Political Science and Biology: Then, Now, and Next

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Abstract: Biology and Politics (or Biopolitics) has been a part of the political science firmament since the 1960s. Over time, it has become less an odd outlier in the discipline and more a tolerated (and sometimes respected) part of the enterprise. After about 50 years of existence, this is a proper time to reflect on where biopolitics has been, where it is now, and where it might go as an academic endeavor. Indeed, some have said that the best step would for biopolitics to no longer be seen as a special, narrow part of political science—but a part of every field in the discipline, integrated into the larger world of the study of politics.

Political Science and Biology: Then, Now, and Next

I. Now

At about five o'clock in the morning of June 8, 1880, John W. Burgess, Professor of Political science and Constitutional Law at what was then called Columbia College, was awakened in his Paris "sleeping room" by someone pounding on the door. Responding to the summons, he was confronted by a messenger bearing a cable. Suddenly wide-awake, Burgess tore open the envelope and read the terse communication, 'Thank God, the university is born. Go ahead.' Those two sentences told the now exuberant professor that that Trustees of Columbia College had finally adopted his proposal for establishing a graduate school of political science and that he could proceed with his plan for engaging its faculty. The Trustees' action was a great personal triumph for Burgess. It was also to prove epochal for Columbia, for graduate education in the United States, and for American political science. Only the latter, of course, directly concerns us here.

So, according to one history, American Political Science was born. (Somit and Tanenhaus, 1967).

The new discipline grew at a respectable pace, mirroring the post-World War II explosion of college enrollments. By a century later, the American Political Science Association (established 1903) had over 13,000 members, three official journals, and an annual meeting. Alongside, but nominally independent of the national organization, were four regional associations, all with journals and annual meetings. In addition, there was a sizable handful of associations, devoted to the various "fields" (public administration, comparative government, political philosophy, international relations, etc.) broadly recognized within the profession.

The post WW II explosive growth in undergraduate and graduate students led, of course, to a need for qualified faculty. As of 2020, well over 100 universities were

offering Political Science Ph.D. programs. As of that date, we should add, the profession had embraced the invidious practice of periodically rank ordering the doctoral granting departments, the discipline's leading scholars, and, it seemed, whatever else that lent itself to a defensible differentiation of academic status.

In short, political science had almost everything that could be asked of a real science. We say, "almost everything" because it lacked what David Easton termed an "overarching theory," Kuhn called a "paradigm," and less formal commentators simply described as a "Big Idea." That lack was widely recognized and over the decades hopeful advocates had advanced an apparently endless number of possible candidates—Power, Decision Making, Socialization, the Influentials, systems theory, structural-functionalism, and Rational Choice, to mention only a few. All were hailed, and enthusiastically adopted. Regrettably, many failed and were, more or less quietly, abandoned.

The failure to agree on a Big Idea was in large part due to the acceptance of Emile Durkheim's dictum that "human social behavior was socially acquired," i.e., that meaningful social behavior was *learned*, not innate. In short, that social scientists need not, and in fact, *should* not concern themselves with possible biological behavioral influences. This taboo, an understandable reaction against the horrendous consequences of Social Darwinism run amuck, was incorporated in what became the Standard Social Science Model (SSSM) (human action—including politics—is the result of culture and learning) accepted across the social sciences (e.g., see Somit and Peterson, 2003).

“Biopolitics” is the name given the attempt by rebel political scientists, beginning in the mid-20th century, to challenge the long dominant SSSM. This disciplinary insurgency had several sources. Among them were: a growing dissatisfaction with the then current state of the discipline; persuasive evidence from psychopharmacology and evolutionary psychology that biological factors ~~do~~ play a role in shaping how we behave; and, from primatology and ethology, the not always welcome news of behavioral similarities between our species and that of other social primates, which could only be explained by a close genetic (biological) affinity (e.g., Somit 1968; Wahlke, 1979; Schubert and Somit, 1982.).

Probably most important, however, was the availability of a “Big Idea,” the “paradigm” for which the profession had been searching with increasing urgency since its inception. We refer, of course, to “neo-Darwinism,” a powerful scientifically solid restatement of evolutionary theory capable of explaining how and why species evolve the behaviors they display and the morphological features that make those behaviors possible (e.g., Mayr, 1963, Simpson, 1944; Dobzhansky, 1972). We discuss this theory in a bit more detail in a later section.

This belated interest in biopolitics can be traced most directly to the 1960s. Several different events/publications during this decade serve as the baseline for subsequent developments. In 1964, Lynton Caldwell published a piece in the *Yale Review* on environmental policy (Caldwell, 1964). In 1963, James C. Davies (1963) published his book, *Human Nature in Politics*, that suggested biological components to human political behavior. Finally, in 1967, at a meeting of the Southern Political Science Association in New Orleans, Albert Somit crossed the Rubicon, urging political scientists

to look at the biological bases of political behavior. Which of these starting points one might embrace, it is clear that the 1960s marked the beginning of an interest in the linkage between biology and politics. We can safely refer to that as the founding decade for biopolitics (For other histories, see Hines, 1982; Somit and Peterson, 2013, 2017; Goetze, 2013; Sprinkle, 2017).

Biological factors have since become increasingly recognized within the discipline of political science. One index of this can be assessed using two successive versions of a handbook of political science. In *A New Handbook of Political Science*, published in 1996, there is no reference to biology as a relevant field for political science (Goodin and Klingemann, 1996). In the next version, *The Oxford Handbook of Political Science*, published in 2009, the lead essay speaks of one possible candidate for “the next big thing” in the study of political science as the use of evolutionary models (Goodin, 2009: 25-27). And the index to this massive volume contains a number of references to evolutionary theory’s relevance in several other chapters. Relevant, too, is the reality that citations to the Alford, Funk, and Hibbing (2005) article on genetic influences on political behavior was one of the most downloaded articles from the *American Political Science Review*.

It is, therefore, appropriate to assess the state of biopolitics after five decades. Such efforts have been made before. In 1972, one of us assessed the state of biopolitics (Somit, 1972). This took place after about, roughly, one decade in the life of the field. At one point, the author noted that new perspectives/theories in political science need to make a mark within about a decade—or they may disappear. Examples alluded to included group theory, systems theory, and (to add one more) structural

functionalism. The prediction for biopolitics? “If [biopolitics] does survive, it will have to yield something substantial in the way of results within the next seven or eight years” (Somit, 1972: 232).

In 1998, there was a new evaluation of the field after three decades (Somit and Peterson, 1998). Biopolitics, after all, had survived much longer than the prognostication mentioned above. The conclusion? As an organizational enterprise, biopolitics had done well and had been generating research for about three decades and had a robust organizational structure (Association for Politics and the Life Sciences, International Political Science Association Research Committee # 12 [Biology and Politics], and a journal—*Politics and the Life Sciences*).

But the question lingered. What impact did biopolitics have on the discipline after three decades? Our assessment was less than positive (Somit and Peterson, 1998: 569):

A quite different conclusion is compelled, however, when we turn to the second, and, perhaps, weightier criterion—intellectual impact on the discipline. By this standard, only one (albeit reluctant) verdict is possible: as of this writing, biopolitics must be viewed as basically unsuccessful.

We observed that the research output of this specialty had not penetrated deeply into the discipline and had not much effect on knowledge generation within political science.

This essay steps back and asks: Where, then, is biopolitics after five decades? An astonishing accomplishment, given the judgment after the first decade. But have matters improved since the evaluation in 1998?

In the 1960s and early 1970s, one boost to this nascent movement was the commitment by several political scientists with widely respected records. If one were a graduate student or assistant professor, then, it was encouraging to have a set of seasoned professionals with significant disciplinary recognition as a support network. And these “stars” were willing to help junior scholars. Some examples: Glendon Schubert, Albert Somit, Fred Kort, James Davies, Roger Masters, Keith Caldwell, and John Wahlke, among others. A strong asset at the outset of the development of biopolitics . . . In addition, several distinguished foreign scholars weighed in on the value of biopolitics: William McKenzie, Heiner Flohr, Peter Meyer, Jean Laponce, Jerzy Wiatr, Rudolph Wildenmann, and Tatu Vanhanen.

There were challenges in the earlier years. It was not rare to hear discussants and audience members at professional meetings bring up “social Darwinism” and “racism” and “eugenics” in comments about biology and politics papers. Over time, those standard questions disappeared and are seldom heard now.

What have been trends in the literature? We divided the period from 1982 through 2019 using publications in *Politics and the Life Sciences* by 5-year periods. (See Table 1.) The final period is an exception, since only 2 ½ years of data were coded. One observation: The first-time frame is an anomaly. There was a special issue on “Teaching Biology and Politics,” and it offered a fairly large number of essays that were long enough to qualify for inclusion in the analysis. We categorized these essays as “self-reflection.” That was the dominant designation (49% of essays) in the 1982-1986 frame. After that: 21% was biopolicy; 15% ethology, evolution, genetics; 10%

focused on the case for biopolitics; 3% represented physiology and neuroscience; 3% were oriented toward research. Finally, metaphor had no examples.

Table 1 here

For 1987-1991, the dominant subarea was biopolicy—with 59% of the articles. Physiology/neuroscience accounted for 28%; Ethology, evolution, and genetics came in at 7%, as did self-reflection. Biopolicy, as we shall see, remained dominant for some time thereafter.

1992-1996? Most numerous articles were in biopolicy (66%). Ethology and evolution were tied with Physiology and neuroscience at 14% each. Bringing up the rear—methods at 7%. No other category was present during this time. From 1997-2002, biopolicy remained dominant (88% of articles). Physiology/neuroscience was a very distant # 2—8%, followed by Ethology/evolution at an even more distant 4%. No other category was represented.

2002-2006 marks a turn. Once more, biopolicy was first, with 46% of articles. Ethology/evolution came in second, with 42%. Last—Physiology/neuroscience at 13%. From 2007-2011, Ethology/evolution was first, with 42%. Next, biopolicy at 30%. Then Physiology/neuroscience registering 26%. There was one article representing self-reflection (2%).

From 2012-2016, biopolicy once again was # 1 – 48%. Then Ethology/evolution at 26% and Physiology/neuroscience at 23%. Last was self-reflection at 3%. Finally, 2017-2019 (issue # 1). Ethology/evolution registered 41% of articles as did

Physiology/neuroscience. Biopolicy trailed with 18%. No other category was represented.

The findings are straightforward. One way of expressing the over time totals is to count the number of times each field has been represented in the total universe of articles—counting these from 1982 through issue # 1 of 2019. The final column in Table 1 (labeled Total) exhibits the counts. 45% of all articles are classified as Biopolicy. Next is Ethology and evolution (24%) followed by Physiology and neuroscience (19%). Self-reflections make up 10% of the total. Other categories are only lightly represented in the count. Over time, biopolicy articles are obviously heavily represented in *Politics and the Life Sciences*. Later, however, Ethology/evolution became more prevalent, as did the Physiology/neuroscience category. 2002-2006 marked the time period when we began to see the hegemony of biopolicy reduced.

I. Now

A. Neo-Darwinism

The basic components of neo-Darwinism are surprisingly simple (see Mayr, 1963 for a classical exposition). First, more offspring are born than can survive, creating a struggle or existence, given the limitations on population that any species' environment can support. Second, there are variations among organisms. Some of these variations increase odds of survival and of subsequent reproductive success ("inclusive fitness") whereas others may be more likely to lead to death and reduce the chances for success. Third, the variations leading to increased chances of survival and reproductive success ("natural selection") are transmitted from parent to offspring.

In short, natural selection is the process by which some individuals survive and pass on their characteristic to the next generation. Reproductive success, we should emphasize, is always relative to the challenges posed by environment. Behaviors which further inclusive fitness in one environment may no longer do so, or even be counter-productive should the environment significantly change.

One of the central issues which distinguish those in biopolitics from mainstream political science is the emphasis on the need to understand the evolutionary origins of the behavioral predispositions which *Homo Sapiens* shares with the other social primates and which significantly affect our political life (de Waal, 2007). Major advances in post-World War II ethology, primatology, and anthropology, as well as in evolutionary theory, made it clear that political scientists should give proper weight to the role played by *Nature*, as well as by *Nurture*, in shaping our social and political behavior. There was also increasing agreement that the many behavioral predispositions we share with the other great apes could only be explained by a common evolutionary ancestry as reflected in the nearly identical (circa 98% with the chimpanzees) DNA.

But we have also evolved some striking behavioral tendencies and capacities that seem to be truly unique to our species. For those opposed to Darwinian thinking, these differences provide comforting evidence of an unbridgeable distance between *homo sapiens* and all other forms of life. Primarily concerned with how and why these behaviors evolved, neo-Darwinian theory takes no stand on that issue.

The most powerful factor shaping *Homo politicus* is our species' genetic legacy as social primates. That legacy, together with socialization, influences almost every aspect of our social, political, economic, and cultural life. Bluntly stated, we are great

apes and we share many of the behavioral inclinations of our fellow great apes—gorillas, orangutans, and—to an even greater degree, *Pan troglodytes*, our closest relative, the chimpanzee.

Over an approximately six-million-year span, the great apes, especially the chimpanzee and humans, evolved the behavioral tendencies and morphology (i.e., physical attributes) they display today. On the one hand, we find superior intelligence, cooperativeness, a moral sense, and altruism. On the other, we find hierarchical social and political structures characterized by dominance and obedience relations, and often staggeringly unequal access to the necessities let alone the luxuries, of life. Mirroring and supporting these hierarchies are an insatiable question for status, a readiness to resort to violence and deception, nepotism, ethnocentrism and xenophobia, to mention a few of their perhaps less laudable tendencies.

B. Organizational aspects

This section addresses organizational aspects of biology and politics. The heart of that structure: two professional organizations, one journal, and two graduate education centers over time (for greater detail, see Peterson and Somit, 2013; Sprinkle, 2017).

The first formal organization supporting the study of biology and politics was the International Political Science Association (IPSA) Research Committee # 12 (Biology and Politics), one of IPSA's earliest research committees. This designation authorized the research committee to form panels at the triennial (now biennial) meetings of IPSA, providing reliable outlets for scholarly discussion and papers (for a history, see Somit, 2013). In addition, IPSA encouraged research committees to form panels at their

national professional association (in our case, The American Political Science Association) and even at regional association meetings

Thomas Wiegele, from Northern Illinois University, officially opened the Association for Politics and the Life Sciences in 1981, with the support of his Dean. Before that, a Center for Biosocial Research had been established (under Dr. Wiegele's guidance) in 1977. APLS organized its first array of panels at the American Political Science Association in 1981 (On APLS, see Goetze, 2013; Sprinkle 2017; Bonnicksen 2013; Hines, 1982).

By 1982, the journal *Politics and the Life Sciences (PLS)* had been launched. Originally published by Northern Illinois University, then Allen Press, it evolved over the years until 2015, when Cambridge University Press took the reins as publisher. The alliance between *PLS* and Cambridge University Press has raised the visibility of the journal and lent an *imprimatur* to the Association.

APLS has become a virtual organization. Since 9/11 and the Great Recession, colleges cut back on many expenses—including travel for faculty attending professional meetings. With costs of publishing the journal fairly high and a reduction in a major revenue source (meeting registration fees and membership fees), meetings began to become less robust. With dwindling attendees, meetings moved from annual to whenever a supporting host could be found.

The real key to becoming a virtual organization was a happy arrangement where people downloading articles from the journal would pay a fee and some of that trickled back to the organization and its journal. Though matters had previously appeared bleak, APLS became financially viable (See Sprinkle, 2017 for more detail).

One desirable element in support of a specialization in biology and politics is graduate school training opportunities. The first well defined specialization in biology and politics as part of a political science doctoral degree was at Northern Illinois University. The program was created in the 1980s and—until its end in 2012—generated a number of doctoral graduates with a specialization in biology and politics who went on to academic careers. It was the first program to offer a structured doctoral education in the subject (See Bonnicksen, 2013; Hannagan, 2013).

Before that, graduate students had to somehow develop a structure to their coursework to facilitate development of a special area in biopolitics. A do it yourself (DIY) program would be devised, using some independent study courses (on genetics for example) and other regularly offered courses in ethology (e.g., primate ethology) and biology (e.g., evolutionary theory). In addition, term papers in standard political science courses facilitated the development of a product that linked biology to the course's subject matter (e.g., political philosophy).

In recent years a fully formed and developed Ph D specialty in biopolitics has been established at the University of Nebraska at Lincoln. The University offers a four-course set in biology and politics at the undergraduate level, a specialty in the master's program is available, and—of course—the Ph D program. There are two doctoral seminars in the subject. To support research, there is a political physiology lab, fMRI and EEG capabilities as well as psychophysiology and eye tracking equipment. There is a Political Behavior Research Group in which graduate students and faculty meet during the semester to talk about research projects—including biopolitical efforts. Finally, there

is a multidisciplinary lab—Political Attitudes and Cognition. The lab is jointly affiliated with Political Science and the Center for Brain, Biology, and Behavior.

C. The current literature

1. Evolution and Ethology

Evolutionary theory and ethology (the biological study of animal behavior) have provided roots for much research in biopolitics. Here a few examples (for the basics of evolutionary theory, please refer to the beginning of II-A).

Peter Corning (2011) contends that evolutionary theory has profound policy implications. His book, *The Fair Society*, illustrates (Corning, 2011). In this work, Corning argues for a fair society, in which social justice is done. At one point, he observes that (2011, p. 66): “group selection [evolution taking place at the group rather than individual level] between socially organized and closely cooperating groups seems likely to have provided a favorable selection regime for the emergence of our unique wardrobe of social and moral traits.” Among these traits are: identification with our “group”; an eagerness to fit in with social norms; concern for the well-being of our particular group; a willingness to be altruistic and to support a sense of justice and fairness. The result of these effects could facilitate the development of a just society. Thus, evolutionary theory carries implications for our understanding of human societies.

Another evolution-based perspective examines why democracy has not been a dominant form of governance over time. Somit and Peterson (1997) seek to explain two apparently contradictory yet well-established political phenomena: First, throughout human history, the vast majority of political societies have been authoritarian. Second,

notwithstanding this pattern, from time to time, democracies do emerge and some even have considerable stability. A neo-Darwinian approach can help make sense of these observations. Humans—social primates—have an inborn bias toward authoritarian life, based on their tendency to engage in dominance behavior and the formation of dominance hierarchies. Reinforcing this bias is an impulse toward obedience. These factors are associated with the propensity of humans to accept authoritarian systems.

Nonetheless, the authors argue, conditions of material abundance combined with another human characteristic—indoctrinability—can foster the emergence and maintenance of democracies. Somit and Peterson assert that an understanding of human nature from an evolutionary perspective can help to explain how and why political systems have developed. They conclude by pointing to policy implications that might enhance the odds of formation and continuation of democratic forms of government.

Sullivan and Masters (1988) provide a useful illustration of concepts from ethology—displays, signals from animals to one another that affect social behavior. Their focus is the effect of candidates for president in 1984; their “facial displays” (anger/threat, fear/evasion, and happiness/reassurance) are assayed and then viewers’ responses recorded. There has been a long research tradition on, for example, facial displays by primates and their function within groups. Thus, Sullivan and Masters build upon that ethological foundation.

Response to displays was measured in multiple ways: verbal measures of affect and psychophysiological responses to displays (e.g., cheek and brow muscular movement, skin conductance, and heart rate). Displays by one’s favored candidate led

to more positive verbally expressed emotional responses to displays. Changes in subjects' views toward candidates, for example, appeared more affected by happy/reassuring displays than by standard predictors such as party identification. There is much more to this article, but the preceding provides an illustration of the work.

The work is very suggestive. However, the evolutionary approach, as examples show, is more theoretical than grounded in data. To be convincing, many readers would want to know what the evidence is. Theoretical arguments, of course, can be powerful, providing a takeoff point for subsequent research. But that is one common argument against evolutionary analyses (some have ungenerously referred these as "just so stories"). With respect to the ethological approach? How do the displays actually activate responses? What are underlying processes? It is obvious that displays affect responses to candidates. There is a theoretical literature from ethology; there are also other observational studies. What are the biological mechanisms involved going from stimulus (displays) to response? This is an arena where the promise is great if such issues can be addressed.

2. Genopolitics

An emerging area in political analysis speaks to the effects of genes on political behavior. A number of students of human behavior have addressed this. Two distinct approaches have emerged. First, there is the use of data on molecular genetics as these are associated with sociopolitical behavior. Second, the use of twin studies to assess how much impact genes have on political attitudes and behaviors. We summarize illustrative research for both approaches and also note some of the ongoing debates about these two perspectives.

Boisvert and Vaske note that (2011, p. 168): "Molecular genetics is the study of gene functioning and how individual differences in gene functioning affect one's health, cognitions, and behavior." Databases have been developed that record individuals' genes for certain characteristics. Some of these databases have featured data from about their sociopolitical attitudes and behaviors. Thus, a statistical analysis of the relationship between genes, on the one hand, and political attitudes and behavior, on the other, can be developed.

Dawes and Fowler (2009) use a database to explore the relationship between genes and political party identification and voting. In this instance, they explore the effects of the A2 dopamine receptor gene variation of the DRD2 gene. One could have no A2 alleles, one, or two. The odds of identifying with a party are 1.2 times greater for a person with one allele as compared to someone with none. Just so, an individual with two A2 alleles has 1.4 times the likelihood of being partisan compared to a person with none. Finally, through the effects of the allele on partisanship, there is an indirect effect on voting, as those who are partisans are more likely to vote.

Questions have arisen about this method. At one level, as Charney and English (2012, 2013) note, complex behaviors are often affected by many different genes; at the same time a single gene may well be affecting numerous distinct characteristics. They note that over 266 genes are involved in the expression of aggression in fruit flies (Charney and English, 2012, p. 13). Human sociopolitical behavior is more complex still, so identifying a single gene or two genes that have major roles to play may be overstated.

Twin studies have also generated considerable research. Alford et al. (2005) used twin studies data (the Virginia 30K, or VA30K, for short, and an Australian study) and found that there was a relationship between genetics and political orientations. In short, identical twins (monozygotic) were more similar in their political ideology and a variety of political attitudes than were non-identical twins (dizygotic). The political metrics were limiting, in that they represented a strange set of variables, not using standard political science measures (for example, some measures used: agreement or disagreement with statements about property tax, women's liberation, X-rated movies, modern art, astrology, the draft, and so on). The results, though, are indicative of a genetic component to the dependent variables. Overall, about one third of the variation in political attitudes is due to genes. The results, the authors conclude, suggest a strong genetic component to the dependent variables (and see Hibbing et al., 2014).

There is disagreement over the methods and uses of genetic research in political science. Several chapters in a recently published edited volume make this apparent (Peterson and Somit, 2011; for a nice survey of literature in which political scientists explore the consequences of genes, see Hannagan, 2011). Charney (2011) points out that the general approach to twin studies has its roots in the early twentieth century. And the understanding of genes has often not changed among those using twin studies. In fact, of course, our understanding of genes has changed considerably since that time. As a result, questions arise about the use of current models in assessing the impact of genes (for a survey of literature on the general subject, see Ksiazkiewicz and Friesen, 2017).

3. Neuropolitics

The study of the relationship between brain functioning and political behavior has long been an emphasis in biopolitics. However, much of the earlier *oeuvre* (before 1990) was theoretical and not data based (e.g., Davies, 1976; G. Schubert, 1983; White, 1982).

Currently, an important technique being used to assess the brain's role in political thinking is functional Magnetic Resonance Imaging (fMRI). fMRI is a non-invasive instrument for assessing brain activity. It is used to show how the brain works under different situations. When placed in a strong magnetic field, hydrogen nuclei respond. This technique has been used to study brain responses to political stimulation. Indeed, stories of the linkage between the brain and political thinking have appeared in the mass media (for example, Mooney, 2013).

One study explored the relationship of brain response to risk-taking and political views (ascertained by party registration information) (Schreiber et al., 2013). The study evaluates whether Republicans and Democrats have different brain responses to risky decision-making (winning a small amount as guaranteed versus winning a larger amount, but with the risk that one will gain nothing). fMRI results suggest that different regions of the brain are activated for Republicans (right amygdala) as compared to Democrats (left posterior insula). These differences in activation accurately predicted the partisanship of 82.9 percent of respondents (for other illustrations of using fMRI to study political attitudes, see Westin, 2006; 2010; Schreiber and Iacobini, 2012). Thus far, studies using neuroimaging are interesting in terms of what we might learn—but there are rather few studies at this time (For summaries of the literature, see such sources as Blank, 2017; Schreiber, 2017; Jost, Nam, Amodio, and Van Bevel, 2014).

In addition, there are methodological problems with the approach. The imaging process is relatively slow, based on blood flow. Neuronal activity is much faster than blood flow, hence something of a mismatch here. Sample sizes are a problem. A rule of thumb is that one should have about 30 subjects. One constraint? Cost. fMRI use costs over \$500 per hour at some universities. Hence, without hefty grant support, there is a real constraint on sample size (for more detail and additional issues, see Peterson and Somit, 2017).

4. Psychophysiology and politics

There has been a recent resurgence of psychophysiology as a takeoff point for research in biopolitics (for a detailed analysis of psychophysiology, see Cacioppo, Tassinary, and Berntson, 2017). Schell and Dawson say (2001): “Psychophysiology is the study of the interrelationships between mind and body. Psychophysiologicalists study primarily human subjects using non-invasive molar physiological responses.” A goal, according to a textbook on media and psychophysiology, is to determine what psychophysiological processes mediate between media exposure and its effects (Potter and Bolls, 2012: 10). For political science, how do psychophysiological processes mediate political events and affect the individual?

One key element of this niche is the methods used. Among these: cardiac activity, EEG, fMRI, skin conductance, psychophysiological arousal, facial displays, eye blink, verbal measures, and voice stress (see Cacioppo, Tassinary, and Berntson, 2017; Potter and Bolls, 2012. For past examples applied to political science, see J. Schubert, 1988; G. Schubert, 1997; Sullivan and Masters, 1988).

The recent return to this approach has generated a substantial literature and some marquee publications (e.g., *Journal of Politics*, *Science*). In 2017, four panels on psychophysiology and politics were on the Midwest Political Science Association schedule. APLS sponsored a conference on psychophysiology, cognition, and political differences, held in Montreal in summer, 2019. Finally, a special issue of *Politics and the Life Sciences* is devoted to this subject. Thus, psychophysiology is a current focal point in biopolitics.

The renaissance of psychophysiological study in political science seems slow but steady, with some speed bumps along the way. For instance, Oxley et al. in *Science* (2008) analyzed a small sample (N= 46) to explore psychophysiological responses of subjects to political policy choices to determine if there were a linkage. Findings suggested that reaction to noxious stimuli (as measured by galvanic skin response) differentiated those who chose a more muscular foreign policy as opposed to those who reacted less strongly. However, a more recent essay, to be published in the *Journal of Politics* (Osmundsen et al., in press) cannot replicate the results, using larger samples and cross-national data. Indeed, Smith and Warren (2020) note that debates over methods and lack of a strong set of replications are a challenge for the psychophysiology and politics approach.

But despite something of a range in findings, there is abundant evidence that psychophysiological factors can be associated with politics. A meta-analysis of literature by Stewart, Salter, and Mehu (2009) demonstrates consistent findings on effects of facial displays of political candidates (such as anger, threat, happiness, sadness, etc.) on viewers, with a number of psychophysiological metrics used.

A few examples from the past suggest a long-term interest in the subject. Schwartz and Zill (1973) used observational metrics of psychophysiological arousal. Peterson (1981) used a self-report measure. Both studies found that subjects at a higher level of arousal were more participant in a variety of political activities. Wiegele (1978) used voice stress analysis to examine level of stress among elites in crisis decision making. Schubert, Peterson, Schubert, and Wasby (see summary in G. Schubert, 1997) used psychophysiological measures to study effects of oral argument as related to Supreme Court decision making and debate.

A number of issues need to be addressed. Replication, is, of course, important given mixed findings on one of the signal publications (Oxley *et al.*). Another question that readers might raise: What is the role of psychophysiology in explaining people's political attitudes and behavior? Independent variable? Intervening variable? The body's response to the ongoing process of political thinking and action? Is there a causal role? An index to be used to predict behavior (as with the Supreme Court study; see G. Schubert, 1997)?

5. Visibility of scholars

One metric of the effect of a body of research is to ascertain how often practitioners are cited. We used Google Scholar to examine the extent to which a subset of scholars in neuropolitics, genopolitics, and psychophysiology has been represented in the literature. The enumeration was carried out in December, 2019. All citations to any biopolitical work that they did were counted. Table 2 provides results.

Table 2 here

John Hibbing has been associated primarily with genopolitics and psychophysiology. A count of his citations indicates that his work was mentioned in political science journals and science journals 3599 times. Christopher Dawes was cited 2439 times. Darren Schreiber? 671 times. Peter Hatemi showed up 3194 times. Rose McDermott was widely cited (including an article on testosterone and politics). 2176 times. Finally, James Fowler was noted 4921 times. All in all, a striking indicator of the visibility of those working in areas like genopolitics, neuropolitics, psychophysiology, and so on. It is hard to dispute the visibility of biopolitical works in the literature—in political science as well as other disciplinary outlets.

III. Next

We have discussed where biopolitics has been and where it is. Now, a few speculative comments on what might come next. We see a number of developments likely to come up in the near and further future.

First, there has been a rapid increase in quantitative studies. Focal points have been genopolitics, neuropolitics, and psychophysiological studies, to name a few, as we have discussed above. There have also been explorations of hormones in politics (Friesen, Gruszczynski, Smith, and Alford, 2020; McDermott, 2011; Apicella and Cesarini, 2011). Others have used aggregate and individual level data to examine the effects of nutrition and health status on politics (Peterson and Franzese, 2015; Mattilla, et al., 2013; Soderland and Rapeli, 2014; Schwartz, Garrison, and Alouf, 1975). Frankly,

much of the discipline of political science is oriented to quantitative work. To the extent that biopolitical scholars publish works along these lines, the more persuasive our efforts. This movement seems to be developing some momentum in recent decades.

Second, biopolitics needs some home departments where students can get an organized, thought out program of study. DIY doctorates with a specialization are needed, since there will not be enough students with an interest to fill classes in more than a small handful of universities. It is promising that the University of Nebraska at Lincoln has developed such a program. It is regrettable that Northern Illinois lost its program in biopolitics. One headwind? With states cutting back on funding of public universities and the likely aftereffects of COVID-19, will there be the development of any programs besides U of Nebraska-Lincoln? We are not sure that more than two or three such programs could be sustainable. We do think that the increase of junior scholars becoming involved provides hope that there will be fully articulated graduate specializations in biology and politics.

Third, and related to the second point, we are seeing the transition to a third generation of biopolitical scholars. The Founders were the leaders of the movement in the 1960s and 1970s as a new generation began to populate biopolitics. These adherents began to take more leadership positions and become deeply involved in this endeavor. The past decade or so? A third generation is emerging as second gen faculty are retiring. This transition is critical, so that biopolitics can continue into the future with a critical mass of committed scholars. Thus far, this transition appears to be developing nicely.

Fourth, there is the challenge of synthesizing and coordinating the biopolicy literature. Biopolicy (application of findings and theory from the life sciences to the study of public policy) is an amorphous literature. Some in biopolitics study this. Many who do not even know that there is such a specialization within political science are producing relevant work that may not be attended to by those in this endeavor. We probably ought to devise some way of beginning to synthesize and systematize this vast and unwieldy *oeuvre*. Such an undertaking could bear fruit in pulling a massive literature into some sort of order. And demonstrate the value of taking biology and the life sciences seriously.

Fifth, we need to move from theorizing big issues to breaking these theoretical arguments down and studying aspects of these—including quantitative studies—to demonstrate the value of such analysis. Earlier, under evolutionary theory/ethology as an area for research, evolution of democracy and evolution as the basis for “the good society” were discussed. But these books tend to be theoretical and not grounded in empirical study. There are, of course, many other such works. Can scholars break the works down and study aspects of these to test the suggestions embedded therein?

Sixth, some have contended that biopolitics will have succeeded if it is accepted as one of many perspectives addressing the various subfields within political science—from comparative to international relations to political philosophy to methods to political behavior to public policy and beyond. Thus, biopolitics would no longer be seen as a special, narrow part of political science—but a part of every field in the discipline, integrated into the larger world of the study of politics. There would be room for an organizational structure pulling together practitioners across political science, as we

have now with APLS and IPSA's Research Committee # 12. How that structure might evolve if the above scenario occurs is an open issue.

IV. Reflections

We suggest that biopolitics now has a beachhead within the discipline. A number of indices suggest this:

- a. Abundant citations of leading biopolitical scholars.
- b. Acceptance of quantitative biopolitical studies.
- c. The increasing importance of biopolicy in the current era.
- d. Establishment of a doctoral program at the University of Nebraska-Lincoln (following up the Northern Illinois initiative).
- e. The survival of the enterprise as its Founders are no longer directly involved in the enterprise. A second generation emerged in the 1970s through the 1990s and, as they retire, a third generation has emerged. We now see a healthy "circulation of elites" within biopolitics. This has become a cross-generational movement.
- f. Biopolitics has outlasted systems theory, structural functionalism, and so on.
- g. The continued operation of two professional organizations in biopolitics (APLS and IPSA's RC # 12) and the movement's journal, *Politics and the Life Sciences*, becoming a Cambridge University Press publication provide institutional infrastructure to sustain the "movement."

h. The presentation of research in the field at major regional and national meetings and publications in recognized journals within the discipline.

Two prior analyses of the status and future of biopolitics have ended on a lugubrious note (Somit, 1972; Somit and Peterson, 1998). Currently? As noted with the metaphor at the outset of this section, biopolitics appears to have established a beachhead within the discipline. One can say that surviving ten years is not much of an accomplishment. Thirty years? Suggests some staying power? Now, fifty years? Biopolitics has survived and is an ongoing movement many years after its origins. That itself is an accomplishment. Will this momentum continue? Can we expand that beachhead and infuse more biological thinking into the political science discipline? Can these promising signs be sustained?

That judgment must await the next generation's analysis, following up on efforts of the first two generations, to update our first three full-scale critical examinations. It is incumbent upon biopolitics to every so often assess at a macrolevel how well we are doing. We leave that task to our successors.

Table 1: Trends in Biopolitics by Sub-area

	2002-	2006	2007-	2011	2012-	2016	2017-	2019	To	tal
	N	%	N	%	N	%	N	%	N	%
Case for biopolitics	0	0%	0	0%	0	0%	0	0%	4	2%
Ethology, evolution, genetics	10	42%	18	42%	8	26%	9	41%	58	24%
Physiology, neuroscience	3	13%	11	26%	7	23%	9	41%	45	19%
Methods	0	0%	0	0%	0	0%	0	0%	3	1%
Biopolicy	11	46%	13	30%	15	48%	4	18%	109	45%
Metaphor	0	0%	0	0%	0	0%	0	0%	0	0%
Self-reflection	0	0%	1	2%	0	0%	0	0%	23	10%
Total	24		43		31		22		241	

Table 1: Trends in Biopolitics by Sub-area

	1982- N	1986 %	1987- N	1991 %	1992- N	1996 %	1997- N	2001 %
Case for biopolitics	4	10%	0	0%	0	0%	0	0%
Ethnology, evolution, genetics	6	15%	4	14%	4	14%	1	4%
Physiology, neuroscience	1	3%	8	28%	4	14%	2	8%
Methods	1	3%	0	0%	2	7%	0	0%
Biopolicy	8	21%	17	59%	19	66%	19	66%
Metaphor	0	0%	0	0%	0	0%	0	0%
Self-reflection	19	49%	2	7%	0	0%	0	0%
Total	39		29		29		25	

Table 2. Illustrative Citations (From Google Scholar)

Scholar	Total Citations
John Hibbing	3599
Christopher Dawes	2439
Darren Schreiber	671
Peter Hatemi	3194
Rose McDermott	2176
James Fowler	4921

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