THE EARLY MODERN ORIGINS OF BEHAVIORAL ECONOMICS*

By Richard Boyd

Abstract: *For all the recent discoveries of behavioral psychology and experimental economics, the spirit of homo economicus still dominates the contemporary disciplines of economics, political science, and sociology. Turning back to the earliest chapters of political economy, however, reveals that pioneering figures such as Francis Bacon, Thomas Hobbes, and Adam Smith were hardly apostles of economic rationality as they are often portrayed in influential narratives of the development of the social sciences. As we will see, while all three of these thinkers can plausibly be read as endorsing "rationality," they were also well aware of the systematic irrationality of human conduct, including a remarkable number of the cognitive biases later "discovered" by contemporary behavioral economists. Building on these insights I offer modest suggestions for how these thinkers, properly understood, might carry the behavioral revolution in different directions than those heretofore suggested.*

KEY WORDS: Behavioral psychology, history of economics, rational choice, early modern philosophy, Francis Bacon, Thomas Hobbes, Adam Smith, cognitive biases

I. Introduction: "Rationality" and the Behavioral Psychology Revolution

It seems fair to say that none of us has ever personally met *homo economicus*, but he is by now a familiar character across many disciplines of the social sciences. The centrality of the rational actor model to mainstream quantitative work in economics should come as no surprise, but its methodological assumptions about self-interest and human rationality have become ubiquitous in kindred disciplines such as sociology and political science as well, for better or worse.[1] Whether it is labeled as "game theory," "public choice," "social choice theory," "formal theory," "rational choice theory," or "positive political economy," the rational choice model has proliferated in many fields of the social sciences and humanities.[2] Even those who gladly acknowledge that no such person as economic man is to be found in the real world still find it analytically useful to proceed in their research on grounds of his hypothesized existence.

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[1] Donald P. Green and Ian Shapiro, *Pathologies of Rational Choice* (New Haven: Yale University Press, 1994).

[2] See especially Jeffrey Friedman, ed., *The Rational Choice Controversy: Economic Models of Politics Reconsidered* (New Haven: Yale University Press, 1996).

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Critics of the rational choice approach such as S. M. Amadae have alleged that its widespread dissemination in the post-World War II era was a function of the Cold War and the need to legitimate neoliberal economic arrangements.[3] Although it seems difficult to imagine any discipline whose practices are not shaped, at least to some degree, by broader economic developments and political attitudes,[4] a simpler justification for the proliferation of neoclassical economic theory was famously offered by Milton Friedman: the best proof of any model is that it works.[5] Regardless of its tendency toward oversimplification, as Albert Hirschman noted, the ascendancy of the economic view was driven by the model's indisputable "parsimony."[6] Even granting all the ways in which the concept of *homo economicus* oversimplifies human nature and the social world, the model's attractiveness stems, according to Hirschman, from its congeniality to rigorous quantitative analysis and generalizability along the lines of the natural sciences.

Interestingly, though, at just about the time when the concept began to exercise great sway over the methodology of the social sciences, *homo economicus* came under attack in the discipline of economics proper. Over the last three or four decades the notion of economic man as perfectly rational and efficient in his choice of means to given ends has been challenged in a number of quarters. Amartya Sen was among the first to object to the descriptive and normative egoism of neoclassical economics, but the thrust of his work seems to have gone more in the direction of moral philosophy than a wholesale rethinking of the economist's view of the world.[7] Under the influence of the burgeoning fields of behavioral psychology and experimental economics, however, the notion that human beings are perfectly rational and utility maximizing creatures who choose deliberately on the basis of all available information has been upended in fundamental ways.[8] The advent of what has come to be known as "behavioral

[3] S. M. Amadae, *Rationalizing Capitalist Democracy: The Cold War Origins of Rational Choice Liberalism* (Chicago: University of Chicago Press, 2003).

[4] Ada Finifter, ed., *Political Science: The State of the Discipline* (Washington, DC: American Political Science Association, 1983); David Ricci, *The Tragedy of Political Science* (New Haven: Yale University Press, 1984); Raymond Seidelman and Edward Harpham, *Disenchanted Realists: Political Science and the American Crisis* (Albany: State University of New York Press, 1985); Dorothy Ross, *The Origins of American Social Science* (Cambridge: Cambridge University Press, 1991).

[5] Milton Friedman, "The Methodology of Positive Economics," in *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953), 3–30.

[6] Albert Hirschman, "Against Parsimony: Three Easy Ways of Complicating Economic Discourse," *Economics and Philosophy* 1 (1985): 7–21.

[7] Amartya Sen, "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory," *Philosophy and Public Affairs* 6 (1977): 317–44.

[8] Daniel Kahneman, Paul Slovic, and Amos Tversky, eds., *Judgment under Uncertainty: Heuristics and Biases* (Cambridge: Cambridge University Press, 1982); Daniel Kahneman and Amos Tversky, eds., *Choices, Values and Frames* (Cambridge: Cambridge University Press, 2000); Vernon Smith, *Papers in Experimental Economics, 1962–1988* (Cambridge: Cambridge University Press, 1991); Richard Thaler, *Misbehaving: The Making of Behavioral Economics* (New York: Norton, 2016).

economics" has brought to light empirical evidence that human beings are "predictably irrational" in many aspects of their lives, not the least in their economic decision-making.[9]

Building on the path-breaking work of Amos Tversky and Daniel Kahneman, for which the latter, along with experimental economist Vernon Smith, was awarded the Nobel Prize in Economics in 2002, behavioral economists have cataloged a wide range of cognitive biases that distort human decision-making in ways that make little sense when viewed through the lens of neoclassical economic orthodoxy. Such behavioral quirks as overconfidence, loss aversion, anchoring bias, recency bias, confirmation bias, and herding—to name just a few—raise serious questions about models of human cognition and decision-making predicated on something like perfect economic rationality. We have abundant evidence that people are, for example, terrible judges of their own decision-making abilities; easily steered into mistaken judgments (or "nudged" into salutary ones!) by means of a variety of heuristics and framing effects; irrationally committed to holding on to goods that they already possess even in the face of what look to be overvaluations; inclined to seek out examples that support their preconceptions while ignoring disconfirming evidence contrary to what they believe or have stated publicly; and prone to act rashly and self-destructively in instances where they feel they are being taken advantage of.

Given the origins of this research on human decision-making in fields of behavioral psychology, economics, and finance, it makes sense that it has heretofore been focused largely on illuminating nonrational features of our personal and economic lives. For example, we now understand more about the nature of speculative behavior, economic decision-making under conditions of uncertainty or duress, as well as how people behave toward others in matters involving interpersonal negotiation, fairness, and trust. Economic or quasi-economic arenas of human action are amenable to behavioral analyses because one can calculate mathematically what constitutes a baseline of "rational" or utility-maximizing behavior, against which anomalies are clearly identifiable. When people systematically depart from this baseline of perfect rationality things become interesting.

At least to date, however, the dominant methodologies of other areas of the social sciences have been informed more by the assumptions of neoclassical economic theory than the new insights of behavioral economics. Domestic political actors such as voters, candidates, or legislators are deemed to be self-seeking and rational, on the one hand, or shaped by institutional norms and incentives that produce predictable patterns of behavior, on the other. Likewise, in the domains of international relations, national security, and trade, for example, the behavior of states can be described, and possibly even predicted, based on rational expectations or

[9] Dan Ariely, *Predictably Irrational: The Hidden Forces that Shape Our Decisions* (New York: Harper Collins, 2008).

norms whose construction themselves may be assumed rational and utility-maximizing. Political behavior on the part of individuals or states that looks to be self-destructive, irrational, quirky, or unpredictable needs to be redefined or explained away rather than calling attention to the limits of reigning models of rational political behavior.[10]

Rather than fixating on the shortcomings of the rational actor model, as has contemporary behavioral economics, I seek in this essay to supplement the model by recurring to an earlier chapter in the development of the social sciences. Turning back to the early modern origins of the social sciences gives us not only a different perspective on the trajectory of the discipline of political economy. It also and more importantly provides us with insights into human behavior that extend the practical applications of contemporary behavioral economics. In what follows I will argue three main claims. First, I contend that many influential narratives about the development of the social sciences have mistakenly and anachronistically attributed the "rational actor" model to pioneering figures such as Francis Bacon, Thomas Hobbes, and Adam Smith. As we will see, while all three of these thinkers can plausibly be read as endorsing "rationality," they also appreciate the complexities of human nature in ways that defy common stereotypes of early modern political thought. Second, and by way of complicating these narratives, I show how early modern thinkers were well aware of the systematic irrationality of human conduct, including a remarkable number of the cognitive biases later "discovered" by contemporary behavioral economists. Finally, building on these insights I offer several suggestions for how these thinkers, properly understood, might carry the behavioral revolution in different directions than those heretofore suggested by behavioral economics proper.

II. Early Modern Political Thought and the "Enlightenment of Enthusiasm"

The decisive chapter of this story, I want to submit, goes back to the foundations of natural philosophy and political economy in the seventeenth and eighteenth centuries. Early modern thinkers such as Francis Bacon, Thomas Hobbes, and Adam Smith are widely credited for inspiring the development of the modern natural, political, and economic sciences, respectively.[11] And yet, as in so many cases of intellectual ancestors, the magnitude of a thinker's influence is often inversely related to the degree of resolution with which their theories are understood. Could it be that their

[10] Green and Shapiro, *Pathologies of Rational Choice.*

[11] Bernard Crick, *The American Science of Politics: Its Origins and Conditions* (Berkeley: University of California Press, 1959); Stefan Collini, Donald Winch, and John Burrow, *That Noble Science of Politics: A Study in Nineteenth Century Intellectual History* (Cambridge: Cambridge University Press, 1983); James Farr, "Political Science and the Enlightenment of Enthusiasm," *American Political Science Review* 82 (March 1988): 51–69.

mythical commitment to a transformative vision of reason, scientific objectivity, generalizability, and uniformly rational conduct rests on oversimplified renditions of their theories? That they are often caricatured as "founders" of the rational actor model of social and political life? If so, what might follow from revisiting their writings with an eye to the contemporary "discoveries" of behavioral economics?

Early modern political thought has been an especially fertile terrain for scholars of political economy, moral philosophy, and the history of economic thought. So much of what we today reckon to be characteristic of "modernity," for better or worse, seemingly originates in the early modern period. Notions of the self as a freely choosing agent emancipated from ascriptive ties and primordial allegiances; the public sphere as a legalistic and secular domain of mutual indifference among anonymous strangers; human conduct as motivated by instrumental and self-regarding purposes rather than custom or theistic injunctions—all of these features of the contemporary world have been traced back to seminal thinkers of the seventeenth and eighteenth centuries and the moral and political transformations they wrought.[12] And yet one of the difficulties of making sense of this period is that its relationship to human rationality (or irrationality) has often been misunderstood.

Perhaps the single most influential of such accounts is Albert Hirschman's classic *Passions and Interests: Political Arguments for Capitalism Before its Triumph* (1978), in which Hirschman famously advanced the claim that early modern thinkers such as Hobbes, Smith, Montesquieu and others regarded commercial society as a mechanism for perfecting human rationality and softening hard edges of antisocial behavior. Aside from the benefits of commerce in generating prosperity, which came to be emphasized only later, according to Hirschman, the primary attraction of the economic view of the world was the prospect of ameliorating the human love of glory that beget violence and warfare. "Doux commerce" held the allure of being able to polish or soften human nature to the point that human beings could be made orderly and predictable, laying the groundwork for something akin to a new science of political life.

Building on characterizations of many of the same key figures, James Farr reaches similar conclusions about what seventeenth-century and eighteenth-century thinkers were after: namely, the "enlightenment of enthusiasm." For Farr, early modern thinkers such as Locke, Hume, Smith, and Ferguson were inspired by the goal of banishing—or at least taming—the human proclivity toward immoderation, superstition, rage, and

[12] Alasdair MacIntyre, *After Virtue* (Notre Dame, IN: University of Notre Dame Press, 1981); Michael Sandel, "Procedural Republic and the Unencumbered Self," *Political Theory* 12 (1984): 81–96; J. B. Schneewind, *The Invention of Autonomy: A History of Modern Moral Philosophy* (New York: Cambridge University Press, 1997); Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1989).

enthusiasm that served as a "poison" of society.[13] Rather than debunking pre-modern glory, as per Hirschman, their target is religiously-inspired superstition and zealotry that led to violence and cruelty. The antidote is a novel political science that aspires to be objective, dispassionate, orderly and predictable along the lines of Newtonian physics. The governing ideal of individuals as rational, deliberate, and calculating, as well as a political science whose methodological standards approximated those of the natural sciences, was an important part of this enterprise.

If not quite as grandiose as inventing a new discipline of political science, Stephen Holmes also regards Hobbes, Hume, Smith, and their brethren as contributing to a new ethos of reason and interest intended to abolish the atavisms of conflict, violence, and superstition.[14] "Passions" are irrational and self-destructive impulses that lead people to fanaticism and cruelty. These are juxtaposed to "interest," which appears as "an alternative to various dangerous and unpredictable emotions."[15] Holmes identifies in particular the ways in which the economic models that often purport to be derived from this period rest upon radical simplifications of a much more complex view of human nature that was fully evident to thinkers of the time.[16]

We should note several features that distinguish all three of these characterizations of early modern political thought. First, and most importantly, their commonality: all of these interpreters acknowledge that Hobbes, Smith, Hume, and other thinkers of the period were well aware of the irrational proclivities of human beings. Irrationality appears as a constant if lamentable feature of social and political life. And yet with the possible exception of Holmes, few interpreters of this period attribute the irrationality that bedeviled early modern thinkers to the fundamental and largely irremediable cognitive biases suggested by behavioral economics. Religion, sociology, elite manipulation, or downright ignorance are more often highlighted as the (potentially remediable) causes of miscalculation and erroneous judgments.

Confusion about the ultimate sources of human irrationality is easily understandable. For early modern thinkers themselves often pin the blame on factors such as rudeness, civilizational backwardness or ignorance; religious pluralism and sectarianism; or the sociological proclivities of ideologies and mass movements. Early modern thinkers are especially preoccupied, as noted above, by the sorts of irrationality and fanaticism connected with strong religious passions. Religious instincts must be extinguished altogether by a new secular order, or rechanneled through novel institutional arrangements such as toleration (Locke), disestablishment

[13] Farr, "Political Science and the Enlightenment of Enthusiasm," 57–62.
[14] Stephen Holmes, *Passions and Constraint: On the Theory of Liberal Democracy* (Chicago: University of Chicago Press, 1995).
[15] Holmes, *Passions*, 54.
[16] Holmes, *Passions*, 45.

(Smith and Madison), or Erastian uniformity (Hobbes). Another potentially salient cause could be broadly termed sociological: otherwise sober, rational individuals who would be fine if left to their own best lights are either manipulated by elites or caught up in the madness of crowds.[17] Yet another explanation is civilizational backwardness or "rudeness" associated with earlier, pre-commercial stages of civilization (Hume; Smith; Ferguson). If these diagnoses of the causes of irrationality are correct, the disease can presumably be palliated, if not altogether cured, by education, generalized enlightenment, or the invention of new methods for ordering political systems and human affairs.

There can be no doubt that thinkers of the period were well aware of many potential sources of irrational behavior. And yet these environmental diagnoses are less telling than what is potentially overlooked by subsequent interpreters: namely, the possibility that these behavioral anomalies are rooted in human psychology itself. As such, they are intrinsic, rather than merely circumstantial, features of human nature. Few if any interpreters have acknowledged that these fundamental quirks of human behavior are seemingly hardwired into human psychology. Cognitive biases are largely irremediable; they can be monitored or managed but never altogether alleviated. Although they do not rise to the level of the violent and fanatical tendencies of religious sectarianism or militant warfare, they nonetheless thwart any easy assumption that humans can be relied upon to act rationally and deliberately in their day-to-day lives.

The realization that human beings are wont to behave rashly, and that this generalized irrationality is politically dangerous, would seem to be different from the notion that people are *predictably* irrational. That is to say, people not only act capriciously or make decisions that are contrary to their own best interests, but they tend to do so in ways that can be categorized and understood systematically. One theme of the period is the protean forces of madness, fanaticism, collective enthusiasm, unbridled passions, and so on. The darker side of human behavior is captured by such oppositions as "passions" versus "interests," "enlightenment" versus "enthusiasm," "civil" versus "uncivil" behavior, and others. And yet the binaries themselves suggest a false dichotomy between forms of conduct which are regular, predictable, and thus normatively desirable, on the one hand, and other forms of irrational human conduct which is merely random or haphazard, on the other. As we will see through a closer reading of some of the leading thinkers of the period, while terms such as "madness," "passions" and "enthusiasm" were in some sense catch-all terms for spontaneous and socially undesirable behaviors, there were discernible *patterns* to what might otherwise seem like random outbursts,

[17] Richard Flathman, *Thomas Hobbes: Skepticism, Individuality and Chastened Politics* (Lanham, MD: Rowman and Littlefield, 2002); Richard Boyd, "Thomas Hobbes and the Perils of Pluralism," *Journal of Politics* 63 (2001): 392–413.

and these patterns are traceable back to certain proclivities of the human mind, rather than artifacts of intellectual environment, theological controversy, or political sociology.

Finally, there has been a widespread tendency to confound the normative and empirical dimensions of early modern political thought. Many interpreters less careful than those mentioned above have mistakenly inferred that because Bacon, Hobbes, Hume, or Smith desired that people *should* behave rationally it must be the case that they believed people actually *did* act this way all of the time. Generations of readers have conflated prescription with description, which is less a condemnation of poor reading skills than a testament to the marvelous rhetorical suasion of seventeenth- and eighteenth-century thinkers. If people are consistently told that they are indeed rational beings, and that they are capable of being instructed in how to ignore their passions and attend to their reason, some modest improvements in human society and institutions might be possible.

In sum, many careful interpreters have shed light on the role of passions and irrationality in early modern thought, but few have identified anything akin to the insights of behavioral psychology at play.[18] Upon closer examination, however, we will see that the "predictably irrational" nature of human behavior was widely appreciated by thinkers of the period. Indeed, the psychological awareness of behavioral quirks and biases is far more conspicuous than any vain hope that people's actions could be expected to conform to the ideal of *homo economicus*.

In what follows I turn to three major figures in the early modern period: Francis Bacon, Thomas Hobbes, and Adam Smith. They have in various degrees been popularly credited, respectively, with the development of modern natural science, rational choice theory, or neoclassical economics. And yet as I hope to demonstrate in the following brief examinations, none of them is fully supportive of unqualified models of human rationality. I cannot hope in the course of these brief treatments to do justice to the complex social and political theories of three such colossal thinkers as Bacon, Hobbes, and Smith. And yet for our purposes these brief vignettes will serve to highlight instances where they expressed significant misgivings about the prospects for human rationality.

III. Francis Bacon and Natural Science: Tribes, Caves, and Confirmation Bias

It is a commonplace to identify Sir Francis Bacon with the origins of modern natural science. Bacon is widely credited not just with inventing the modern scientific method, but also with embracing ideals of scientific objectivity, uniform predictability, and control over the natural universe

[18] Nava Ashraf, Colin Camerer, and George Lowenstein, "Adam Smith, Behavioral Economist," *Journal of Economic Perspectives* 19 (2005): 131–45.

that we associate more broadly with the "Enlightenment." Bacon's innovation has been linked to the breakdown of a worldview dominated by magic and superstition and the ascendancy of one characterized by reason and science.[19] As Stanley Fish has prominently noted, even Bacon's rhetoric in the *Essays* is supportive of a worldview characterized by inductive reasoning and critical thinking at the expense of purely and unreflectively deductive "method."[20] For Hans Blumenberg, as for so many others, Bacon's contribution takes the form of a lawlike pragmatic rationality constitutive of modernity.[21] Saint Simon goes so far as to say that Bacon "founded positive science."[22]

To be sure, the Baconian Revolution is more obviously related to the genesis of the natural sciences, but his insights seem to carry over to the methodology of the social and political sciences as well, an impression given force by Bacon's chosen subjects of human nature and society in both his *Essays* and the *New Organum*.[23] And yet upon closer examination we find that rather than exhibiting the scientific predictability of atomic particles or biological processes, the fallible individuals who inhabit Bacon's writings look anything but rational. Already Bacon manages to identify a remarkable number of cognitive biases that feature in the writings of contemporary behavioral economics.

One noteworthy example of his precocious behavioral sensibility is Bacon's presentation of the four "Idols" at the opening of his "New Organon." For Bacon, the progress of modern natural science—and indeed human society—has been beset by the existence of four so-called "Idols."[24] These are best understood as false guides to human belief and action based on systematic misperceptions of true knowledge. The most primary of these is the "Idol of the Tribe," or the innate proclivity of humans to distort their knowledge of the world. Of all Bacon's "Idols" this one arguably comes closest to the psychological biases with which we are most concerned. The second is the "Idol of the Cave," which relates to our tendency to filter all new knowledge through the lens of previous experience, also a common concern of behavioral psychology. The third is the "Idol of the Marketplace,"

[19] Paolo Rossi, *Francis Bacon: From Magic to Science* (Chicago: University of Chicago Press, 1968), 12; Ronald S. Crane, "The Relation of Bacon's *Essays* to His Project for the Advancement of Learning," in *Essential Articles for the Study of Francis Bacon*, ed. Brian Vickers (Hamden, CT: Archon Books, 1968), 272–92.

[20] Stanley Fish, *Self-Consuming Artifacts: The Experience of Seventeenth-Century Literature* (Berkeley, CA: University of California Press, 1972).

[21] Hans Blumenberg, *The Legitimacy of the Modern Age* (Cambridge, MA: MIT Press, 1983), 383–90.

[22] Henri de Saint Simon, *Selected Writings on Science, Industry and Social Organization*, ed. Keith Taylor (London: Croom Helm, 1975), 106.

[23] On Bacon's growing skepticism about the possibilities of a political science along the lines of a natural science, see Ian Box, "Bacon's 'Essays': From Political Science to Political Prudence," *History of Political Thought* 3, no. 1 (1982): 31–49.

[24] Francis Bacon, *The New Organum: True Suggestions for the Interpretation of Nature*, ed. Lisa Jardine and Michael Silverthorne (Cambridge: Cambridge University Press, 2000), Aphorism XXXIX, p. 40.

which speaks to how our knowledge of the world is dominated by popular opinion and the very language we employ to categorize the world. And finally there is the "Idol of the Theater," which relates to the disproportionate (and largely pernicious) influences of religious dogmas or ideologies.

The latter two "Idols"—the Marketplace and the Theater—may ultimately be rooted in vexing psychological affinities for simplified political ideologies or currents of popular opinion, but the former two—namely, the Tribe and the Cave—are most akin to the sorts of cognitive biases upon which contemporary behavioralists have subsequently shed light.

With respect to the "Idols of the Tribe," Bacon describes them as having "their foundation in human nature itself, and in the tribe or race of men."[25] Curiously, even as an empiricist who denies that we possess any knowledge that we have not ourselves experienced, Bacon nonetheless rejects the claim that "the sense of man is the measure of things."[26] Rather, all sense perception is interpreted "according to the measure of the individual and not according to the measure of the universe."[27] Everything that we know must first be experienced, but there is no guarantee that what we experience will be accurately understood or categorized. In fact, the very nature of "the tribe" almost guarantees the opposite result.

Our difficulty of knowing stems from a seemingly irremediable attribute of our nature: that is, the faultiness of human understanding, which "like a false mirror . . . receiving rays irregularly, distorts and discolors the nature of things by mingling its own nature with it."[28] Natural partiality, self-gratification, vanity, and other quirks and biases mean that we often don't perceive things the way they really are, but rather as we'd most like them to be. As Bacon makes clear in distinguishing the Idols of the Tribe from those of the Cave, which are peculiar to each individual based on his or her own unique experiences, the Idols of the Tribe consist of "error common to human nature in general."[29] All people—including those trained in natural philosophy—are liable to committing such errors.

Especially vexing, according to Bacon, is a propensity to interpret all new knowledge on the basis of previous knowledge. We cling to information that supports what we already know while closing our eyes to inconvenient truths. This tendency resembles what we have come to know as confirmation bias, availability, and anchoring. "Human understanding," Bacon complains, "when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it."[30] Conversely, even when "there be a greater number and weight of instances to be found on the other side, yet these it either neglects

[25] Bacon, *New Organum*, XLI, 41.
[26] Ibid.
[27] Ibid.
[28] Ibid.
[29] Bacon, *New Organum*, XLII, 41.
[30] Bacon, *New Organum*, XVI, 43.

and despises, or else by some distinction sets aside and rejects, in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate."[31] One could hardly have founded a clearer statement of the predisposition to confirmation in the writings of Tversky or Kahneman!

Bacon identifies this bias with a faulty model of deductive science that stipulates certain conditions as given and then proceeds as if the real world (especially disconfirming aspects of the real world) does not exist. This tendency is exemplified by the degraded Scholastic version of Aristotelianism that passes for science in Bacon's own day. Aristotle's followers judge the world by the tenets of their preconceived theories, rather than vice versa. The error is amplified by the increasingly abstract and abstracted nature of Scholastic philosophy. Natural philosophy has come to be dominated not by experimental research and engagement with anomalous empirical phenomena in the real world, Bacon complains. Instead science is practiced mainly by cloistered academics who begin with a given set of assumptions and then proceed to reason about the world by teasing out deductively the logical consequences of the assumptions with which they began. Sophistry, pedantic "syllogisms," and false analogies are rampant.[32] Such a methodology is not only detached from the empirical realities of the world, and thus prone to error and oversight. It is also and maybe more crucially conservative: without a willingness to engage with counterfactuals, quirks, and anomalies, it ends up justifying the status quo.

One might object that Bacon is guilty of unfairly lumping Aristotle together with degraded remnants of Aristotelianism prevailing in his own day, and dismissing the former on the basis of shortcomings of the latter. And yet in many ways Aristotle comes off looking worse than his epigones. For while Aristotle—unlike the Scholastics—engaged in empirical research and experimentation, he allegedly ignored findings that would tend to undermine his theory, according to Bacon.[33] If a bias to view the world through preconceived theories is characteristic of the methodology of the most highly trained scientists of Bacon's day, an error to which even the great Aristotle is prone, what hopes can we entertain that ordinary people will be able to overcome their native inclination to seek confirmation and eschew contrary information?

In matters of prediction, for example, Bacon laments our tendency to "mark the events where they are fulfilled, but where they fail, though this happens much oftener, neglect and pass them by."[34] We cling to examples where religious or other kinds of prognosticators are proven right—as anyone who predicts the future must eventually be, as they say of the proverbial broken clock which is right twice a day—while conveniently

[31] Ibid.
[32] Bacon, *New Organum*, XIII-XIV, 35.
[33] Bacon, *New Organum*, LXIII, 51–52.
[34] Bacon, *New Organum*, XLVI, 43.

neglecting all those prophecies that never came to pass. Rather than dismissing this phenomenon as mere superstition or credulity confined to matters of religion, Bacon's explanation is essentially psychological: "Besides, independently of that delight and vanity which I have described, it is the peculiar and perpetual error of the human intellect to be more moved and excited by the affirmatives than by negatives; whereas it ought properly to hold itself indifferently disposed toward both alike."[35] The "peculiar and perpetual error of the human intellect" is to seek out confirmation and eschew contrary evidence, even if, from the vantage of scientific objectivity, "the negative instance is the more forcible of the two."[36]

Bacon is suspicious of our ability to make sense of data and to reason on the basis of new information, but the problem is compounded when others manipulate evidence in order to influence us. Bacon recounts with hearty approval the "good answer" given by a man who, when shown a picture hanging in a temple of those who had allegedly been rescued from disaster for having performed their prayers, inquires critically, "yes, but what of those who drowned after saying their prayers?"[37] Witness the roots of survivorship bias! Religious ideals may be particularly susceptible to confirmation bias and immune to falsification, but this tendency affects economic and political forecasting as well. In our own day we herald the genius of figures such as Meredith Whitney, Dr. Michael Burry, or others renowned for "predicting" the Financial Crisis, while conveniently ignoring the fact that others had anticipated more or less the same kind of crisis unfolding for years, but because they were early they were effectively wrong, and thus forgotten. In the case of Whitney, her subsequent prediction of an imminent wave of municipal bankruptcies, which was widely heeded to the financial detriment of all those who listened, proved to be patently wrong.[38]

Given his emphasis on the crucial role of falsification in honing our understanding of the world, one can understand Bacon's disgust with the method of reasoning by syllogism or analogy, which he attributes to Aristotle and his Scholastic followers. Not only does the method of syllogism make for bad science; it bears a close and probably un-coincidental resemblance to several heuristics and biases that distort our decision-making. "A has the quality of X; B is somewhat akin to A; and thus B must also have the quality X." Nothing could be less scientific than to assume that two superficially related things must be kindred; that unrelated instances such as a throw of the die are interrelated; or that because an event transpired in a certain way, another one that is superficially similar must likewise unfold in the same fashion. And yet how many of us—Aristotelians and non-Aristotelians alike—are guilty of assuming that these are the case? Analogizing based on recent or available cases is a heuristic shortcut that so many of us take.

[35] Ibid.
[36] Ibid.
[37] Ibid.
[38] Michael Lewis, *The Big Short: Inside the Doomsday Machine* (New York: Norton, 2011).

Our minds are so deeply impressed by "those things . . . which strike and enter the mind simultaneously and suddenly, and so fill the imagination," that we strive to make other surrounding items fit patterns.[39] Heuristics prove useful in everyday life by simplifying our decision-making process, but the danger is that we seek patterns when none are present. The tendency to associate two things with one another often makes it hard for us to reckon with even basic matters of probability. Witness Tversky and Kahneman's celebrated "conjunction fallacy," whereby most participants judged—contrary to basic rules of probability—that Linda was more likely to be both a bank teller and a feminist, rather than just a bank teller alone.[40] The error likely stems from previous associations between Linda's character description ("outspoken," "concerned with issues of discrimination and social justice," and so forth) and strongly ingrained prejudices about social roles.

On the one hand, Bacon is optimistic that a new method of inductive reasoning and the birth of modern natural science might go some distance toward dispelling the ignorance that plagues human understanding. On the other hand, he also assumes that these and other distortions stem from incorrigible factors such as the "preoccupation" of the human spirit, its "narrowness," a kind of "restless motion" in the human mind, an abundance of emotions or "affections," the "incompetency of the senses, or from the mode of impression."[41]

IV. Thomas Hobbes, Psychological Equality, and the Ultimatum Game

If Bacon is often cited as the founder of modern natural science, Thomas Hobbes is just as frequently hailed across the social sciences for setting out the terms of what we now call rational choice theory. As Joe Oppenheimer has noted—voicing the conventional wisdom—the "pivotal intellectual position" of rational choice theory is to be found in Thomas Hobbes's *Leviathan*, where Hobbes "tried to explain the basic functioning of political institutions via individuals' choices."[42] Identifying Hobbes as the progenitor of rational choice and the rational actor model is not just a trope across the social sciences, but it forms a major interpretive school seeking to make sense of Hobbes's own political philosophy.[43]

Even so, many of those who have turned to Hobbes in search of a consistent application of the rational choice paradigm have concluded that

[39] Bacon, *New Organum*, XLVII, 43–44.

[40] Amos Tversky and Daniel Kahneman, "Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment," *Psychological Review* 90 (1983): 293–315.

[41] Bacon, *New Organum*, LII, 46.

[42] Joe Oppenheimer, "Rational Choice Theory," in *Sage Encyclopedia of Political Theory*, ed. Mark Bevir (Thousand Oaks, CA: Sage, 2010), 1148–58.

[43] David Gauthier, *The Logic of Leviathan: The Moral and Political Theory of Thomas Hobbes* (Oxford: Clarendon, 1969); Jean Hampton, *Hobbes and the Social Contract Tradition* (Cambridge: Cambridge University Press, 1986).

significant parts of his argument resist being subsumed into this framework.[44] Other commentators have observed that Hobbes's *Leviathan* is one of the most complex and perceptive accounts of human psychology ever offered.[45] Far from reductionist or atomistic, Hobbes's portrayal of the human psyche is richly detailed. Alongside a resounding normative call for human beings to reorder their behavior and political institutions in keeping with a deductive logic modeled on the axioms, precepts, and theorems of geometry, there is abundant skepticism about whether this transformative project is possible given the unwieldy human material with which we have to work. Much of Hobbes's project is rhetorical, concerned with educating and improving rather than just describing.[46] To invert Hobbes's own formulation, the difficulty is in "men as they are the *matter*" as much as "they are the *makers* and orderers" of political communities.[47]

Like Bacon, Hobbes regards the world as full of false idols, whether these consist of predatory elites seeking to manipulate the gullible, dissenting sectarian ministers and other theologians using false scripture to foment the "kingdom of darkness," the tendencies of people to dissolve into fanatical mobs and thereby surrender any vestiges of decency or common sense, or the ambiguities of the words and languages that we are obliged to employ in our interactions with others.[48] All of these factors confound human understanding and complicate efforts to live in peaceful society.

Arguably the greatest challenge in forging a durable political order is what Hobbes calls "vain-glory," or, the tendency of each of us to "overestimate our own power."[49] Another way to describe "vain-glory" is overconfidence in one's own abilities, and it assumes a number of manifestations that seem stubbornly rooted in human nature itself. Those who "estimate their sufficiency by the flattery of other men, or the fortune of some precedent action, without assured ground of hope from the true knowledge of themselves" are "inclined to rash engaging" based on a mistaken impression that their means are greater than is really the case.[50] They are bold when times are good and no danger is immediately present. Conversely, when confronted by danger people tend to underplay their hand out of a fear of losing what they already have. As Ioannis Evrigenis has suggested, Hobbes's rhetorical vision of the state of nature is not so much intended to

[44] Patrick Neal, "Hobbes and Rational Choice Theory," *Political Research Quarterly* 41 (1988): 635–52.

[45] Holmes, *Passions and Constraint*; Mary Dietz, "Hobbes's Subject as Citizen," in Dietz, ed., *Thomas Hobbes and Political Theory* (Lawrence, KS: University Press of Kansas, 1990); Deborah Baumgold, *Hobbes's Political Theory* (Cambridge: Cambridge University Press, 1988); S. A. Lloyd, *Ideals as Interests in Hobbes's Leviathan* (Cambridge: Cambridge University Press, 1992).

[46] David Johnston, *The Rhetoric of Leviathan* (Princeton, NJ: Princeton University Press, 1989).

[47] Thomas Hobbes, *Leviathan*, ed. Edwin Curley (Indianapolis, IN: Hackett, 1994), chap. 29, p. 210.

[48] Hobbes, *Leviathan*, chap. 46, pp. 453–68.

[49] Hobbes, *Leviathan*, chap. 6, p. 32; chap. 11, p. 60.

[50] Hobbes, *Leviathan*, chap. 11, p. 60.

frighten people with exotic scenes of anarchy whose dangers they will readily discount, but rather to present them with a fear of losing what they most take for granted in the peace and order of civil association.[51] Whenever the threat is manifest, rashness and overconfidence give way to "panic terror" and loss aversion, all the more so if individuals are surrounded by others simultaneously losing their heads. Social psychology and herding behavior drive people to oscillating extremes of optimism and pessimism, not to mention irrational cruelty.

At moments Hobbes differentiates between a few troublesome gallants possessed of unduly inflated opinions of their own bravery or intelligence, on the one hand, and ordinary people whose vanity has not been inflamed by flattery, on the other. And yet some of his most famous statements indict overconfidence as a universal bias of human nature. In what is both an ingenious rhetorical argument and a fascinating psychological observation, Hobbes's case for equality among the "the faculties of the mind" hinges on a "vain conceit of one's own wisdom, which almost all men think they have in greater degree than the vulgar, that is, than all men but themselves and a few others whom, by fame or for concurring with themselves, they approve."[52] "[S]uch is the nature of men," Hobbes notes, that while we will often concede others to be funnier, more articulate, or more erudite than us, "they will hardly believe there be many so wise as themselves."[53] Paradoxically, everyone seems equally inclined to believe that they are smarter than average!

In addition to overestimating our own wisdom and power, we also have difficulty reckoning with events whose causes or consequences are remote. Hobbes describes the science of reckoning as akin to a complicated mathematical equation, where the possibilities of error grow with each additional term in the logical sequence. Thus for matters whose causes are distant or invisible, or whose effects are far off on the horizon, our faculty of reasoning ends up being pretty weak.[54] Accordingly, human nature virtually guarantees that we will overreact when something is close at hand and discount dangers that are far away: "All men are by nature provided of notable multiplying glasses (that is their passions and self-love) through which every little payment appeareth a great grievance, but are destitute of those prospective glasses (namely moral and civil science) to see afar off the miseries that hang over them and cannot without such payments be avoided."[55] The political concern here, of course, is with subjects' proclivity to take umbrage at even small sacrifices while ignoring prodigious but deferred benefits. But the broader psychological insight seems to be how

[51] Ioannis Evrigenes, *Images of Anarchy: The Rhetoric and Science of Hobbes's State of Nature* (Cambridge: Cambridge University Press, 2014).
[52] Hobbes, *Leviathan*, chap. 13, p. 75.
[53] Ibid.
[54] Hobbes, *Leviathan*, chap. 11, p. 61.
[55] Hobbes, *Leviathan*, chap. 18, p. 118.

we exaggerate the magnitude (or probability) of things right in front of us while discounting too easily events or dangers that have yet to appear.

Another concern of Hobbes's that seems to have received less attention than it deserves in the secondary literature is his concern with fairness or equity, understood as equality of treatment among people who regard themselves as moral equals. One of *Leviathan*'s most enigmatic statements is the assertion in Chapter 14 about our expectations of equality and the need to treat everyone as equals even if there are relevant differences between them. As Hobbes notes, in language that is admittedly conditional, "*if* therefore nature have made men equal, that equality is to be acknowledged; or *if* nature have made men unequal, yet *because men that think themselves equal will not enter into conditions of peace but upon equal terms*, such equality must be admitted" (my emphasis).[56] Hobbes scholars have been divided on the interpretive matter of whether Hobbes is indeed saying that people are equal here (as he seems to have suggested in Chapter 13), or just issuing prudential advice that we should treat them as equals in order to minimize social conflicts. And yet regardless of the substantive matter of our natural equality or inequality, the psychological lesson is crystal-clear: namely, that because people do in fact think of themselves as equals, they have expectations about fairness or "equity" that have to be taken seriously in all matters of political negotiation or social cooperation.

Conspicuous disregard of another's equal status will be met with noncooperation. As with the political compact, so too with other social endeavors: my willingness to engage with others is predicated "on the condition" that everyone else be bound by the same conditions and actions "in like manner."[57] Otherwise, if "men [were to] require for themselves that which they would not have to be granted to others" they act contrary to the law of nature, which "commandeth the acknowledgment of natural equality."[58] Offenders are not only guilty of arrogance or "*pleonexia*, that is, a desire of more than their share."[59] They will also fail to elicit social cooperation, even in cases where it would arguably be to the absolute advantage of other parties to go along with the agreement, notwithstanding the likelihood that they will receive a relatively smaller share.

There are striking parallels between Hobbes's egalitarian moral psychology and the findings of so-called "ultimatum games" and other experimental work on norms of cooperation and reciprocity.[60] As in the case of Hobbes's derivation of the social contract, an individual must propose some distribution of goods between himself and another player. The second player has the choice of affirming the distribution offered, and receiving a

[56] Hobbes, *Leviathan*, chap. 15, p. 97.
[57] Hobbes, *Leviathan*, chap. 17, p. 109.
[58] Hobbes, *Leviathan*, chap. 15, p. 97.
[59] Ibid.
[60] Werner Guth et al., "An Experimental Analysis of Ultimatum Bargaining," *Journal of Economic Behavior and Organization* 3 (1982): 367–88.

share of the good, or of denying the proposed distribution, in which case neither player gets anything. What experimental economics finds at the most basic level is consistent with Hobbes's suggestion about the decisiveness of egalitarian fairness: most often the proposed distribution is a fifty-fifty split, and in cases where the proposed split becomes too unequal (generally, less than 30 percent), players will reject the distribution as unfair, gaining nothing, rather than submit to an arrangement they deem to be too unequal.

There are, admittedly, a number of different psychological mechanisms that might explain what appears to Hobbes as an irrational preference for relative over absolute gains. For example, ostensibly self-denying behavior may be reinterpreted as nothing more than a perfectly rational pursuit of a "social preference function" that prioritizes equality and reciprocity over material gain.[61] Or, rather than a putative affirmation of egalitarian values, these kinds of self-denying actions could very well reflect a deep-seated biological urge to punish violations of social norms such as reciprocity and cooperation.[62] Contrary to Hobbes's blanket assertion of a natural sense of egalitarian fairness, it turns out that social context and framing matter decisively in terms of just how much inequality we are prepared to tolerate, and under what circumstances.[63]

Regardless of the precise psychological mechanism, Hobbes's invocation of norms of equity, fairness, reciprocity, and equal treatment mainly involve political cooperation. Equity or justice lies at the heart of the formation of the social contract. However, there are strong signals that Hobbes is concerned not only with the equity of a single act of political constitution, but rather sees equality as a governing ideal for other cooperative relationships in civil association. His laws of nature dictate that no one ought to treat others as inferiors, that in distributing goods each ought to get an equal share, and that in the case of those goods that are indivisible, the only fair way to distribute them is by lot, in which the chance of acquisition is equally distributed. Conversely, any distributions contrary to the natural laws of equity are likely to be sources of resentment if not overt war.[64]

V. Adam Smith and Overconfidence

Of all the figures surveyed here, Adam Smith would seem to have the most obvious connection to the neoclassical model of the rational actor.

[61] Colin F. Camerer, *Behavioral Game Theory: Experiments in Strategic Interaction* (Princeton, NJ: Princeton University Press, 2003), 11; Ernst Fehr and Urs Fischbacher, "Why Social Preferences Matter: The Impact of Non-Selfish Motives on Competition, Cooperation, and Incentives," *Economic Journal* 112 (2002): C1–33.

[62] Dominique J. F. De Quervain et al., "The Neural Basis of Altruistic Punishment," *Science* 305 (2004): 1254–58.

[63] Elizabeth Hoffman, Kevin McCabe, Keith Schachat, and Vernon Smith, "Preferences, Property Rights, and Anonymity in Bargaining Experiments," *Games and Economic Behavior* 7 (1994): 346–80.

[64] Hobbes, *Leviathan*, chap. 15, pp. 97–98.

Smith is widely cited as one of the progenitors of the development of the modern science of economics. His economic theory assumes that people can reliably be counted on to pursue their self-interest; that in doing so they are most able to identify their own preferred ends as well as the means most consistent with achieving them; and that the outcome of a "system of natural liberty" in which they are free to do so is maximally conducive to economic well-being and freedom.

All that being said, commentators have noted the ways in which Smith's moral theory—particularly his account of human nature in the *Theory of Moral Sentiments*—offers a more complex view of human nature and rationality than a cursory reading of his *Wealth of Nations* would lead one to expect.[65] Vernon Smith in particular has done much to flesh out the complexities of Adam Smith's moral psychology.[66] In their recent book, Vernon Smith and Bart Wilson make a fascinating case that the moral psychology of Smith's *Theory of Moral Sentiments* provides a better model for explaining the findings of experimental economics than does either the "utility maximization" framework of traditional game theory or the "social preferences" amendments to which some have appealed by way of shoring up the orthodox view of economic rationality.[67] I want to suggest some additional reasons—beyond those identified by Colin Camerer, Vernon Smith, and others—for thinking Smith's insights might be of use in complicating the rational actor model. Providing additional support for their suggestions, these examples are not drawn from the self-evidently robust moral psychology of Smith's *Theory of Moral Sentiments*, which interpreters often invoke to palliate Smith's alleged economism, but instead from his explicitly economic arguments in *Wealth of Nations*.

One of the greatest discoveries of contemporary behavioral economics is that people have a hard time dealing with risk and uncertainty.[68] People struggle to make rational decisions even in cases where the odds are clear-cut. They freeze up, or worse still, take cues from others around them, in situations where pure uncertainty reigns. Just as Hobbes counseled, political life suffers from thorny coordination problems, asymmetries of information, power imbalances, and symbolic failures of recognition that lead to breakdowns of order.

It may be commonplace to say that politics is marked by irrationality, convulsion, and violent conflict, but economic life is more often portrayed, by way of contrast, as an oasis of calm, deliberate calculation. The very same David Hume who boldly disclaimed that in politics at least "every man

[65] Nava Ashraf, Colin Camerer, and George Lowenstein, "Adam Smith, Behavioral Economist," *Journal of Economic Perspectives* 19 (2005): 131–45.

[66] Vernon Smith, "The Two Faces of Adam Smith," *Southern Economic Journal* 65 (1998): 1–19.

[67] Vernon Smith and Bart Wilson, *Humanomics: Moral Sentiments and the Wealth of Nations for the Twenty-First Century* (Cambridge: Cambridge University Press, 2019).

[68] Amos Tversky and Daniel Kahneman, "Judgment Under Uncertainty: Heuristics and Biases," *Science* 185 (1974): 112–31; cf. Frank H. Knight, *Risk, Uncertainty, and Profit* (Boston: Houghton Mifflin, 1921).

must be supposed a knave" was equally disheartened that political life is plagued by partisanship, faction, zealotry, and persecution.[69] For Hume, as for many thinkers of the period, commerce offered the prospects of softening the unruly passions that made political life chaotic. Rational economic self-interest and cooperation through trade might be supposed to triumph over distrust, jealousy, bellicosity, and other destructive passions.[70]

Adam Smith is frequently invoked in support of the notion that people are competent judges in matters that pertain to their own interests. And Smith's writings are replete with observations supportive of the claim that, on the whole, people tend to be relatively better (even if not perfectly) informed about matters in which they have a strong economic interest than disinterested bystanders or incompetent legislators.[71] Smith understands that people have incentives that would lead them to make rational economic decisions and to allocate resources in ways that are most efficient.

Nonetheless, it is important to note that Smith's acknowledgement of the superior decision-making of individuals is relative praise, and he remains dubious about the capacity of ordinary people to reckon properly their interests under some circumstances. Discussing a market that is ostensibly as efficient as the labor market—where people are making momentous life decisions about what profession they would like to pursue—Smith identifies a number of behavioral biases. First is the case of overconfidence. Many enter demanding or crowded professions knowing full well that only the very best will manage to achieve their goals while most will end up failing.[72] As Smith notes, the market may approach a semblance of efficiency in that it must compensate the successful few for all the uncertainties and privations associated with, say, a career in the law.[73] And yet from the vantage of the many who tried and failed in the "lottery of the law," it is unclear whether prospective high wages offer sufficient compensation for all the risks, especially if the numerous failures had any inkling beforehand of whether they possessed requisite skills to succeed.[74] Indeed, as Smith notes, it is likely that across the profession of law as a whole the "annual gains bear but a small proportion of their annual costs," at least as understood in purely pecuniary terms.[75]

Some of the negative expectancy found in the law and other "underrecompensed" liberal professions can be explained by non-pecuniary benefits. People flock to these careers not because it is a rational economic decision, but because of the prestige and public admiration enjoyed by

[69] David Hume, *Essays: Moral, Political, and Literary* (Indianapolis, IN: Liberty Press, 1987), 42.
[70] Hume, *Essays: Moral, Political, and Literary*, 253–80.
[71] Adam Smith, *Wealth of Nations*, ed. Edwin Cannan (Chicago: University of Chicago Press, 1976), Bk. IV, ii, 478.
[72] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 120–21.
[73] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 115–19.
[74] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 119.
[75] Ibid.

successful practitioners.[76] However, while acknowledging that reputational or social factors have value to would-be professionals, whether positively or negatively, Smith identifies a deeper behavioral irrationality that may explain why ordinary people hazard difficult careers in the first place. This boils down to the "natural confidence which every man has more or less, not only in his own abilities, but in his own good fortune."[77] Overconfidence explains in part why people choose to pursue careers such as academia where pay is generally low and opportunity cost high, but whose social prestige might be reckoned a compensating factor. It also explains the irrational dreams of legions of would-be pop stars, country Western singers, actors, novelists, artists, restauranteurs, and other careers whose expectancy seems demonstrably negative. As Nassim Taleb suggests in his assessment of the prospective career choice between dentistry and rock music, the highly skewed payoffs among successful rock musicians may be captivating, but this ignores the fact that the average musician is much less successful than the average dentist.[78] And yet notwithstanding the sober economic realities, we are captivated—as Smith remarks—by the "public admiration" that attaches to the rare winners while ignoring the greater number of inconspicuous failures.[79]

In what could well be an allusion to Hobbes, Smith recalls that the "overweening conceit which the greater part of men have of their own abilities, is an antient evil remarked by the philosophers and moralists of all ages."[80] But people are not just overconfident in their own powers. Much less attention has been focused on people's "absurd presumption in their own good fortune." Luck is as often overestimated as ability! Smith has a great example in mind to illustrate this point:

> That the chance of gain is naturally over-valued, we may learn from the universal success of lotteries. The world neither ever saw, nor ever will see, a perfectly fair lottery; or one in which the whole gain compensated the whole loss; because the undertaker could make nothing by it. In the state lotteries the tickets are really not worth the price which is paid by the original subscribers, and yet commonly sell in the market for twenty, thirty, and sometimes forty per cent. advance. The vain hope of gaining some of the great prizes is the sole cause of this demand.[81]

Generic greed is insufficient to explain the irrational appeal of lottery tickets. Rather, as Smith keenly observes, it is the magnitude of the prize—rather than the probability of winning—that drives the decision to play. Lotteries

[76] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 119–20.
[77] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 119.
[78] Nassim Taleb, *Fooled by Randomness* (New York: Random House, 2004), 20–21.
[79] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 119.
[80] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 120.
[81] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 120–21.

with small prizes but a higher probability of winning (and thus a less-bad expectancy) are scorned, whereas people clamor to buy tickets for those with immense prizes but terrible odds. And yet by multiplying the number of tickets they buy in the hope of winning the large prize, they only increase the certainty of losing money.[82]

Conversely, people almost always downplay the probability of bad things happening—the proverbial "black swans" highlighted by Taleb and others—thus either failing to buy insurance, on the one hand, or selling insurance too cheaply, on the other. According to Smith, insurance companies tend to generate very modest profits in good times, while enduring catastrophic losses in bad times, because of the discount we place on adverse outcomes.[83] But it is not only insurers who underestimate the risk of hazards and set the price of bearing that risk too low. Many prospective insured assign an even lower probability to adverse events such as fire, disaster, or loss. As Smith notes, despite the very real dangers of fire, the vast majority of homeowners in his time neglect to buy fire insurance.[84] Unlike the risk of fire, which is ubiquitous but easily overlooked, the risk of shipping is easier to see. Because "sea risk is more alarming to the greater part of people," "the proportion of ships insured to those not insured is much greater" than among homes liable to fire. This is not the case because of any "nice calculation" that the dangers of shipping accidents are actually greater than losses from fire, but because of the way in which dramatic risks overshadow mundane risks.[85] One thinks here, for example, of the disproportionate attention devoted to the threat of terrorism—even to the point of people needlessly purchasing terrorism insurance—versus the hazard of falling out of a chair. This is not just a discrepancy between dramatic and prosaic risks. Rather, the natural human tendency seems to be to misreckon *all* risks, even the most conspicuous: "Many sail . . . at all seasons, and even in time of war, without any insurance." As with eschewing fire insurance on houses, this recklessness is an artifact of "mere thoughtless rashness and presumptuous contempt of the risk" rather than intelligent calculation of probabilities.[86] No one wants to believe that his own ship is liable to being wrecked.

Our "presumptuous contempt of risk" is at least in part a function of an inability to discriminate among relative dangers. But it also depends on the condition of the person assessing the potential threat. Healthy people are more inclined toward rashness and hazard than those who are unwell, Smith claims. Likewise, the young are oblivious to risks while older people tend to be more cautious. The fact that outcomes are skewed—offering a slim prospect of great success but an even greater likelihood of failure or

[82] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 121.
[83] Ibid.
[84] Ibid.
[85] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 122.
[86] Ibid.

outright death—draws adventurous young people to careers such as the navy. Mortality may be an obvious risk, but young men still line up to enlist in times of war because they focus only on the upside of glory while ignoring the very real, tangible dangers: "These romantick hopes make the whole price of their blood. Their pay is less than that of common labourers, and in actual service their fatigues are much greater."[87]

In the midst of this discussion Smith stumbles into one of the most vexing issues of modern financial theory: namely, the relationship between risk and reward. He concurs that they are positively correlated in some basic sense. As we might predict, in order to entice people into riskier investments, the prospective returns need to be higher: "The ordinary rate of profit always rises more or less with the risk."[88] Nonetheless, Smith grasps a nuance of this theory sometimes lost on modern practitioners. Contrary to the predictions of the theory, the reward "does not, however, seem to rise in proportion to it, or so as to compensate it compleately." [89] Taking greater risks provides no guarantee of commensurately higher returns, and because of the cognitive biases of human behavior, extreme risk-taking may actually yield the opposite result: "Bankruptcies are most frequent in the most hazardous trades," Smith offers. In an example seemingly ripped from the pages of Taleb, Smith offers a critique of the world of high-flying speculators, noting that the career of "a smuggler, though when the adventure succeeds it is likewise the most profitable, is the infallible road to bankruptcy."[90]

How can this be true in a rational and efficient market? Why don't high-yielding, speculative investments offer rewards sufficient to offset the risks they carry with them? Smith's psychological explanation seems entirely plausible:

> The presumptuous hope of success seems to act here as upon all other occasions, and to entice so many adventurers into those hazardous trades, that their competition reduces the profit below what is sufficient to compensate the risk. To compensate it compleatly, the common returns ought, over and above the ordinary profits of stock, not only to make up for all occasional losses, but to afford a surplus profit to the adventurers of the same nature with the profit of insurers. But if the common returns were sufficient for all this, bankruptcies would not be more frequent in these than in other trades.[91]

Given Smith's assertion of our systematic overconfidence in our own abilities and our attraction to risk-taking activities, it seems unsurprising

[87] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 122–23.
[88] Smith, *Wealth of Nations*, Bk. I, Chap. x, Pt. 1, 124.
[89] Ibid.
[90] Ibid.
[91] Ibid.

that individuals would be incapable of making clear-eyed decisions about their own prospects for success. But even for choices whose outcomes we acknowledge we have little or no personal control over, "the chance of gain is by every man more or less over-valued, and the chance of loss is by most men under-valued, and by scarce any man, who is in tolerable health and spirits, valued more than it is worth."

As difficult as it may be to calculate the prospective outcomes of life decisions or investments in the here-and-now, imagine how hard it is to foresee the effects of economic decisions that are far off in the future. People discount the future at an unduly steep rate, Smith contends. Individuals are usually the least imperfect decision-makers in their own cases, given that they have the most available information and the right incentives to judge correctly.[92] But it is still the case that we may sometimes need to gainsay their decisions when these involve calculations about the future. Indeed Smith goes further in this case than even Cass Sunstein and Richard Thaler, for whom "nudging" involves only designing a choice architecture conducive to people choosing rightly, rather than as Smith suggests, depriving people of their natural liberty on grounds that they might make bad decisions about matters of momentous long-term significance.[93]

VI. Conclusion: Beyond the Contemporary Behavioral Revolution

If nothing else, these lamentably brief treatments of Bacon, Hobbes, and Smith serve to reveal that the Nobel Prize-winning discoveries of contemporary behavioral psychology are less novel than they might appear at first glance. As we have seen, many of these behavioral quirks were well known to early modern observers of human nature. Even if anecdotal, the neat correspondence between the natural philosophy of the seventeenth and eighteenth centuries and path-breaking work in behavioral psychology and experimental economics offers some independent validation of the more provocative findings of the latter. And yet above and beyond questioning the originality of behavioral economics, the more interesting question to be asked is: What can early modern political thought teach us that contemporary behavioral economics cannot? What do early modern thinkers do differently, or better, than their legatees in today's behavioral revolution?

First, these thinkers seem largely resigned to the permanence of cognitive biases. For all of the transformative optimism of early modern thinkers in other regards, and their vaunted reputation as apostles of "Enlightenment," they held much less hope than contemporary economists—neoclassical or behavioral—about the ability to improve on systematic human biases.

[92] Smith, *Wealth of Nations*, Bk. IV, Chap. II, 478.
[93] Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness* (New York: Penguin, 2009).

Bacon speaks of these errors as "indelible," wrought into human nature itself. Although the findings of contemporary behavioral economics bespeak a similar pessimism about the incorrigibility of cognitive biases, the thrust of much work in behavioral economics seems to be consistent with an impulse to remediate. That is, once these biases are more widely understood, our quirks revealed, then individuals will be less prone to erroneous judgment on the basis of mistaken self-understanding. Even granting the difficulty in overcoming the underlying cognitive biases, policy-makers and planners can nonetheless take advantage of them either by means of "nudging" or a more savvy use of "framing effects." No sooner is a cognitive quirk discovered than it gives way to an impulse to ameliorate or transcend it.

One can hardly fault our early modern predecessors for lack of ambition in wanting to improve upon human fallibility. Hume, Smith, and others indeed speak of "polishing" or "refining" human nature. But it is also striking how their hubris is tempered by a sobering humility about the possibilities of improvement. If remedies are to be found, as Hobbes notes, it is not so much with man as matter as with man as maker, that is to say, by crafting institutions designed to accommodate the underlying flaws and incommodities of human nature. Whether it is Bacon's aphorisms, Smith's political economy, or the "new science of politics" of the American Founders, we seem doomed to work around human fallibility so as to minimize its most egregious errors and incommodities. Unlike for our contemporaries, the goal is not the *summum bonum* of economic rationality and efficient markets but rather avoiding the *summum malum* of disorder and civil war.

The second and related divergence of early modern political thought from contemporary economics—behavioral, neoclassical, or otherwise—is its embrace of a comprehensive notion of *political* economy. Whereas contemporary behavioral economics begins with anomalies of economic life, the stakes of irrational behavior were first and foremost political for the likes of Bacon, Hobbes, and Smith. For them, irrationality yielded not just poor economic decision-making such as paying too much for a television set, imprudently buying a lottery ticket, or going into debt for a worthless law degree. Irrational behavior spelled a dogmatic adherence to untenable ideological principles, failures of social cooperation, catastrophically destructive public policies, and even, at the limits, the collapse of stable governments into civil war.

This insight into the political challenges and dangers of nonrational conduct suggests a way in which economics and politics might intersect that is different than the formula implied by the rational choice approach—a way that seeks to promote a more behavioral understanding of the vagaries of political life. One advocate has contended that the advent of modern rational choice theory has resulted in a reintegration of politics and economics along the lines of the eighteenth century. Of all of rational choice theory's

accomplishments "none is more important than that it has led to a reintegration of politics and economics under a common paradigm and deductive structure," Peter Ordeshook contends.[94] While aspiring to treat political actors as market actors, and vice versa, this kind of synthesis bridges the gap in precisely the *opposite* way envisioned by the early modern thinkers surveyed above. Rather than seeking to introduce the putative rationality of economic man into our understanding of political behavior, as have contemporary advocates of rational choice theory, the legacy of early modern political thought prompts us to see the foibles of political man everywhere.

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[94] Peter Ordeshook, "The Development of Contemporary Political Theory," in *Political Economy: Institutions, Competition, and Representation*, ed. William A. Barnett, Melvin J. Hinich, and Norman Schofield (Cambridge: Cambridge University Press, 1993), 76.