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The Biology of Political Behavior: An Introduction

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A broad cross-section of the social sciences is increasingly turning to biology and evolutionary theory to help explain human behavior. Political science is a notable exception to this trend, even though there are sound conceptual reasons for expecting biological processes to play an important role in explaining political behavior. While agreeing with the conceptual arguments, the authors believe original empirical research is the most persuasive means of convincing political science to incorporate biology in explanations of political behavior. Techniques developed in neuroscience, behavioral genetics, agent-based simulation, experimental economics, and other fields offer exciting research opportunities to explore questions of central interest to political scientists. The research presented in this volume provides examples of replicable, empirical evidence that political beliefs and behavior are a product of biological as well as environmental factors.

Keywords: neuroscience; genetics; neurotransmitter; evolution; interdisciplinary

Who we are and what we do is the product of environmental *and* biological factors. In the life sciences, this simple statement would be regarded as painfully obvious. In many parts of the social sciences, especially in political science, it is seen as peculiar, wrong, and even dangerous. As a result, virtually the entire research agenda in political science is isolated from the vast biological knowledge base that has built up over the course of the past fifty years. Most

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political scientists continue to be environmental determinists, believing that human behavior is entirely the product of environmental forces. From this perspective, political attitudes and political behavior are driven by parental socialization, campaign messages, conversations at work, and idiosyncratic experiences. Political science gives biology virtually no role in answering the questions it seeks to address. In the extant literature of mainstream political science, biological independent variables are extremely rare, and biological theory rarely is used to generate hypotheses and insights.

Why political science continues to ignore biology is unclear. In other social sciences, biology is given a useful and expanding explanatory role. In psychology, personal traits such as risk-taking, harm avoidance, attention deficit hyperactivity disorder (ADHD), depression, and extroversion have been connected to biological variables including neurotransmitter levels and even genetics (see Bouchard and McGue 1990; Pickering and Gray 1999; Plomin et al. 2001; Harpending and Cochran 2002; Ding et al. 2002). Evolutionary psychology explicitly merges cognitive psychology with evolutionary biology to demonstrate that universal human tendencies such as strong reciprocity and altruistic punishment are products of evolutionary pressures (see Tooby and Cosmides 1992; Buss 1999; Pinker 2002). In economics, behavioral economics and neuroeconomics both draw heavily from biological concepts, and both have been growing rapidly in number of practitioners, contributions made, and public visibility (for reviews, see Camerer, Loewenstein, and Rabin 2004; Camerer, Loewenstein, and Prelec 2005). In anthropology, the Human Behavior and Evolution Society is also growing, and many of its members use evidence from a variety of societies, including hunter-gatherer groups, to test hypotheses drawn from evolutionary and biological principles (see, for example, Henrich et al. 2001). And in sociology, a long-established research tradition has attempted to connect neurotransmitters and hormones to social behavior (see, for example, Archer 1991; Booth and Dabbs 1993); a recent address by the then-president of the American Sociological Association (Massey 2002) sounded a clarion call for that discipline to take biological concepts more seriously.

In contrast, the movement to incorporate biology into political science seems to be making considerably less progress. Biopolitics, the original movement to get political science to take biology seriously, traces its roots back more than thirty years and even has a professional organization: the Association for Politics and the Life Sciences (APLS). Political science's central disciplinary organization, the American Political Science Association (APSA), once included a biopolitics group as one of its official sections, but the movement has encountered problems. Membership in the section fell below APSA's threshold requirements, so the group is no longer recognized. APLS and its core of biologically oriented political scientists now host a small conference independent of the discipline's primary professional society, leaving biopolitics outside the mainstream of political science.

Why does political science lag behind when it comes to incorporating biology into its research? Part of the reason may be a sop to political correctness and the associated fear of openly recognizing innate human differences. It seems unlikely, however, that political scientists' devotion to political correctness exceeds that of,

say, sociologists. A more likely reason pertains to the subject matter of mass-scale politics, which, more than other subject areas, may seem to be environmental rather than biological. Behavior can be usefully placed in three categories: personal, social, and political. Personal behavior is behavior that is a characteristic of the individual; it requires no social interaction to manifest itself. This includes risk-taking, depressive symptomatology, and similar behavioral characteristics that can be in evidence either with or without other people. Social behavior requires the presence of at least one other human being in the immediate environment and might involve altruism, revenge, or trust. Political behavior is different from social behavior in that it pertains to preferences for the structure and organization of mass-scale social life even if this structure and organization might not directly affect an individual's immediate social environment. Gay marriage, for example, may not affect a given individual, or have an impact upon anyone in his or her family or social circle, yet that individual still may have extremely strong preferences about the manner in which society should regulate (ban, allow, or something in between) intimate relationships between members of the same gender.

Why does political science lag behind when it comes to incorporating biology into its research? Part of the reason may be a sop to political correctness and the associated fear of openly recognizing innate human differences.

While numerous animal species display observable personal (see Gosling and John 1999) and social (see de Waal 1982, 1996) behavior, only humans have preferences for the organization of large-scale group life. Animals may care about the hierarchy of their immediate, small-scale group, but such issues relate to small-scale dominance hierarchies and not to large-scale politics. Perhaps because mass-scale politics seems so uniquely human, so cerebral, and so rational, scholars of politics are prone to conclude that it somehow transcends biology.

Whatever the reason, political scientists have grown comfortable ignoring biology. The biological underpinnings of behavior has virtually no presence in the curriculum of political science graduate programs, has very little presence in the leading scholarly journals, and is largely ignored in undergraduate instruction. The notion seems to be that even though many other aspects of human behavior are shaped by genetics and biology, politics is *sui generis* and therefore incapable

of being informed by biological insights. The prevailing assumption is that, if biology matters at all, its effects are trivial. Though widely held, this assumption is bereft of supporting empirical evidence. If biological variables are never employed, it is impossible to support *any* claim of their impact on behavior, including a claim that they have no impact. Given the influence of biology on other aspects of the human condition, the onus would seem to be on the environmental determinists to demonstrate that they are correct in ignoring biological variables. Otherwise, the suspicion has to be voiced that biology is ignored partly because doing so absolves political scientists of the need to become familiar with modern biology.

We believe ignoring biology is a mistake. The uniqueness of human politics does not mean it is divorced from biological processes any more than it is likely that human politics are completely divorced from human personal and social tendencies. And those personal and social tendencies themselves undoubtedly have biological origins (see the works cited earlier). The “theories” claimed in political science are usually just collections of relationships, little more than recapitulations of time tested correlations, rather than assertions of ultimate causes. Little in the political science literature even acknowledges that any two people subjected to identical environmental stimuli over the course of their lifetimes could still possess dramatically different behavioral predispositions. Until political scientists incorporate biology into their theoretical and empirical models they will risk being labeled “incoherent environmentalists” (Tooby and Cosmides 1992).

In an effort to promote the application of biological principles to political science, in October 2006 we hosted a conference on the campus of the University of Nebraska–Lincoln. Our goal was to bring together political scientists doing work informed by biology with scholars in other disciplines who are investigating questions of interest to political scientists. This conference was made possible by a generous gift from a Nebraska alumnus named G. E. Hendricks with additional support from the Department of Political Science, and we were extremely pleased with the quality and diversity of the two dozen scholars from at least half a dozen different disciplines who attended the conference. Scores of people besides those giving presentations came to the conference sessions where they witnessed the following reports on research.

Neuroscientist Michael L. Spezio of Cal Tech, on behalf of coauthors R. Michael Alvarez, Kyle Mattes, Alexander Todorov, Hackjin Kim, and Ralph Adolphs, demonstrated the neural pathways involved when subjects view candidate photos for the purpose of discerning character traits. Jennifer Wolak of the University of Colorado and George E. Marcus of Williams College tested for the possibility that subjects with different personality traits would display predictable emotional responses to political stimuli. Diana Mutz of the University of Pennsylvania showed that television is atypical in that it exposes people to close-up conflict between disagreeing parties; she then documented the physiological consequences of this situation. Rose McDermott of the University of California, Santa Barbara, along with coauthors Dominic Johnson, Jonathan Cowden, and Stephen Rosen, using an imaginative simulation, suggested that levels of testosterone may influence the

degree to which aggressive decisions are made. Peter K. Hatemi of the University of Nebraska–Lincoln, along with geneticist Nicholas Martin of the Queensland Institute of Medical Research, employed modern structural equation models to show the connection between genes and voting behavior. Ira H. Carmen of the University of Illinois offered a detailed account of the specific genes that have been identified as relevant to personal temperament and speculated on the manner in which these same genes are likely to bear on political behavior. James H. Fowler of the University of California, San Diego, in combination with coauthors Christopher T. Dawes and psychologist Laura A. Baker, provided additional evidence on the relevance of genes to politics—in this case on the tendency of individuals to either turn out to vote or not.

Economist Paul Zak of the Claremont Graduate School documented the importance of trust to social behavior and discussed recent research on the biological bases of trust, particularly the correlation of trust with the hormone oxytocin. Using a computer simulation based on the logic of biological evolution, Paul E. Johnson of the University of Kansas modeled the changes likely to occur in political organizations such as interest groups. Christopher W. Larimer of the University of Northern Iowa, working with Rebecca Hannagan and Kevin B. Smith, observed the tendency of experimental subjects to prefer certain types of decision makers and traced these preferences to evolutionary sources. John R. Alford of Rice University, along with coauthor John R. Hibbing, investigated the potential connection between personality traits (known to be partially genetic) on one hand and social and political traits on the other. Thomas Craemer of the University of Connecticut provided evidence that people's racial attitudes, perhaps for evolutionarily sensible reasons, are different depending upon whether personal idiosyncratic attitudes or socially shared attitudes are being reflected. Leonie Huddy, Stanley Feldman, and Christopher Weber of the State University of New York at Stony Brook showed that some people simply feel more secure than other people and that this variation mediates the manner in which people respond to external threats. Darren Schreiber of the University of California, San Diego, used modern neuroimaging techniques to demonstrate the manner in which race is processed by the human brain. Arthur Lupia, working with Jesse O. Menning, modeled politicians employing fear in an attempt to stimulate support for policy preferences that may not be optimal.

Anthropologist Michael Price of Brunel University in the United Kingdom, using data collected in personal observations of Shuar hunter-horticulturalists, found interesting patterns in preferences for individuals who cooperate as opposed to individuals who benefit. Psychologist Robert Kurzban of the University of Pennsylvania, working with coauthors Peter DeScioli and Erin O'Brien, investigated the intriguing phenomenon of moralistic punishment and discussed both the conditions under which it surfaces and the evolutionary pressures from which it likely derives. Law student John Sautter of the University of Vermont identified some individuals as more empathetic than others and predicted that these individuals will behave differently in the prisoner's dilemma game. John Orbell of the University of Oregon, with coauthors Oleg Smirnov,

Holly Arrow, and Doug Kennet, employed computer simulations to show the advantages derived when some individuals make sacrifices in the face of out-group threats and others make sacrifices in the face of threats coming from within the group. And anthropologist John Tooby detailed the essential role of “outrages” in intergroup conflict.

We took the time to list each of these topics and approaches to demonstrate the many different ways in which biology can be applied to the study of political phenomena. As can be seen, the range of topics is virtually endless; the methodological approaches include computer simulations, laboratory experiments, survey data, formal models, evolutionary theorizing, behavioral genetics, hormonal assays, psychophysiological measurements, and neuroimaging techniques such as functional magnetic resonance imaging (fMRI). A second reason for providing this full list of presentations is to indicate that it is not necessary to hold an advanced degree in either molecular biology or neuroscience to apply biology to politics. By thinking carefully about the role of emotions, decision making, human similarities and differences, experimental design, and group life; by paying attention to work being done in other disciplines; and by forming teams with scientists possessing different areas of expertise, it is possible to make significant advances without spending a lifetime retooling. We owe it to potential collaborators to become familiar enough with biology to understand generally and to be able to converse intelligently, but division of labor is the order of the day in the sciences, and this is the most sensible approach for applying natural science techniques to social science questions.

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Many of the presenters at the conference, particularly the non-political scientists, had already committed their research for publication elsewhere, but when Phyllis Kaniss and Julie Odland suggested the possibility of placing revisions of the conference papers in a volume of *The Annals*, we prevailed upon the other

presenters to revise their conference presentations into publishable articles, and we solicited one additional article from conference attendee William T. Anderson of the University of South Dakota and his colleague Cliff H. Summers. The result is this collection of nine original articles all touching in some fashion on the salience of biology to political behavior and all illustrating the fruitful directions that the study of biology and politics can be taken.

The acid test is not that there exist good conceptual reasons for political scientists to pay attention to biology, but that there is testable, replicable empirical evidence that biology helps explain political behavior.

If biology is to make important contributions to answering the questions that interest political science, then research must be empirical and not just conceptual. The handful of political scientists that have published in high-profile journals using biological variables and/or theory are generally distinguished by empirical work with original data. Examples of such productive, ongoing research agendas include those of John Orbell on the evolutionary basis for behavior and Machiavellian intelligence in social groups (see Orbell et al. 2004), Milton Lodge on hot cognition (see Lodge and Taber 2005), George Marcus on affective intelligence (see Marcus, Newman, and Mackuen 2000), as well as earlier work by Douglas Madsen (1986) on serotonin and Roger Masters (Sullivan and Masters 1993) on the facial appearance of leaders. We strongly believe that it is this sort of research that will best make the case that biology deserves important consideration by political scientists. We are sympathetic to pleas for more biologically related research as well as to biologically based theoretical accounts that do not include original empirical findings (e.g., Wahlke 1979; Somit and Peterson 1997). However, original empirical research ultimately has to carry the argument. The acid test is not that there exist good conceptual reasons for political scientists to pay attention to biology, but that there is testable, replicable empirical evidence that biology helps explain political behavior. It is the latter that is more likely to energize other scholars, especially graduate students, to construct a lasting research agenda on the foundation laid down so ably by the earlier biopolitics movement. If biology is going to play a significant role in political science research, the time for exhortations is past and the time for data and analyses is present.

It is our hope that this collection of articles, all but a couple of which rely on original empirical findings, will help to provide inspiration for further empirical investigations of the manner in which biology interacts with environmental forces to produce social and political beliefs and behavior. Thanks to the river of evolution and thanks to the remarkable variation in genes, politics is much more than the product of environmental forces. Biology can help to account both for central behavioral tendencies and also for the astounding variation around these central tendencies.

The research possibilities are arrayed before us. Fascinating questions regarding the origins of politics and the causes of human political variation now rest beside the remarkable techniques developed in neuroscience, experimental economics, computer simulations, psychophysiology, behavioral genetics, and molecular biology. Applying these techniques to the fundamental questions that have bedeviled political scientists for centuries will be thrilling. Human behavior, whether personal or political, does not transcend biology even as it is not determined by biology. We hope this volume will encourage social science scholars to investigate more concerted the rich dynamic interplay of environmental *and* biological variables that makes us who we are and makes the political system what it is. When it comes to human behavior, evolutionary theory is more than a metaphor for societal change, and biology is more than an interesting but irrelevant discipline.

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