and of the range of human values, including prejudicial and egalitarian values. Drawing on our research and that of many others, our book presents a new interpretation of human values and their various manifestations in cultural behavior and related group-level phenomena. The theory proposes that, both on the evolutionary time scale and the ecological time scale, humans interfacing with infectious diseases cause many core human values. On both time scales, infectious diseases account for a huge amount of human morbidity and mortality, and hence cause strong natural selection for traits that reduce contact with the diseases and manage their negative effects upon contact. The parasite-stress theory of values provides new and encompassing ways to understand the wide range of regionally variable cultural patterns in the values dimension of collectivism–individualism and the similar values dimension of conservatism–liberalism, as well as patterns across the world in religiosity, personality, sexual behavior, marital systems, cooperative breeding and family organization in general, interpersonal violence, intergroup violence (warfare), and cognitive ability. The theory also reveals how infectious diseases and the values they cause generate geographic variation in governmental systems (e.g., autocracy versus democracy, governmental corruption versus transparency), economic outcomes (e.g., wealth per capita, and wealth inequity), and the creation and diffusion of innovations and technologies. Hence, our book proposes new theories of economics, political science, and a wide range of other human affairs. It also proposes new interpretations, based on the parasite-stress theory of sociality, of the evolution of human reciprocal altruism and human-unique intelligence.

In addition to our interest in cultural variation on the broadest scale across the planet, we share a scientific fascination with the conservative culture of the Old South, the southern USA prior to the region's racial desegregation beginning in the 1960s. Our study of the Old South, and in Thornhill's case, experiences in the Old South, contributed to our interests in the causes of human values. As shown in this book, the highly conservative social life that Thornhill observed as he grew up is similar to that of children in other highly conservative cultures, both throughout history and currently. He was born in 1944 in Alabama, the so-called Heart of Dixie. His natal culture had changed little in basic values over the previous 100 years or more. Some people unfamiliar with the South's history may find this claim about the region's stasis incredible. Historians, however, have shown the region's cultural isolation and temporal constancy in the values held by people into the 1960s and 1970s. The slogan "the South will rise again" refers to the desire of traditionalist southerners to re-establish the culture of the Old South.

Another interest we share is the causes of biodiversity. The evidence we present in this book reveals that parasite adversity and associated preferences or values provide a novel theory of how new cultures and new species arise. We have called this new theory of diversification "the parasite-driven-wedge model." The causes specified in this model may lead commonly to new cultures and species arising side-by-side (i.e., parapatric diversification) from a common ancestor, and lead to new species arising sympatrically. The parasite-driven-wedge also may account for the sympatric origin of human caste social systems.

We share, too, an interest in understanding sociality across all species, not just humans. Although *Homo sapiens* is our primary topic, the book treats how recent knowledge of the interrelationship between infectious diseases, values/preferences and sociality may illuminate topics concerning non-human sociality, especially group cohesiveness, intergroup segmentation, family organization, and dispersal.

Our book is a scientific research monograph and not a survey textbook of the many and diverse topics we treat. Its purpose is to create a theoretical and empirical synthesis based on the parasite-stress theory of sociality of many areas of scholarship that traditionally have been largely or entirely separated. We draw on, analyze and reinterpret many literatures. In drawing on such a range of literatures, we have tried our best to represent them fairly. We appreciate fully that even the ideas we criticize have contributed in an important way to a dialogue among scholars.

We have tried to make our book understandable to all. We explain specialist terms and theoretical, analytical and methodological issues in some detail. Our desire to achieve comprehension of the book by all comes from our view that the parasite-stress theory of values and its empirical support are relevant to the lives and interests of everyone. First, every person has values and may wish to understand them scientifically. Second, the parasite-stress theory is a scientific theory of the ultimate or evolutionary, as well as the ecological or immediate, causes of values. Such a theory can provide the knowledge necessary to change values if this is an ideological goal. Scientific discovery of the causes of prejudice and egalitarianism opens up two opposing paths for those who may use these discoveries to engineer

the future cultural course of the human species. One path is to use the causal knowledge to erect liberal culture and its associated democratic values throughout the world. The second path is to use the causal knowledge to erect conservative culture and associated prejudice and inequality. The parasite-stress theory of values and its empirical support do not claim one path is morally superior to the other. This theory and its discovered findings, as with all science, inform about nature as it is, but provide no moral judgment or direction.

We sincerely thank the many colleagues who provided comments on our ideas at various stages of their development and empirical testing. In the last chapter of the book, we discuss the criticisms and comments of many scholars who provided commentaries on our recent *Behavioral and Brain Sciences* article on parasite stress, religiosity and family values. Others also have given us useful input: Paul Andrews, Bram Buunk, Martin Daly, Chris Eppig, Steve Gangestad, Ed Hagen, Ashley Hoben, Jinguang (Andrew) Zhang, Kenneth Letendre, Kamil Luczaj, Damian Murray, Steven Pinker, Scott Reid, Pete Richerson, Mark Schaller, Joy Thornhill-Montoya, Robert Trivers, Josh Tybur, Paul Watson, and the anonymous reviewers of the book manuscript. We thank Anne Rice for formatting the manuscript and other assistance. We thank, too, Meghan Bentz, Djente Jo Fawcett, Parisa Mortaji, Vishal Patel, Abbie Reade, William A. Strickler, Samana Tasnim and Savannah Woodward for various critical assistances. Finally, we are grateful to Dan Colman who allowed us to present his unpublished material on intercollegiate sports-teams discussed in Chap. 12.

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Chapter 1

Background and Overview of the Book

1.1 Introduction

In this chapter we introduce the topic of research on human values as well as our approach to the study of this topic. Also, we give a brief overview of the chapters that follow.

1.2 Particularist Studies of the South

A range of scholars, especially historians, psychologists, and sociologists, have generated a voluminous published literature about the Confederate or Deep South USA, the southeastern states of the USA, prior to the federally legislated racial desegregation of the region in the 1960s. This era in the Deep South is commonly called “The Old South.” Vandello and Cohen’s (1999) subdivision of the USA into cultural regions identifies 11 states with high collectivist (conservative) ideology as comprising the Deep South region: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. These 11 states are the same ones that seceded from the USA and formed the Confederate States of America from 1861 to 1865. In the literature about the Deep South (hereafter the South), southern hospitality, politeness and manners, emotionally rich Southern American English, marital durability, family duty and honor, female modesty and sexual continence, reverence of hierarchy, elder respect, localism or parochialism, lifelong friendships, hygiene, religiosity, conformity, obedience of norms, and traditionalism are seen often as benevolent values of the region. In contrast, the mental rigidity or dogmatism in the ideologies of sexism with assumed male superiority, classism (elitism) and associated authoritarianism, and racism and other prejudices are considered widely the region’s malevolent values, because they are undemocratic/anti-egalitarian. Although the South’s culture of male honor is sometimes viewed as a positive cultural feature, male honor seems to be a cause of

the high male-on-male homicide rate in the region and thus is discussed sometimes as a morally negative southern value (Nisbett and Cohen 1996).

The customary analysis of the South by its scholars is to describe southern culture in terms of the particulars of southern events without much or any consideration of how the South's value system is related to other value systems across the globe that are similar (conservative) or dissimilar (liberal). For instance, it is often said by historians of the South that the USA Civil War of 1861–1865 was caused by a clash of core values between the two regions involved. Scholarly accounts certainly support the North's liberal attitude of opposing slavery and the South's racism, as well as the South's xenophobia toward the northern invaders and meddlers, as parts of the causal picture. These accounts, however, do not give an encompassing explanation, as all wars are determined, at least in part and fundamentally, by conflicts in moral or ideological systems. Why did southern and northern values differ in the ways they did and what were the causes of these conflicting core values that escalated into interregional aggression and eventually that civil war? Why did the decision to secede from the US arise in the South rather than in the North? Given that civil conflicts are common in some regions of the planet, how can knowledge of their causes inform historians about the US Civil War? A deeper and more final understanding of the US Civil War is achievable by looking both inside and outside the events in the South.

Civil wars are extremely common in some areas of the world, but not in others. As an example, more than two-thirds of the countries in sub-Saharan Africa have seen civil war since 1960 (Blattman and Miguel 2010), but many large regions of the world have had no such wars over the same period of time. Knowledge of the common denominators of civil war onsets in regions and times, as well as those of the absence of civil war in regions and times, is essential for the understanding of any single civil war. This broader or encompassing approach can demonstrate the causes that are common to all civil wars—and thereby illuminate causes of any particular civil war. Encompassing comparative methodology is highly valued in the best of sociological research on civil war, because it provides scientific testing of hypotheses about causes of civil war, wherever and whenever they occur. Strictly particularistic studies lack comparative data from outside their restricted focus of analysis, and thus cannot test for and hence identify a general or a fundamental cause of civil war or of any other cultural feature.

The American Civil War is a very popular topic among book authors. Many of the thousands of books on this war have particularistic points of view about the causes of the war. An additional challenge, however, is to identify the general causes of civil wars and thereby illuminate each of these wars, including the American Civil War. Our effort to meet this challenge is just one of many themes of this book.

Another way to describe the particularistic or atomistic method of research on culture is in terms of the high importance it gives to local history as causation: the South's unique history caused the region's unique culture. As an example, Nisbett and Cohen (1996) use the South's history of male-honor ideology to explain the region's current male-honor culture. Actually, the cultural history of the South is part of the phenomenon to be explained and not an explanation in itself. People's

values in a region yield that region's culture and cultural history. Hence, a big question for the history of the South is why these people's values were the way they were but not another way. This is answerable only from evidence of the functional organization of peoples' value systems—i.e., the effects that values are designed by evolution by natural selection to accomplish—and therefore how the people of the South fit into the overall empirical picture of variable value systems across the world and history. Understanding what evolved purpose values serve will illuminate why they exist and why they vary across individuals, time, and geographic regions.

Overall, then, the particularistic–historical method cannot identify the larger causal picture. (See also Daly and Wilson 2010 for a critique of this method.) In the case of the South, the method cannot yield an understanding of the region that is part of an empirically consistent, general scientific theory of human values. Particularistic scholars of the South have generated a large, valuable body of facts that require synthesis into a general causal framework by evolutionary theory and comparative data analysis in order to inform causation of the culture of the Old South in light of causation of cultural variation across the globe. This is one of the goals of this book.

There are relatively few notable exceptions to the particularistic–historical approach in prior studies of the Old South. For example, van den Berghe (1981) discussed the similarities between African-American slavery and servitude in the Old South and the caste systems in other countries. Vandello and Cohen (1999) treated the South as an extreme in a continuum of conservative (collectivist) values across the USA states. But even these important efforts toward engaging bigger issues are descriptive and anecdotal, and hence remain outside a scientifically synthetic and robust general theory of values. More encompassing questions are: Why did strongly hierarchical social systems with strict boundaries between social strata and extreme prejudice against people of a particular color, caste, or hereditary background arise independently in the Old South and Asia, as well as in some other places, but not in other regions? Why did the Old South stand out in the USA in its highly conservative value system and show similarity in values to other conservative regions of the world? Why was the Old South's culture more similar to that of contemporary Guatemala or Syria than to that of contemporary Sweden? Why is the southeastern USA today more conservative than other regions of the same country and other regions of the West? A general scientific theory of values would provide answers to all these questions in a small set of causes common to them all.

1.3 Other Particularistic–Historical Studies

The particularistic–historical approach is certainly not restricted to scholars of the South. Its assumptions about culture are held widely by academics and nonacademics alike. This approach assumes to answer the question of how humans obtain their culture or socially learned values and behavior, a major question of cultural anthropology and cultural psychology. Obtaining the answer to this question is

fundamental to our book because the book emphasizes a general theory about the causes of the acquisition of culture by people as well as the causes of cultural stasis and cultural change.

In some forms, the particularistic–historical approach relies fundamentally on a view of acquisition and transmission of culture that not only ignores the evolved design of human psychology, but is spiritual as well. Certain traditions in anthropology and related fields view the transmission of values between generations as automatic, inevitable, and passive, resulting from culture itself as an incorporeal force with an inertia that drives it within and across generations in an often-unchanging course. In essence, this view sees culture as a ghost explicable only in terms of itself, and hence there is no need to consider people as decision-makers that affect the adoption and transmission of culture. William Irons (1979) wrote a masterful early critique of this supernatural perspective on culture. (See also similar critiques by Tooby and Cosmides 1992 and Buss 2001.) Recently, Martin Daly and Margo Wilson (2010) discussed the currently widespread advocacy of a similar view by some culture theorists. This nonmaterial view, as Daly and Wilson call it, understands culture as being transmitted by its own inertia—as something that flows along through time independently of any strategic cognition and action of humans in choosing, discarding, and modifying cultural items to meet the problems they face.

1.4 Culture Is Acquired Strategically

The alternative view—that individual humans are cultural strategists—is a foundation for this book. It is a commonly held theory of culture among scholars who apply the evolutionary biological theory of human psychology and behavior in their research on culture (e.g., Irons 1979; Alexander 1979a, b; Daly 1982; Flinn and Alexander 1982; Boyd and Richerson 1985; Tooby and Cosmides 1992; Billing and Sherman 1998; Buss 2001; Gangestad et al. 2006; Fincher et al. 2008; Daly and Wilson 2010; Henrich and Henrich 2010; Chudek et al. 2012). Accordingly, as will be explained more fully in Chap. 2, humans are evolved cultural strategists with psychological adaptations placed in the human nervous system by past Darwinian selection favoring individuals who learned cultural items, including ideologies, that ancestrally maximized personal reproductive success, as measured by the number of produced descendant and nondescendant kin. Hence, such psychological adaptations are responsible for, i.e., cause, selective assessment, and use of cultural items by individuals. Such adaptations also guide individual decisions about discarding or retaining and modifying/not modifying cultural items, including values. Moreover, such adaptations determine people’s decisions that affect the fate of cultural items that arise *de novo* within a society or diffuse into a society from another society. Certainly, culture is transmitted between and within generations and between societies. This transmission, however, is caused by historically adaptive and highly discriminative psychological learning adaptations of individuals, not by arbitrariness or by the ghost of cultural inertia. These discriminative adaptations positively bias

culture-item adoption and use toward those items that maximize the benefit-to-cost ratio, where benefits and costs are measured in terms of reproductive success of individuals in evolutionarily ancestral environments.

Our view of cultural acquisition does not assume that individual people are always free agents to adopt whatever available cultural items will maximize their reproductive success. Manipulation and/or coercion from parents or other family sources, and from peers, allies, and enemies often become part of the context in which individuals decide among values and other cultural items. Nor do we assume that cultural choices are made primarily with conscious calculation, although this oftentimes is one cause of the selection, retention, and use of cultural items. The role of consciousness, specifically self-awareness, in enculturation is discussed further in Chap. 2.

An irrevocable finding from a long and noble history of research by dedicated and admirable scholars is that a material brain causes all of people's feelings, cognitions, behaviors, and learning. This research has scientifically falsified the many ghosts that have been proposed as causes of human mental activity and behavior. (See the treatments of this research history by Carl Degler (1992) and Steve Pinker (2002).) The ghost of cultural inertia has not yet been purged from the thinking of some researchers and many ordinary people. As demonstrated in this book, the evolutionary theory of people as evolved cultural strategists has profound implications for the understanding of enculturation and of cultural diversity.

1.5 Causes of the Particularistic–Historical Ideology

We find the ideology that is the basis of historical–particularistic thinking about culture is scientifically fascinating. Some readers might hypothesize that the notion of a nonmaterial cultural inertia arises from the psychological adaptations that yield spiritual feelings and religious behavior, given that such feelings exist in some form in the minds of essentially all people. (See Atran (2002) and Boyer (2002) for discussions of religiosity as a by-product of psychological adaptations for other purposes.) Certainly, that is a reasonable start, but we suggest there is much more to it. The belief that historical cultural tradition has the overriding influence on us, even determining who we are or become, is an important deduction and core value of many people. We propose that there are, however, predictable individual and group differences in this belief.

Conservatives support and value traditional thinking more than liberals do, as documented in Chaps. 4 and 5. A useful example is the US Marine Corps reverence for the warrior tradition. This value system, or ethos as it is called in the Marines, encourages merging into the stream of tradition—of history—with those brave Marine warriors who came before and, in this way, become that tradition or history. In the South, there is great value placed on tradition, which is manifested in folklore and everyday conversation. An example is the tenacity of the ethos of the American Civil War in the South. We hypothesize that the conveyance in language and other behavior of the value that tradition is one's essence is an honest or truthful signal to

observers of fully understanding, believing, and being embedded in conservatism and hence in local in-group well-being, harmony, and goals. It is a way to display that you are not just “whistling Dixie,” to use a common phrase in the South. To just whistle Dixie is a dishonest portrayal of the sacred conservative values, and it is a derogatory label for those who are not truly Dixie, i.e., not a product of, faithful to, and merged with southern tradition and history. Contemporary southerners who celebrate the birthday of Robert E. Lee or Stonewall Jackson (two major southern generals in the American Civil War) or fly the flag of the Confederate States are not whistling Dixie.

We are saying that honest signaling of traditionalist values assists conservatives in social navigation in conservative culture. (Honest signaling, the general theory of signals in biology, is treated more fully later in the book, first in Chap. 2.) Our hypothesis predicts that future research will find that those who hold strongly the historical-particularistic perspective on how people come by their culture, whether inside or outside academics, will score right of center on psychometric (questionnaire) measures of conservatism. A major theme and empirical finding of this book is that conservatism is ideological defense against infectious diseases. Thus, we predict, too, that future research will show that the degree of belief in tradition as the basic cause of one’s being will correlate positively with scores on questionnaires that measure people’s concern about contracting infectious diseases. We predict also that the importance of the historical-particularistic ideology across countries of the world or states of the US will correlate positively with regional severity of infectious diseases. It is already well established scientifically that regional severity of infectious disease is robustly related positively to the importance of traditionalism, a component of conservative ideology, in the value systems across the globe (Chap. 5).

On a related topic, for a long while there has been a schism between researchers who understand culture as a product of the evolved psychology of individual actors, reducible to the strivings of individuals to secure goals that promoted high ancestral reproductive success, and those who see culture as a supra-individual phenomenon that cannot be reduced to individual cognitions and motives (see Irons 1979; Tooby and Cosmides 1992; Buss 2001; Chiu et al. 2010; Daly and Wilson 2010). The view that individuals are designed by evolutionary selection to adopt culture strategically endorses the former view, whereas the particularistic-historical view endorses the latter.

We suggest that this schism is fueled, in part, by core ideological differences pertaining to how the person or self is conceptualized by liberals versus conservatives. As documented and discussed in more detail in Chap. 4, individualists (liberals) see the individual person as an independent agent who has personal goals that are paramount relative to group interests; in sharp contrast, collectivists (conservatives) view the world in interdependent terms: an individual is merged or embedded in the group to the extent that his or her being is only understandable in terms of the group’s harmony and goals. The psychologist Donald Campbell is cited often as a proponent of the views that culture (a) exists as a happening very distant or entirely independent of individual behavior and goals and (b) functions for the good of the society, specifically to prevent human activity from becoming overly selfish.

Campbell believed that culture anticipates, controls, and regulates human behavior in order to promote group harmony, cooperation, and survival. (See Chiu et al. (2010) for a useful summary of these ideas.) This way of interdependent or collectivist thinking is similar to that of theists who view god as one who controls human activity and knows fully the best course of action for humans. Campbell anticipated resistance to his ideas from individualists. Chiu et al. (2010) document this and try to promote Campbell's view and its collectivist thinking about culture.

A critical commentator might suggest that our reservations about Campbell's ideas stem from our core values: we are individualists and hence see people in terms of independent agency. The scientific validity of the two views, however, cannot be settled by ideological arguments. In science, only evidence counts. The hypothesis that people strategically adopt culture as a result of psychological adaptation created by past evolutionary selection for maximizing individual reproductive success, as measured by the production of descendant and nondescendant relatives, is supported both by strong theory and empiricism, including the copious evidence about the nature and diversity of culture presented in this book.

Certainly, we are not claiming that the striving of individual people or groups of people does not create physical cultural things that exist external to individuals. The local zoo, the corner church building, the Internet, and this book are examples of such things. Instead, we are saying that all aspects of culture are physical/material and are caused by evolved psychological and behavioral activity of individuals that often includes individuals striving in groups for competitive edge.

The human animal is an evolved group-living organism and hence regardless of core ideology people live and operate socially in groups. The groups established and preferred by conservatives are different than those liberals form and prefer. Simply put, conservatives are in-group specialists whereas liberals are out-group specialists. The social tightness of conservatives in their in-group reflects their high in-group interdependence and priority of in-group goals. Groups of conservatives are relatively durable and strictly bounded by like values. Liberals are less interdependent and hence are said to be individualistic and exhibit an autonomous self-conception and agency. Liberal groups are relatively impermanent and open to diversity (Chaps. 4 and 5).

In sum, we are hypothesizing that the persistence of the beliefs claiming that culture is a group-protective, supra-individual, noncorporeal, passively transmitted phenomenon, with a trajectory independent of evolved human psychology and behavior, are explained by two core values of conservative ideology: traditionalism and the view of self as interdependent.

1.6 The Scientific Promise of Better Methods

We have stressed above that the particularistic–historical method, including its foundational mechanism of cultural transmission by inertia, is flawed. Fortunately, better ideas and methods for the scientific study of culture and cultural history are available.

A general perspective on human ideologies/values—what we have called the parasite-stress theory of values—recently has emerged in the scientific literature. It assumes people are functionally designed to learn, adopt, and use culture strategically. The parasite-stress theory of values is a subtheory of the general theory of biology, evolution. In science, the word “theory” has a special meaning: fact-based principles that serve the scientist in making discoveries. Scientific theory, then, is a combination of facts and conceptual proposals that organize facts and discover more facts. The fact-based principles that comprise a scientific theory inspire new hypotheses that are then tested by observations, including observations derived from experiments. Experimentation is not synonymous with scientific testing, but is just one avenue for testing a hypothesis. A hypothesis is a statement about a possible cause of some thing in nature. The cause may be one of deep-time-past history (i.e., evolutionary history) or one acting now or recently; in biology, the former type of causation is referred to as ultimate and the latter as proximate. Hypotheses are either supported or not by observational data addressing a given hypothesis’s predictions/empirical implications—those things that must exist in nature if the hypothesis is an actual statement of causation. A hypothesis is supported when it successfully predicts new findings or better predicts old findings, and strongly supported when its discovered findings cannot be explained by alternative hypotheses. Charles Darwin gave biology its general theory, and biologists since Darwin’s work have demonstrated evolutionary theory’s utility in understanding life, by far the most complex and diverse component of the universe. Evolutionary theory, then, is a fact-based method for discovering the causes of living things and their diverse characteristics.

Only recently has evolutionary theory been applied broadly and in detail to human value systems, resulting in the cornucopia of recent findings presented in this book. A highlight of our scientific careers is participating with colleagues in this new research area. Our book emphasizes the story of this application of evolutionary theory and methods to human values and their diversity across epochs and geography. The parasite-stress theory of values appears to explain why many features of human social life and the value systems that cause them take the same fundamental form in many times and places in the world, but a different fundamental form in other times and places in the world. It seems, too, that the parasite-stress theory of values is a general theory of sociality with the potential to explain some key features of sociality in nonhuman animals. Our book tells that story as well. Given the parasite-stress theory’s broad application to social life, this theory is also called the parasite-stress theory of sociality.

1.7 The Naturalistic Fallacy

Before proceeding we emphasize that this book is a scientific document and hence its findings in themselves can provide no moral guidance. The findings in the book do not endorse morally any value system nor do they claim that one system is

morally superior to another. Science identifies what is, and cannot identify what ought to be. The belief that a fact about the nature of the world gives moral direction—that “is” equates with “ought”—is called the naturalistic fallacy, a fallacy of logic. It is logically erroneous to believe that the universe created by natural processes—processes without supernatural intervention—provides evidence, in these processes or their products, of morality and immorality. The assumption that a supernatural, morality-knowing being(s) created and guides nature, the assumption of most of the people of the world, leads to the conviction that moral truth is to be found in the features and workings of nature. Science is solely concerned with discovering the causes of the effects that are the universe. Science does not identify moral and immoral paths; people identify these paths based on their values. Theism includes the belief that morality and immorality are generated from some supernatural sphere, but, in fact, people, to promote their personal interests—according to evolutionary biology, their inclusive-fitness interests (Chap. 2)—generate morals and belief in spirits. As discussed throughout this book, values, including secular ones, are proximate mechanisms of promoting personal reproductive interests.

The naturalistic fallacy is endorsed by some secularist scholars (e.g., Wilson 1998; Baschetti 2007a, b; Harris 2010). Most notably, Sam Harris (2010) argued in his popular book, *The Moral Landscape: How Science Can Determine Moral Values*, that the naturalistic fallacy is erroneous and that science identifies morality in its findings about the causes of human well-being. However, the interpretation of what promotes well-being depends on a person’s values. As shown in later chapters, perceived and valued well-being to conservatives is different than well-being to liberals. For instance, conservatives are most satisfied with tradition, cultural stasis, and unequal treatment of people, whereas liberals find well-being in nontraditional ways and means and egalitarianism. People’s perception of well-being will change only if their values change, as we discuss first immediately below and document subsequently throughout our book. Our book scientifically identifies the “is” of “ought,” which is not in any way the same as finding ought in is. Our book is about the proximate and ultimate causes of morality. Scientific identification of such causes provides only “is.” “Ought” depends on the ideological beliefs of the person, which serve the person in dealing with adversity in her/his niche. In this book, the fundamental adversity that we advocate as important is infectious disease.

1.8 How Values Relate to Science

Although the discovery and use of facts about the content of nature as the way to identify morality is not part of science, there are two principled ways in which morals (and values broadly) actually are related to scientific research. As noted earlier, one way stems from the fact that a person’s morals and a group’s morals have causes. Scientific research is *the* means to identify causation. The scientific study of values, including all aspects of religious ideology, is no different than the scientific study of the giraffe’s neck or planetary motion—all these studies pursue knowledge

of causation. The second way is that scientific understanding of causation allows the achievement of the moral goals desired and decided by people, but, as we have emphasized, it cannot identify moral goals. If the people of a region decide that an increase in democratization is the correct moral path, then knowledge of the causes of democratic and undemocratic values is the necessary information for implementing changes that will democratize future generations. The evidence we will present in this book indicates that reducing social prejudice and authoritarianism and increasing equalitarianism can be accomplished by emancipating people from infectious diseases. In contrast, if the moral goal of a government is to make authoritarianism, ethnocentrism, and xenophobia more widespread, or even to achieve their extremes in full-blown fascism or genocide, then this goal will be achievable by promoting widespread mortality and morbidity from infectious diseases.

Recent evidence indicates that the majority of researchers investigating the relationship between evolution and human behavior are quite liberal (Tybur et al. 2007). Our personal ideologies are left of center, and therefore consistent with this general pattern. Our approach in understanding the causes of values is scientific, however, and thus value neutral. Given our values, we hope governments and people widely will elect the moral path of liberalism rather than the moral path of conservatism.

1.9 Accommodationism

Above we mentioned that, in terms of the scientific goal of elucidating causation, the scientific study of religious ideology is no different than the scientific study of any other feature of nature. We want to be clear about what we mean. There is a widespread notion that science is limited in its application to the universe. According to this ideology, often called accommodation, certain aspects of the universe are off-limits to science because God and other similar deities act not only in mysterious ways, but also in ways that are unknowable because they are supernatural. Accommodationists believe that this allows the compatibility of science and religion. Accommodationists vary in which realms of the universe are designated as scientifically unknowable, but such topics as the deep-time history of the universe, including life's history on earth—evolution, basically—and religion are commonly ones that are deemed off-limits to science. Notably, some accommodationists feel that morality is a purely spiritual realm of human affairs and, as such, can only be addressed by religion—science has nothing to say about it. This is the opinion of Francis Collins, head of the National Institutes of Health. It is also the opinion of some members of the National Academy of Sciences. Many scientists have criticized these opinions on the appropriate grounds that science applies to all features of the universe. Singham (2010) has provided an informative discussion and documentation of contemporary accommodationism and its prevalence in the West.

It should be clear to readers that we are not accommodationists. Science is the avenue without limit for illuminating all aspects of nature. The supernatural does not exist as a material feature of the universe and hence is not part of nature.