Multi-Level Theory and The Political Economy of Health Behaviors: An Institutionalist Looks at Behavioral Economics

Frederick J. Zimmerman
Professor, Department of Health Policy & Management
Fielding School of Public Health
UCLA

fredzimmerman@ucla.edu

DRAFT – Preliminary and Incomplete (and rough)

September 2, 2014

Abstract — Behavioral economics is a collection of empirical results, without a theoretical framework to tie them together. Nonetheless, a strong heuristic of a two-system brain has been invoked by many behavioral economists to help communicate similarities across studies and implications for practice. This two-system heuristic holds that we make quick, intuitive decisions with a System 1 brain, and careful, deliberative decisions with a System 2 brain. Institutional economics provides a valuable critique and counterpoint to this two-system theory. It argues that our thoughts are built up of cognitive habits and that more sophisticated decisions are constructed from simpler habits. Where two-system theory holds that deliberative decisions must be as rational as available information allows, the institutionalist perspective holds that deliberative decisions can and do inherit biases from basic intuitions. Institutionalism further holds that cognitive habits are not either rational or irrational, but are learned. Because they are learned, they can be either helpful or harmful, depending on the motivations of those who influence our ways of thinking. In behavioral economics, departures from rationality are universal and random quirks. In institutionalism, departures from what might look rational are socially and economically patterned.

Multi-Level Theory and the Political Economy of Health Behaviors: An Institutionalist Looks at Behavioral Economics

1. Two-System Theory

Behavioral economics defines itself by a collection of empirical results. In a recent review of the application of behavioral economics to health, Thomas Rice identifies the lack of a unifying theory as a major challenge facing behavioral economics (Rice, 2013). To the extent that behavioral economics can be said to have any theoretical content at all, it is two-system theory, which claims that our brains employ two distinct kinds of cognition: a System 1 that is intuitive, fast, effortless, and emotional; and a separate System 2 that is reasoning, slow, controlled, and rule-governed (Kahneman, 2003). Two-system theory has its fullest presentation in Daniel Kahneman's book *Thinking Fast and Slow* (2011). Different scholars in the tradition of behavioral economics have slightly different formulations of this brain dichotomy, but the essential dichotomy is always present, either implicitly or explicitly.[1]

An essential part of this cognitive dichotomy is its normative valence: the reflective system makes better decisions than the intuitive system. Some writers explicitly assert that System 2 is rational (Thaler & Sunstein, 2008) while System 1 is not, although Kahneman is too much a psychologist to believe in the chimera of rationality, a concept that he clearly mistrusts. All the same, he writes, "only the slower System 2 can construct thoughts in an orderly series of steps" (Kahneman, 2011). The unmistakable implication of dual-system theory is that whether or not it achieves the cognitive perfection that economists associate with rationality, the reflective System 2 produces better decisions than the impulsive System 1, albeit more slowly and with greater effort. Call it rational, deliberative, reflective, or effortful, there is no mistaking the presumption that System 2 produces the good decisions that elude System 1.

The intuitive system is characterized as one might describe a small child: intuitive, quick-to-judge, impressionable, and prone to systematic errors. For Thaler and Sunstein, "Brain scientists are able to say that the activities of the Automatic System are associated with the oldest parts of the brain, the parts we share with lizards" (Thaler & Sunstein, 2008). The reflective system is clearly the grown-up in this pair: it is reflective, controlled and rule-based, and its job is to "monitor and correct" system 1. "One of the tasks of System 2 is to overcome the impulses of System 1" (Kahneman, 2011, p. 26)

---

[1] The two-system theory of behavioral economics owes a great deal to dual-process theory in psychology, but there are differences. The focus in this chapter is on two-system theory as it has been articulated by various behavioral economists. Some, but not all, of the same critiques would apply to dual-process theory. See, for example, (Frankish, 2010), (Evans, 2008, 2012),(Osman, 2004),(Keren & Schul, 2009).

Seen in this light, behavioral economics only partially replaces rational-choice theory. Its strong empirical results have put paid to the presumption that people behave rationally, but a nub of rationality is retained. The way to incorporate the reality of behavior inconsistent with rational choice has been to divide thinking into two parts: an irrational (or "intuitive") part, and a rational (or at least "reflective") part. As Kahneman puts it, "Theories in behavioral economics have generally retained the basic architecture of the rational model, adding assumptions about cognitive limitations designed to account for specific anomalies" (Kahneman, 2003, p. 1469).

Although some behavioral economists eschew theory altogether, whenever behavioral economics needs a conceptual foundation, it is to two-system theory that it turns. Yet this conceptual foundation has many cracks, and may put the empirical gains of behavioral economics in danger when they come under stress. The three most significant problems are the lack of a conceptualization of growth or development in cognitive processing; the inattention to the process that selects whether System 1 or System 2 is engaged in any given decision; and the strong implication that System 2 produces better decisions than System 1.

Most work in behavioral economics seems to treat the quality of System 1 and System 2 as static and exogenous. The task has almost always been to create a short-term experiment that will manipulate the associations available to System 1, thereby changing behavior. The notion that System 1 can be trained to produce better decisions is recognized in the literature (Kahneman, 2011; Sloman, 1996), but has played almost no role in the empirical work. This failure is a problem, because presumably public-health could benefit from improving System 1 in general, rather than creating choice architectures that nudge System 1 one decision at a time.

The second problem is that no mechanism is specified for how System 2 is triggered. Yet this is perhaps the most interesting process of all, and arguably far more important than the distinction between System 1 and System 2. In describing the advantages of System 2 over System 1, Kahneman cites research by Walter Mischel (Mischel et al., 1989) in which children were asked to wait patiently for cookies. Those who were most successful were able to distract themselves by singing, tapping their hands, or pretending to sleep. Are these actions part of System 1, System 2, or some other system? Nobody knows. If System 2 is in charge of monitoring and correcting System 1, then is it always paying attention? And if so, how do mistakes happen? And for that matter, how can System 2, which is slow, keep up with System 1? How does System 2 even know when System 1 is making a mistake? If System 2 has to wait for System 1 to alert it to a mistake, how can System 1 know that it is about to commit an error? This theoretical failure represents a deep conceptual flaw in two-system theory that is rarely acknowledged, but potentially fatal.

This problem is dealt with imperfectly in the literature. Kahneman reports that, "when System 1 runs into difficulty, it calls on System 2 to support more detailed and specific processing that may solve the problem of the moment," suggesting that it is up to System 1 to know when it is in over its head (Kahneman, 2011, p. 24). Yet at the same time, he writes, "one of the tasks of System 2 is to overcome the impulses of System 1," suggesting that System 2 initiates its own takeover of processing (Kahneman, 2011, p. 26). Elsewhere

he suggests that errors occur not really because of either System 1 or System 2, but because the errors escape the detection of System 2 (Kahneman, 2003, p. 1468).

This conceptual problem creates circular reasoning in two-system theory. System 2 is said to avoid the biases of System 1, but, in the absence of observable differences in the activation of System 1 and System 2, how do we know that System 2 systematically produces better decisions? The answer seems to be that we know of the superiority of System 2 over System 1 because observed better decisions are said to be the outcome of System 2 and mistakes are said to reflect the shortcomings of System 1. For advocates of two-system theory, evidently, saying is believing.

Repeatedly we are warned against the "errors of intuitive judgments" (Kahneman, 2003, p. 1467), and the "quirks of System 1" (Kahneman, 2011, p. 413). These attributes of the two systems are occasionally allowed to adhere to individuals, with unambiguously moral overtones. Describing people who do poorly on a particular cognitive task, Kahneman writes, "....System 2 is weak in these people...they are prone to answer questions with the first idea that comes to mind and unwilling to invest the effort needed to check their intuitions. Individuals who uncritically follow their intuitions about puzzles are also prone to accept other suggestions from System 1. In particular, they are impulsive, impatient, and keen to receive immediate gratification." (Kahneman, 2011, p. 48).

It is this dichotomy that justifies the use of nudges in public policy: a rational, deliberative process among public decision-makers is deployed to come up with ways of harnessing the biases of people's irrational brains in ways that will make those people better off. The justification for libertarian paternalism only works if the effortful decision-making provided by System 2—and employed by public decision-makers—is superior to the intuitive System 1 that influences the decisions of individuals. This assumption should be questioned.

In the end, Kahneman does not in fact seem to really believe in dual-system theory, but is using it only as a heuristic. "System 1 and System 2 are so central to the story I tell in this book that I must make it absolutely clear that they are fictitious characters. Systems 1 and 2 are not systems in the standard sense of entities with interacting aspects or parts. And there is no one part of the brain that either of the systems would call home" (Kahneman, 2011, p. 29). The dual-system model has little to do with dual systems, and instead boils down to the statement that we usually (not always) do better (but still not perfectly) when we pay more attention.

Fair enough. One can certainly understand the need to simplify reality when creating useful theoretical categories. But the way in which these categories are created has important framing effects, as any behavioral economist would have to concede. The question then is what are these framing effects, and how useful are they?

To replace rational-choice with half-rational choice achieves nothing. When pressed, behavioral economists recognize that System 2 makes systematic errors, and that even deliberative thought over decisions with enormous economic consequences not only can go wrong, but can go wrong in systematic ways that can be identified and predicted by behavioral economics—even when the stakes are high (Ariely, 2009).

Yet in this finding, its own frame is working against it. The idea that we have a rational brain and an irrational brain, or even that we have an intuitive System 1 that is watched over and corrected by a reflective System 2, suggests that we will get the big things right. Indeed, if not, the justification for libertarian paternalism falls apart.

While the results of empirical work in behavioral economics suggest that people can make cognitive errors that lead to life-long regret, or that big financial meltdowns are possible, or that we can all commit collective suicide by global warming, the frame says otherwise. System 2 should catch and correct the biases and quirks that would lead to such choices long before the consequences ever become that large. But as the linguist George Lakoff has observed, "When the facts don't fit the frames, the frames are kept and the facts are ignored" (cited in (Romm, 2012)). Two-system theory accordingly destroys the insights created by behavioral economics. There must be a better way.

An important place to start is with the recognition that the brain is immensely sophisticated, and capable of a stunning variety of processes, most of which it does quite well, but rarely perfectly. There are patterns to these imperfections, but these patterns do not suggest in any way that some parts of the brain or some cognitive processes produce fewer mistakes than others. If two-system theory is retained at all, it must be with the recognition that both System 1 and System 2 are capable of surprising achievements and systematic biases. There is no quality difference between the two systems.

2. Habit, Custom, and Power

An alternative theory turns away from the economist's preoccupation with rationality toward an older psychological and institutionalist theory of instinct, habit, custom and power. In this theory, thought is more like language than like math: whereas math is algorithmic, thought, like language, builds on itself. At any point in time decisions can be good or bad, but they change—usually for the better—over time. The brain learns.

At stake are small decisions such as the placement of vegetables at lunch or the decision to offer chocolate milk in schools, and much larger decisions, such as those involving campaign finance and the nature of democracy itself.

This alternative theoretical paradigm offers a much stronger foundation for the contributions of behavioral economics than does the two-system paradigm. It is based on the notion that the brain learns both from experience and from others. This learning brain does a good job with decisions it has seen before, especially if it has experienced the consequences of those decisions. It can also do reasonably well with decisions that others in its social group have seen before. It tends to do poorly with novel decisions, and it can be tricked.

This alternative, called "multi-level theory", is inspired by a long literature in institutional economics, and has been presented in some depth previously (Frederick J Zimmerman, 2013); it will be described only briefly here. Multi-level theory holds that we have one brain, not two. This brain works using cognitive habits, built up one on another. Thought

is inherently social, and fundamentally emotional. Custom is the social manifestation of cognitive habits in the form of shared values, heuristics, and conceptual categories. Custom is a storage-bank of ways of thinking that have proven beneficial to our forebears and will be passed along to our progeny. Customs, and with them the individual cognitive habits that constitute custom, evolve over time in response to selective pressure to improve. In making decisions based upon the cognitive habits we've inherited from others, we are able to achieve an optimality that our own limited rationality would not achieve.

Each of these concepts will be briefly clarified in turn.

Habit

Work in behavioral economics has led to widespread acceptance that people are cognitive misers, extensively using convenient and unconscious heuristics such as rules of thumb or following the examples of others to make conscious decisions. In this sense, behavioral economics sketches out a view of rationality that is consistent with the prior insights of institutional economics: chunks of rationality make sense internally, and these chunks are used by analogy in novel situations, with varying degrees of success. While individuals do not directly engage in utility maximization, social structures have evolved a set of behavioral and cognitive patterns—or habits of mind—that typically serve the ends of individual decision-making very well. These habits of mind, including heuristics, rules of thumb, cognitive frames, social references, and so on, do not involve any direct utility maximization, but are quasi-rational or idiomatically rational in the sense that on average they produce choices that closely approximate those that would arise from individual utility maximization.

While the interpretive emphasis in the empirical behavioral economics literature has been on departures from the predictions of individual, rational-choice models, a reading of behavioral economists such as Herbert Simon, Gerd Gigerenzer, Daniel Ariely, and others shows that this idiomatic, quasi-rational decision making in fact performs surprisingly well. Heuristics are not mistakes or even cognitive shortcuts; they are the building blocks of thought itself. So far from separating thought into intuitive and reflective parts, the learning-brain paradigm recognizes that deliberation is mostly unconscious and that "Reason, even in its most abstract form, makes use of, rather than transcends, our animal nature" (Lakoff & Johnson, 1999).

The role of cognitive habits has a long tradition in psychology, meriting a chapter in William James' Principles of Psychology (James, 1890 [reprinted 2007]). The institutional economist Thorstein Veblen wrote extensively about habits of mind (Twomey, 1998), and the related concept of habitus is an essential component of Bourdieu's social theory (Bourdieu, 1992).

For these authors, habit means a full sequence of thoughts or actions that can be triggered by a single stimulus, and that, once triggered, continues to the end (Neal et al., 2006). The essential element of habit is accordingly not repetition, but cohesion. A habit is a group of thoughts or actions that hang together, not a single action that is repeated.

Each habit has both a trigger and a sequence of cognitions. Habits are productive in that the triggers can become more nuanced and the sequences longer and more refined with experience. Since brain activity is valuable, the chunking together of discrete cognitions into a cognitive habit represents efficiency in behavior and decision-making (Desrochers et al., 2010; Wood et al., 2002). An individual deciding how to cook Brussels sprouts for dinner relies on cognitive habits for these decisions. With practice, the cooking of the Brussels both becomes easier and produces better results. With feedback decisions are made more competently and with less thought over time. A rational cook would cook the dish exactly the same way every time (perfectly from the beginning), and with exactly the same cognitive effort. By definition, the rational cook would be cognitively engaged and deliberative about all the decisions in the kitchen. In contrast the learning brain learns to improve its cooking. It is—perhaps ironically—precisely the creature of habit who learns, whose habits can become more efficient over time.

The role of learning is one of the major differences between the cognitive-habits model and the rational-choice model. The rational-choice model assumes that people are "lightning calculators" (Twomey, 1998), with a memory and decision rule. Two-system theory supposes that people are lightning calculators…with imperfections. Or that they are lightning decision-makers and perfect calculators, but not at the same time. By contrast, the cognitive-habits model assumes that people improve through trial and error.

One advantage of conceiving the brain as a learning brain rather than as a rational brain or a half-rational brain, is that the learning-brain paradigm places thought itself into the explanatory frame. Not only decisions, but also thought, can be more or less successful, that is to say, more or less suited to the environment and problems that face it.

Words like "social determinants", "confounding" or "elasticity" have particular meanings to the specialists who understand them, and these meanings are cognitive habits: complex chains of cognitions, like, "the percent change in a dependent variable that is caused by a percent change in an independent variable" that are triggered by a single word, like "elasticity." Heuristics are like sub-routines that save us a lot of verbiage—and conscious thought. But of course, it takes a long time to develop a cognitive habit like "elasticity" and it is worth it only if one is regularly facing situations that call for it. Expertise is accordingly the development of a large number of cognitive habits related around a theme.

Expertise can also delete the imperfect cognitive habits used by others. To an expert in land rights in Africa—who understands that there are separate rights to use, abuse, rent, buy, bequeath, pledge, lend, take from, or modify land—the term "private property" has no meaning: it is just too vague to be useful anymore. Ask a land-tenure expert whether "private property" promotes economic development and you'll get a blank stare. But ask a non-expert the same question, and you're likely to get a woefully confident answer.

The paradigm of the learning brain accordingly provides a very different understanding of some of the core empirical findings of behavioral economics than does the paradigm of two systems. In an often-cited experiment (Frederick, 2005) participants were told that a bat and ball together cost $1.10 and that the bat cost $1.00 more than the ball. They were invited to report how much the ball cost. The answers tend to be bimodal, with many people providing the intuitive, but incorrect, answer that the ball costs 10¢, while others

provide the correct answer that the ball costs 5¢. Very few people provide any other answer. Proponents of two-system theory suggest that these results illustrate the existence of separate intuitive and reflective cognitive processes. Yet two-system theory provides no explanation for how these different answers arise, other than to appeal to the black box of attentional control. The learning-brain theory, by contrast, provides a clear explanation: most people have a cognitive habit already that \$1.10-\$1.00=\$0.10. Those with more expertise have more sophisticated cognitive habits to the effect that the problem is to find the value of *x* in a situation where (*x*+\$1.00) + *x* = \$1.10.

The experimental results showed that students at MIT answered this question correctly far more often than students at less illustrious universities (Frederick, 2005). Why is that? Two-system theory suggests that MIT students were better at suppressing the impulse to answer with the intuitive, but incorrect answer. That is to say, students at MIT have better self-control. The learning-brain theory suggests that MIT students have learned more math than students at the other universities. There may be any number of reasons why the MIT students have more sophisticated cognitive habits around math at a similar age than the other students, including native intelligence, opportunity, the quality of their schools, a particular interest in math, or even self-control. But the two-system theory offers only the self-control explanation.

It should now be clear that the frame one uses to understand the empirical results of behavioral economics has extremely meaningful implications for public policy and political discourse. Two-system theory suggests that MIT students, having greater self-control, are able to make more rational decisions and in that sense are inherently superior morally and intellectually to others. Learning-brain theory suggests that MIT students may be intellectually or morally superior, *or* they may have had more opportunities. There is a world of difference between these two frames.

Cognitive habits are like subroutines that make all complex and abstract thought possible: "the 95 percent below the surface of conscious awareness shapes and structures all conscious thought" (Lakoff & Johnson, 1999). However, because cognitive habits are built up, one upon another, in ever more complex and sophisticated chains, an incorrect or unproductive cognitive habit at a basic level can taint all the other cognitive habits of which it is a part. If one believes instinctively that 2+2=5, one can never get the right answer for questions like 27+24. It is therefore important to understand how cognitive habits develop and change, and what disciplining process makes them more likely to be helpful than harmful.

Evolution

The learning brain learns from experience. Cognitive habits that trigger unpleasant consequences are discarded while those that trigger fun and joy are retained. While a habit is not a compulsion, a habit is reinforced and strengthened by repetition. The emotional consequence of the chain of cognitions is a part of the habit itself. While in many cases this emotional reinforcement is internal, in other cases there is no obvious emotional return from a given chain of cognitions (2+2=4). For these kinds of cognitive

habits—where the benefit of the cognitive habit is not obvious and immediate—we learn from others.[2]

Cognitive habits exist in the brain (Frederick J Zimmerman, 2013), but they also have a social manifestation. At the social level, cognitive habits are called custom, and include norms, common assumptions, shared values, metaphors, language and law. To an institutionalist, the social incarnations of habits are institutions.

Cognitive habits on their own are not subject to the constraints of logic. One can adamantly oppose government deficits and equally vigorously oppose tax increases and spending reductions. One can go broke saving money on large purchases. Although they are not subject to logic, cognitive habits are subject to an equally rigorous discipline—that of selective pressure. The development of cognitive habits, as well as their refinement, pruning, and alteration, occurs through evolution, a process that involves variation in habits, selective pressure, and replication (Cosmides & Tooby, 1994; Stoelhorst, 2008).

Part of the feedback process in this evolution relies on one's own assessment of the value of a habit, and is one important way in which habits are trimmed, modified, expanded, and reproduced. Habits that are useful get used, and therefore are reinforced. Habits that are not useful fall into disuse and in time are forgotten. Painful habits are actively extinguished.

Selective pressure is exerted by friends, family, co-workers, and strangers who either punish or reward actions and who either reinforce or dissipate mental associations. This pressure can be wholesome or hurtful. Parents who consistently say "no" to sugary snacks before dinner extinguish over time children's habit of asking for them. On the other hand, children who bring raisins as dessert in their school lunches may find that their peers make fun of their dessert.

Habits of mind are offered to us by our social environment as the bequest of previous generations. They are a bank of wisdom, deposits of common sense and discoveries that were earned by the toil and experience of those who lived long ago (Hodgson, 2004). Eggplant, fava beans, tapioca, and mushrooms—all foolhardy risks long ago—are ours only because of the legacy of habits of preparation.

When it works properly, the evolution of cognitive habits reveals the collective and historical wisdom of a social group, not only about methods and procedures, but also about what has value (Stoelhorst, 2008). In this sense, rationality is collective, not individual (Bromley, 2006). Over time, the flow of selective pressure smoothens out the rough edges of our imperfect thinking. It is selective pressure that can make of individually predictable irrationality more optimal social custom.

A recent agent-based simulation model by Geoffrey Hodgson and Thorbjørn Knudsen (Hodgson & Knudsen, 2004) shows the promise of this approach, as well as the value of cognitive habit and social custom in individual decision-making. They simulate the

[2] Sloman (1996) makes the distinction between learning from experience and learning from others a primary distinction in his two-process theory of cognition.

evolution of the custom of driving on a particular side of the road in an environment of 40 agents driving around a ring road, half going in each direction. The agents begin by driving on either the left or right side of the road and then choose whether to change sides as they see oncoming traffic, hoping to avoid collision. As the simulation proceeds, agents develop a history of tending to drive on the right or the left. A parameter set exogenously at the beginning specifies how much weight they attach to their personal history—to what extent drivers are set in their ways. This parameter turns out to matter a great deal to both personal and collective outcomes of the system. Gradually a custom emerges to drive on either the right or the left. For a wide range of parameter values in the model, the importance agents attach to habit significantly improves the speed at which the agents collectively coalesce around a particular custom. What is more, the strength of habit is the single most important parameter to the efficiency of the system as a whole. While other parameters—such as desire to avoid hitting other cars or the distance ahead that a drive can see—were strong predictors of individuals avoiding harm, only habit had a strong influence on how rapidly the system as a whole converges to a solution. This research suggests that a paradigm of the learning brain, built upon cognitive habits, can provide a strong foundation for rigorous simulation modeling, and that important insights may emerge when it does. To date, such rigorous modeling has not been possible with two-system theory.

But while cognitive habits may improve outcomes for both individuals and systems, they need not always do so. Just as prices can be distorted, perverting the social optima of rational-choice models, so can the evolution of cognitive habits. Because our cognitive habits are so susceptible to influence, it is useful to understand how we can be led away from optimality by those with the power to do so.

Power

People loath thinking about power. The powerful prefer the sources of their power to be invisible, or, if visible, conferred by the magic of the market, or ordained by God. The powerless prefer not to see themselves as subject to forces beyond their control, and in any event are in no position to rock the boat. Neither side cares to dwell on what might have been. Changing power relations is immensely difficult and can go badly awry, often making everyone worse off. For all of these reasons, a case can be made for taking existing power relations as given. Yet the social progress we value most has always come by spreading power more broadly, whether in expanding civil rights in the middle- and late-20th Century, expanding access to higher education after WWII, extending the franchise to women at the beginning of the 20th Century, or through limiting the role of government in the economy in the 17th and 18th Century. While the powerful try always to consolidate and enhance their power, social progress comes from diffusing power.

In public health the discussion of power is particularly important. As Nancy Krieger has written, "a society's economic, political, and social relationships affect both how people live and their ecologic context, and, in doing so, shape patterns of disease distribution" (Krieger, 2008). Yet notwithstanding its obvious importance for population health outcomes, there are no CDC or NIH funding mechanisms for the study of power, and little emphasis on the role of power in public health. Instead, there are a handful of scholars

who explicitly recognize the importance of power, treading water in a vast ocean of research that is methodologically individualistic and that takes power relationships as given. Why might this be? Why should one of the most important determinants of health receive so little attention? Perhaps one answer is that power is seen as too vague a concept to permit rigorous theoretical attention or quantitative empirical analysis. That need not be so.

An excellent overview of power is in Steven Lukes' *Power: A Radical View* (Lukes, 2004). This book stresses that power is a capacity, which must be understood distinct from its results. A powerful person is still powerful, even if he fails to achieve his goals. Power can accordingly be defined as the capacity to cause pain or pleasure in others at relatively little cost to oneself.

Lukes identifies three faces, or dimensions of power. These are not distinct types of power, but rather three ways of understanding power. They are direct power, agenda-setting power and power over ideas, or framing power.

Direct power is the capacity to directly hurt or help others and—in a sense—to get away with it.

Agenda-setting power is the capacity to keep items on or off the table for discussion. In the recent debate over improving health insurance coverage that resulted in the Affordable Care Act, the health insurance lobby was able to put a single-payer plan off the table.

In public health, this kind of power has been deployed to devastating effect. When a patient-outcomes research project determined that certain commonly-used surgical procedures are ineffective for back pain, a group of orthopedic surgeons successfully lobbied to slash funding for the Agency for Healthcare Research and Quality, which had funded the research (Deyo et al., 1997; Rosenstock & Lee, 2002). Since then, any attempts to use the science of effectiveness to limit reimbursement to only procedures that actually work have been—first *de facto* and now *de jure*—off-limits (Neumann & Weinstein, 2010).

Framing power is the capacity to make the outlandish seem reasonable and the unappealing seem desirable. Framing power derives from the quality and quantity of rhetoric. MLK's power came not from his evocation of civil rights or equality for African-Americans. These ideas were already mainstream. His power came from his insistence that equality meant that tired African-Americans should sleep in any hotel of their choosing, that African-Americans should sit next to Whites on buses, and that Black and White children should attend school side by side, and from his refusal to believe that "the bank of justice is bankrupt." Those ideas were outlandish before King—almost as much in the North as in the South—but came to be seen as reasonable as people listened to King's rhetoric. That is framing power: it is power over the way we think.

Not so long ago it would have seemed outrageous to consume a large soda with every meal; now it is commonplace. This shift did not happen because a rational population suddenly came to believe they were better off drinking soda than water or milk. Nor did it come about because of a sudden surge in System 1 thinking. It came about because

technological changes led to greater power for food over our cognitive habits (Frederick J. Zimmerman, 2011).

Because the learning brain learns not only from its own experience but also from others, it is susceptible to learning the wrong lessons. In a sense, access to our cognitive habits is non-excludable: anyone can influence our cognitive habits. While this insight is a core empirical finding of behavioral economics, it has not been placed in a theoretical context by behavioral economics. The role of power is accordingly documented empirically over and over, but the implications of power are whitewashed. Moreover, behavioral economics has illuminated the role of power over our behavior, while paying far less attention to the role of power over thought itself, a task that has been left to cognitive linguists. Power resides in discourse (Kesting, 1998).

In all of these dimensions, power operates on the evolution of cognitive habits in ways that matter profoundly for ways of thinking about public policy and by extension for public health. One example shows how. One of the primary social determinants of health is the extent to which governments are willing to invest in spending on early childhood interventions, education, income support, public health, and low-income healthcare. Yet all of these expenditures have been stagnant or even trending downward for decades. One reason is the pervasive belief that taxes are too high. Yet taxes as a percentage of the economy are both lower than in any other OECD country and lower than they've been in the US in 4 decades. Paul Krugman notes on his blog that he regularly receives mail accusing him of being communist and anti-American for arguing for higher taxes, yet as he points out, high taxes on the wealthy were invented in America, and were explicitly accepted as a means of keeping the rich from getting richer (Krugman, 2014). The evaporation of the social consensus around high taxes did not happen by accident, but was actively promoted by the wealthy—with adverse affects for population health.

All the same it is unfashionable to speak of power, and that fact itself is a frame, a heuristic, or a cognitive habit that has not arisen by accident. It's useful to hide power, which can be accomplished by defining it in such a way as to make most kinds of power invisible—an example of the agenda-setting dimension of power. Two-system theory, in endorsing a rational brain (or even rational people) separate from an impulsive brain (or from impulsive people) participates in this veiling of power.

Lukes (2004) cites the example of Indian widows in terrible health, or Indian wives subjected to domestic violence, who "lacked any sense of being wronged" and saw their suffering as "natural and normal". He identifies such attitudes as the outcome of "lifelong socialization and absence of information." This way of thinking of their own status is not a quirk, and has nothing to do with System 1 or System 2 thinking. Instead, these ways of thinking are reinforced through the selective pressure operating in the interests of the powerful. An evolutionary perspective is quite helpful here: preferences can be both adaptive in that they help individual people in the short run to avoid useless struggle, but at the same time be damaging to that class of people and their interests overall (Laajaj, 2012).

Instead of two ways of thinking, one impulsive and one rational, we have one cognitive function, but it learns. The brain can learn from experience or from others, and when it

learns from others, these others can prioritize learning that will help the learner or learning that will help the teacher. Power distorts the ways of thinking that underlie all thought. Where there are low-quality decisions, there are often power-imbalances.

The differences between two-system theory and the learning brain can be described in terms of the systematic mistakes of thinking: In two-system theory, these mistakes are predictable biases, randomly distributed in the population, or perhaps along the lines of innate differences in self-control. In the learning-brain paradigm of multi-level theory, mistakes in thinking are distributed along lines of social and economic power imbalances.

Although nudging such behaviors back into place can be useful, a more effective public health would document, quantify, and reverse the power imbalances that shape unhealthy cognitive habits in the first place.

Having put forward an alternative paradigm, a case study of sugared milk in the Santa Monica School District is presented to illustrate the differences in the two theoretical frames of decision-making.

3. Milk: A Case Study

Public health is the creation of social conditions in which people can choose to be healthy. Fulfilling this mandate ethically requires that decisions made in the public's interest be as close to optimal as possible. The observation that highly deliberative processes can produce suboptimal or even downright harmful decisions is therefore an exceptionally important observation for public health.

We have the automobile to thank for skim milk.

In the first half of the Twentieth Century, skim milk was a troublesome waste by-product of butter production (Smith-Howard, 2013). It was poured into the streams in rural areas around dairies, emitting a foul smell, soiling streams and spoiling the pristine landscape. Although unpleasant to rural inhabitants, the disposal of skim milk into waterways became a major marketing problem only when urban automobilists began to come to rural areas on their Sunday drives. Suddenly the noxious and disgusting sight of milky streams threatened milk's reputation as clean and wholesome. Something had to be done. After World War II, milk marketers discovered that they could sell previously useless skim milk by marketing it as a weight-loss wonder. Though no shred of scientific evidence ever existed to support this marketing claim, it seemed intuitive that a product that had much of its fat removed would help remove fat from those who consumed it. Call this belief an intuition arising from System 1 or a belief based on the simple cognitive habit that equates dietary fat with body fat.

Having discovered a useful marketing heuristic, the dairy industry pushed it as far as it could. Given the dairy industry's image of wholesomeness—the milk of human kindness and motherhood all wrapped up in a clean, white package—this was pretty far. In 1985 the USDA officially endorsed skim milk for the first time, and by 1988 low-fat and skim-milk sales exceeded whole milk for the first time (Green, 2013). Over time, the public

health community has aggressively supported the dairy industry in its insistence on skim milk, steadily removing first whole milk and then 2% milk from dietary recommendations, public institutions, and—especially—schools.

Notwithstanding the consistency of these recommendations, there is no evidence that switching from whole milk to reduced-fat milk prevents obesity, and some evidence to the contrary (Barba et al., 2005; Scharf et al., 2013). Public health has developed a harmful custom—a dangerous, collectively held cognitive habit—not because of its own experience or analysis, but because the power of an interested party. Along the way, dietary recommendations have been subjected to tremendous expert deliberation. Surely it is not possible to develop expert recommendations without employing System 2.

The history of milk recommendations provides a useful test of two-system theory. If System 2 produces better decisions than System 1, then recommendations should be rational: they should withstand the test of time, and get better, not worse. Recommendations can change with new evidence, but in the absence of new evidence they should not change: a rational decision is rational for all time. However, if on the other hand, deliberation is built upon heuristics that may be faulty and are subject to the meddling of powerful outsiders, then recommendations will shift with the prevailing winds of power. With recommendations shifting markedly over the decades away from whole milk and toward ever lower-fat milk, this history provides strong evidence against two-system theory. Instead, the effortful deliberations that have produced these changing recommendations have increasingly relied on the simple heuristic that dietary fat=body fat, a heuristic consistently reinforced by a dairy industry keen to take the fat out of milk so that it could be sold separately as butter and cheese.

Of course, a more sophisticated heuristic recognizes that it is energy balance that determines weight gain, not dietary fat per se. This heuristic might argue that low-fat milk could be justified because it has lower caloric content. Yet this heuristic, too, is misguided. Both fat and sugar promote palatability, and foods that have neither fat nor sugar nor salt are unlikely to be palatable on their own, especially for children (Drewnowski, 1998). Skim milk and 1% are indeed unpalatable to children, so although the choice is often presented as whole milk vs. unflavored low-fat milk, in fact when presented with this choice children choose neither, which is part of the reason that milk consumption has been declining in the US and is regarded as inadequate (Dietary Guidelines Advisory Committee, 2010). Instead, it has been necessary to increase the palatability of low-fat milk by adding sugar. Now the choice is between whole milk and flavored low-fat milk. Flavored 1% milk has about the same number of calories as unflavored whole milk and flavored 2% has more (Dietary Guidelines Advisory Committee, 2010). In its drive to reduce obesity, the public health community has in effect promoted higher caloric intake.

This own-goal cannot be ascribed to System 1, and the dichotomy between the two systems is not helpful in understanding how it could arise. Multi-level theory, with its emphasis on habit, custom, and power, provides a stronger theoretical frame for directing efforts to improve policy-making and avoiding mistakes.

The Santa Monica School Board was motivated by a desire to sustain the calcium intake of its students. Although its process was clearly effortful and deliberative, it was also shot through with bias. The Board relied, for example, on evidence that removing the sugar from milk would reduce milk consumption. Yet the only studies showing a link between flavored milk consumption and total milk intake were funded by Dairy groups (Frary et al., 2004; Murphy et al., 2008). It may have been responding to perceived differences of opinion among parents, but while over 1,000 parents signed a petition to remove flavored milk, those arguing in favor of retaining milk were largely outside experts—but not independent ones. In a subsequent press release the dairy lobby later boasted of defeating the Santa Monica initiative through an astroturf campaign, stating, with no apparent sense of irony, "Dairy Council launched a proactive grassroots effort" to persuade school districts to retain flavored milk (Dairy Council of California, 2012). Finally, the Board may have believed it was protecting the freedom of students in rejecting a ban on flavored milk. Yet although the language of a ban was frequently invoked, this was no ban akin to a weapons ban or a ban on bullying: students would have been free to bring any beverage they chose. The language of banning, while inaccurate, serves the purpose of casting those who urged the schools to stop selling sugared milk as coercive. The hysterical opposition to Michelle Obama's food plate is part of the same irrational fear, and it participates in the same frame of government nutrition advice as coercive overreach.

By 2013 there was a growing scientific consensus that recommendations to replace whole milk with skim milk—sugared or not—were at variance with the evidence and likely do more harm than good, and that sugared milk in particular should be avoided (Ludwig & Willett, 2013). This consensus is exactly the opposite of both current USDA recommendations (Dietary Guidelines Advisory Committee, 2010) and the decision reached by the Santa Monica School Board.

But what makes this story particularly bemusing is that parents and the School Board were vigorously disputing the wrong issue. Instead of debating whether kids will drink less milk if sugary milk is replaced by unsugared skim milk or whether a teaspoon a sugar a day will make kids obese, they should have focused on the goal of improving bone health and how to educate children's palates for a lifetime of healthy eating. This issue switch has tremendous implications for the use of behavioral economics in public health and for libertarian paternalism in general.

The idea that parents who care about their children might improve their behavior when given new information was not a concern of the School District. Although it claimed that its primary purpose in retaining sugared milk was to maintain the calcium intake of students, the School Administration never bothered to inform parents of the importance of calcium in their children's diets. The whole debate over sugared milk would have been the ideal time to mention the importance of dairy in the diet. And indeed, two members of the School Board suggested an educational campaign. But when the District's new policy was rolled out, education had no part of it. That any authority would try to encourage milk consumption by adding sugar to milk without ever troubling to inform people of the value of milk to health is surprising. That a deliberative body whose mandate is to educate children would forget to do so is stunning. But frames are powerful things.

There is a final irony. Two recent scientific reviews have found that the relationship between dietary calcium intake and bone health is slim to nonexistent (Lanou et al., 2005; Winzenberg et al., 2006). The justification for fostering milk consumption in children itself rests on a faulty heuristic: that because milk contains calcium, and because bone density relies on calcium in the bones, dietary calcium must promote bone density. At heart, this heuristic is little different than the Medieval belief that because walnuts resemble brains, walnuts must promote intelligence.

The problem with two-system theory is not so much that there are two different cognitive processes, one intuitive and one deliberative. That much is, well, intuitive. The problem is that in its formulation in both behavioral economics and in the popular imagination these two processes are distinct—they are alternative strategies for solving similar problems—and that one system produces better decisions than the other. This is a powerful heuristic, that we have two brains, a good, but slow one and a bad, but fast one. Instead, the learning brain paradigm of institutional economics argues that we have one brain and that conscious, deliberative thinking is built up of unconscious, intuitive habits of mind. Accordingly, deliberative thought is not better than intuitive thought; it inherits all of its biases. There is a real danger that libertarian paternalism will make us worse off.

4. Framing and Population Health

A cognitive frame is "a spatial and temporal bonding of a set of interactive messages" (Bateson, 1972) that serves the purpose of organizing information into a coherent package to make it meaningful (Ortiz, 2013). Behavioral economists have written extensively about framing effects. For example, it is well known that people fear losses more than they crave gains, and the effect has been estimated as high as 2:1—that is, people will forgo a gain of $20 to avoid a potential loss of $10 (Rice, 2013). Research on framing effects has revealed that loss-avoidance can be triggered not just by the reality of potential losses, but also by foregrounding potential losses in the way a question is framed.

The effects of framing extend to highly consequential decisions in areas in which people have expertise and make deliberative decisions. In a well-known experiment, physicians—thinking consciously about issues in their area of expertise—are more likely to recommend an operation if "90 out of 100 are alive" than "10 out of 100 are dead" (Tversky & Kahneman, 1981).

A frame is a cognitive habit in action. The purpose of framing is to set up a decision problem in such a way as to make a particular cue, or trigger, particularly salient, so that it will trigger a particular kind of cognitive habit. For example, physicians have adopted the cognitive habit of "First, do no harm." Accordingly a problem that is phrased in such a way so as to make the possibility of harm especially salient will elicit decisions that focus on avoiding harm. Physicians will avoid a scenario in which "10 out of 100 are dead." But the same problem presented in a way in which the harm is not salient will not trigger the cognitive habit of "First, do no harm," and will encourage decisions that result in "90 out of 100 alive."

Loss framing is one type of framing that has been extensively studied, but it is not the only type of framing. In these analyses, it is the relative riskiness of a choice—potential future gains or losses of one option vs another—whose framing is being manipulated. It is also possible to use framing to alter perceptions of the attributes of a choice on its own (Levin et al., 2002; Levin et al., 1998). For example, college students were more likely to recommend a medical procedure to others that "was 50% effective" than if it had "a 50% failure rate" (Levin et al., 1988). Similarly, a study of the willingness-to-pay for a cancer screen was higher when the result was expressed in terms of cancers found than when it was expressed as cancers missed (Howard & Salkeld, 2009).

Many of the behavioral interventions of behavioral economics applied to public health are in fact framing interventions. For example, a stoplight system to influence food choice (see Riis chapter in Roberto/Kawachi book) sets up a particular cognitive habit—that of stopping when cued with red and moving ahead when cued with green—that is universal and automatic. Guidelines on healthy eating and active living (see Block chapter) not only provide information, but set up a frame in which behavior can be guided by a user's manual, as if active living is like assembling a piece of Ikea furniture. Conditional cash transfers seem to work even when the cash incentive is very low compared to the economic benefits involved. In these examples, the interventions work by highlighting the salience of a payment within an incentive frame.

Framing and Thought

While much of the work on framing in health has focused on behavior, an important emerging literature recognizes that how we think about public health and policy is sensitive to the way issues are framed (Dorfman et al., 2005). This work responds to work in political science and linguistics, which have identified a distinction between episodic framing—the framing of a human-interest story, in which an issue is presented in the context of its particulars—and thematic framing—the framing of social science, in which general rules and patterns are presented. Analyses of framing have shown that the popular media presents social problems like poverty, crime, and poor health, in episodic frames (Gitlin, 1980; Iyengar, 1994). Individual people are portrayed with their individual problems being the result of their individual. Not surprisingly, this framing makes it difficult for the public to embrace policies that redress the structural barriers that shape people's choices.

The ability to engage in abstract thinking accordingly profoundly affects judgment and behavior. Several recent presidents seem to have been largely incapable of abstract reasoning. Ron Reagan junior has said of his father, "Tenderhearted and sentimental in his personal dealings, he could nonetheless have difficulties extending his sympathies to abstract classes of people" (Matthews, 2013). When President Reagan was told about how his cutbacks in social spending would cause hardship for individual people, he would respond with great kindness and direct a staffer to solve the person's problem. But he could never understand the connection between the personal story and the larger policy. As one journalist wrote, "While Reagan could be made to take interest in, and even genuinely seem to care about a particular situation, he remained unmoved if the same hardship story was multiplied into a million similar ones" (Matthews, 2013, p. 127).

Two-system theory, which holds that processes governing emotion and reflection are inherently separate and exogenous, misses important public-health opportunities—beginning, but not ending with Social Cognitive Theory—that leverage the interactions between emotion and reflection.

This connection can also lead to serious public health problems, as when Andrew Wakefield was able to bottle a toxic stew of fear, misinformation, and Cherie Blair to sell the canard that the measles, mumps and rubella vaccine causes autism (Goldacre, 2010). The point here is not that people act irrationally when they are afraid, it's that fear is surprisingly easy to create.

As Ben Goldacre so aptly puts it, "Without anybody's noticing it, bullshit has become an extremely important public health issue" (Goldacre, 2010).

Frames clearly have enormous importance to public health. As public health begins to embrace behavioral economics more warmly, it is essential to do so in the right frame of mind. A two-system frame of decision-making that opposes a rational brain to an irrational one—or worse, rational people to irrational people—will reify the individual, personal-responsibility frame, albeit with some indulgence. A learning-brain frame is more consistent with the historical mission of public health.

5. What Does a New Paradigm Have to Offer?

While behavior economics has pointed to quirks and biases, institutionalist history suggests that these biases are socially and economically patterned through inequalities in the distribution of power. It is no accident that low-income and minority borrowers were the most likely to fall prey to manipulative mortgages, or that low-income minority neighborhoods have roughly twice as much advertising as low-income white neighborhoods (and 50% more for obesigenic food) (Yancey et al., 2009). For two-systems theory, such differences are uninteresting; for rational-choice theorists they can only be about selection; for multi-level theory they are at least in part about exploitation.

One of the most interesting features of behavioral economics is how the specter of exploitation is always present, but never fully engaged. Exploitation could be defined as using the insights of behavioral economics to structure context of choice so that the outcomes of the choice will benefit the structurer at the expense of the chooser. Senior citizens dislike the structure of Medicare Part D plans, and with good reason. The number of plans is so confusing to seniors that once they have a plan they stick to it rather than braving the thicket of options to choose again. Although it has been estimated that 43% of seniors would benefit from switching plans, less than 10% do so (Rice & Cummings, 2010). The cost to non-switchers has been estimated at $500 per beneficiary per year. If libertarian paternalism is possible then—necessarily—so is exploitation.

In *Nudge* Sunstein and Thaler refer to the possibility of exploitation again and again. "...markets often give companies a strong incentive to cater to (and profit from) human

frailties, rather than to try to eradicate them or to minimize their effects." "The opportunity to fleece customers is valuable," they note, and remind us that African Americans, low-income Americans, and poorly-educated Americans paid hundreds, and even thousands of dollars more for their mortgages than well-educated and White Americans, even controlling for credit risk. The central questions of choice architecture are: Who uses? Who chooses? Who pays? Who profits? (Thaler & Sunstein, 2008 p. 99)

The only meaningful response to the possibility of exploitation is to place strict limits on the power of those who would engage in the exploitation. But more muscular regulation is not on Sunstein and Thaler's agenda. Instead, they commit to libertarian paternalism, suggesting, for example, that a good fix for the potential for abuse in mortgage lending would be to provide clearer information about interest rates in teaser-rate mortgages. That seems like a sensible, libertarian-paternalist alternative to regulatory restriction of such mortgages. And it is, at the individual level. But at a market-level, this proposal won't work. If teaser-rate mortgages save money for every borrower who takes one out instead of a standard fixed-rate mortgage, the banks would lose money, and the mortgages would not be offered. If they are offered, it can only be the case that more borrowers lose than gain. The market for teaser-rate mortgages can accordingly only be a gamble, in which the house (the bank) takes a large cut. If borrowers on the whole had information about whether they would need the mortgage beyond the initial period, then the banks would not make money. If borrowers do not have such information, then in the best-case scenario they are simply gambling, and in the worst-case scenario their cognitive failings—of overconfidence, of trust in their relationship with their bank, of innumeracy—are being exploited. Whatever happened to Who pays and who profits?

The characterization of nudging as libertarian paternalism reads like an attempt to invoke a cognitive frame that may evoke sympathy in a population tired of stark left-right political divides (Bonell et al., 2011). Yet nudging is clearly not libertarian (Hausman & Welch, 2010), and neither is it necessarily paternalistic, in the sense of being in the nudgee's best interest. Instead, nudging is an example of the use of power to influence the thinking and decisions of others. This process is not inherently bad, but it must not be given a free pass from careful ethical review.

6. The Stakes for Public Health

Most experts agree that about 5-6% of children across all societies suffer from an organic disorder of executive function that causes symptoms of attention-deficit and hyperactivity disorder. Yet in the United States, 11% of children have been diagnosed with ADHD, and 70% of these take prescription medication for it (Hinshaw & Scheffler, 2014). The disjuncture between underlying need and diagnosis and prescription may seem odd, but it is explained in large part by an increase in diagnoses since the early 1990s, driven primarily by a huge increase in marketing (Schwarz, 2013). In the 10 years following 1993, sales of ADHD medication in the US tripled in real terms (Scheffler et al., 2007), and have more than tripled again since then (Schwarz, 2013). While there was once a consensus that ADHD involved both under-treatment and over-treatment, a consensus is now emerging that significant over-treatment is happening (Schwarz, 2013).

Medicating children is one of the most important health-related decisions that both physicians and parents undertake. While there may be some instances of slapdash prescribing, one hopes that in the vast number of cases, decisions are made with extensive deliberation. In two-system theory, then these decisions should be relatively immune from the biases of system 1. It is true that, as Kahneman acknowledges (2011, p. 415), "Often we make mistakes because we (our System 2) do not know any better." Yet can overtreatment of a child behavioral disorder really occur simply because the physicians and parents involved don't know any better." No. This explanation—or rather, non-explanation—is required by two-system theory, but it is not reasonable. The notion that bad decisions are made because we don't know any better flies in the face of the empirical results of behavioral economics.

In contrast, multi-level institutionalist theory, with its paradigm of habit, custom, and power, recognizes that we take our information and our ways of thinking from others. In this context, we are susceptible to influence by others and this influence can be both deliberate and self-serving. Overdiagnosis of ADHD has happened not because of random cognitive mistakes, but because of marketing of ADHD drugs. This marketing is an example of the enormous power held by pharmaceutical companies over parental decision-making, and all of the most cherished tropes of family life—a successful student, a son happily taking out the garbage, a dad whose home in time for dinner—are invoked to sell stimulant medication (Hall, 2005; Schwarz, 2013). Pharmaceutical companies have for years aggressively marketed directly to parents and directly to teachers (Phillips, 2006), and these marketing efforts have been highly successful at boosting the number of children medicated—whether or not it is in their best interest. The marketing of ADHD drugs is an example of a nudge that is anything but paternalistic.

As this very brief overview hints, the main threats to public health are not in the myriad of small behaviors that can be redressed with a nudge here or there. Instead, population health will continue to suffer when people who think carefully and deliberately about problems do so using frames, heuristics, assumptions and information that lead them to focus narrowly on individual decisions. Power imbalances persist and even grow in a democracy because people don't believe in them. And they don't believe in them because their cognitive habits—their ways of thinking—make them systematically blind to most kinds of power. That is not by accident, of course.

7. Reprise

In a midst of a London cholera epidemic, John Snow famously disabled a contaminated pump. This action was more than a nudge, and its decisiveness seemed to interfere with the natural order of things as perceived at the time. Today's natural order revolves around rational-choice theory. Behavioral economics has usefully poked holes in this theory, allowing us to peek at insights that had been previously hidden. But behavioral economics to date has been more about holes than about structure, and there is no theory of behavioral economics that can replace rational-choice theory. This chapter sketches out some elements of behavioral and institutional economics that could contribute to a theoretical alternative to rational-choice theory, and discusses the implications of such a theory for public health.

The Santa Monica School Board's decision to continue selling sugary beverages to children is hardly the most important health issue facing its children. Yet in this small sketch of public life—with its manipulation of evidence, lobbying for guidelines, perverse framing, and attention to the wrong public-health questions—are all the details and colors of the much bigger challenges posed by behavioral economics.

Behavioral economics has a frame that is at war with itself: either departures from rationality are not thematized at all, suggesting that they are really not that important, or they arise from the failure of a reflective brain to adequately discipline the intuitive brain, and therefore cannot be important.

The current framing of empirical results in behavior economics carries three dangers. It distracts, almost by design, from traditional regulation, education & incentives. It obscures the fact that those in power might not actually have our best interests at heart. And it places power outside the discussion.

All of these dangers are attenuated when we recognize the true theoretical underpinnings of behavioral economics are not two brains, but one shared set of habits of mind.

In John Snow's era and for many years thereafter, public health was about the microscopic vectors of disease. Improving water and sanitations systems eliminated these vectors, improving the health of the population. Today's vectors are just as difficult to see with the naked eye, and just as potent. And just as in John Snow's day, advancing public health will require controlling the spread of disease through these vectors in ways that balance important values of autonomy, justice, and beneficence.

References

Ariely, D. (2009). *Predictably Irrational: The Hidden Forces That Shape Our Decisions*. New York: Harper.

Barba, G., Barba, G., Troiano, E., Russo, P., Venezia, A., & Siani, A. (2005). Inverse association between body mass and frequency of milk consumption in children. *British Journal of Nutrition,* 93, 15-20.

Bateson, G. (1972). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. Lanham, MD: Chandler Press.

Bonell, C., McKee, M., Fletcher, A., Haines, A., & Wilkinson, P. (2011). Nudge smudge: UK Government misrepresents "nudge". *The Lancet,* 377, 2158-2159.

Bourdieu, P. (1992). *The Logic of Practice*. (translated by Richard Nice) Stanford, CA: Stanford University Press.

Bromley, D.W. (2006). *Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions*. Princeton and Oxford: Princeton University Press.

Cosmides, L., & Tooby, J. (1994). Better than rational: Evolutionary psychology and the invisible hand. *The American Economic Review,* 84, 327-332.

Dairy Council of California. (2012). California Fights Back For Flavored Milk In Schools.

Desrochers, T.M., Jin, D.Z., Goodman, N.D., & Graybiel, A.M. (2010). Optimal habits can develop spontaneously through sensitivity to local cost. *Proceedings of the National Academy of Sciences,* 107, 20512.

Deyo, R.A., Psaty, B., Simon, G., Wagner, E.H., & Omenn, G.S. (1997). The messenger under attack: An occupational hazard for health researchers. *N Engl J Med,* 336, 1176-1180.

Dietary Guidelines Advisory Committee (2010). Dietary Guidelines for Americans, 2010.

Dorfman, L., Wallack, L., & Woodruff, K. (2005). More than a message: Framing public health advocacy to change corporate practices. *Health Education & Behavior,* 32, 320-336.

Drewnowski, A. (1998). Energy density, palatability, and satiety: implications for weight control. *Nutrition Reviews,* 56, 347-353.

Evans, J.S.B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annu. Rev. Psychol.,* 59, 255-278.

Evans, J.S.B. (2012). Questions and challenges for the new psychology of reasoning. *Thinking & Reasoning,* 18, 5-31.

Frankish, K. (2010). Dual-Process and Dual-System Theories of Reasoning. *Philosophy Compass,* 5, 914-926.

Frary, C.D., Johnson, R.K., & Wang, M.Q. (2004). Children and adolescents' choices of foods and beverages high in added sugars are associated with intakes of key nutrients and food groups. *Journal of Adolescent Health,* 34, 56-63.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives,* 19, 25-42.

Gitlin, T. (1980). *The whole world is watching: Mass media in the making & unmaking of the new left*: Univ of California Press.

Goldacre, B. (2010). *Bad science: Quacks, Hacks, and Big Pharma Flacks*. New York: Faber and Faber.

Green, E. (2013). The Controversial Life of Skim Milk. *The Atlantic*.

Hall, A.L. (2005). Welcome to ordinary? Marketing better boys. *The American Journal of Bioethics,* 5, 59-60.

Hausman, D.M., & Welch, B. (2010). Debate: To Nudge or Not to Nudge*. *Journal of Political Philosophy,* 18, 123-136.

Hinshaw, S.P., & Scheffler, R.M. (2014). *The ADHD Explosion and Today's Push for Performance: Myths, Medication, and Money*. Oxford: Oxford University Press.

Hodgson, G.M. (2004). *The Evolution of Institutional Economics: Agency, Structure and Darwinism in American Institutionalism*. London: Routledge.

Hodgson, G.M., & Knudsen, T. (2004). The complex evolution of a simple traffic convention: the functions and implications of habit. *Journal of Economic Behavior & Organization,* 54, 19-47.

Howard, K., & Salkeld, G. (2009). Does attribute framing in discrete choice experiments influence willingness to pay? Results from a discrete choice experiment in screening for colorectal cancer. *Value in Health,* 12, 354-363.

Iyengar, S. (1994). *Is anyone responsible?: How television frames political issues*: University of Chicago Press.

James, W. (1890 [reprinted 2007]). Habit. *Principles of Psychology, vol 1*. New York, NY: Cosimo Classics.

Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *American economic review*, 1449-1475.

Kahneman, D. (2011). *Thinking, fast and slow*. New York: Farrar Straus & Giroux.

Keren, G., & Schul, Y. (2009). Two Is Not Always Better Than One A Critical Evaluation of Two-System Theories. *Perspectives on Psychological Science,* 4, 533-550.

Kesting, S. (1998). A Potential for Understanding and the Interference of Power: Discourse as an Economic Mechanism of Coordination. *Journal of Economic Issues,* 32, 1053-1055.

Krieger, N. (2008). Proximal, Distal, and the Politics of Causation: What's Level Got to Do With It? *American Journal of Public Health,* 98, 221.

Krugman, P. (2014). What America Isn't—or Anyway Wasn't. The Conscience of a Liberal: The New York Times.

Laajaj, R. (2012). Closing the eyes on a gloomy future: Psychological causes and economic consequences. Pacific Development Economics Conference, University of California, Davis.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*: Basic books.

Lanou, A.J., Berkow, S.E., & Barnard, N.D. (2005). Calcium, dairy products, and bone health in children and young adults: a reevaluation of the evidence. *Pediatrics,* 115, 736-743.

Levin, I.P., Gaeth, G.J., Schreiber, J., & Lauriola, M. (2002). A new look at framing effects: Distribution of effect sizes, individual differences, and independence of types of effects. *Organizational behavior and human decision processes,* 88, 411-429.

Levin, I.P., Schneider, S.L., & Gaeth, G.J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational behavior and human decision processes,* 76, 149-188.

Levin, I.P., Schnittjer, S.K., & Thee, S.L. (1988). Information framing effects in social and personal decisions. *Journal of Experimental Social Psychology,* 24, 520-529.

Ludwig, D.S., & Willett, W.C. (2013). Three Daily Servings of Reduced-Fat Milk: An Evidence-Based Recommendation? *JAMA pediatrics,* 167, 788-789.

Lukes, S. (2004). *Power: A Radical View*. New York: Palgrave Macmillan.
Matthews, C. (2013). *Tip and the Gipper: When Politics Worked*. New York: Simon and Schuster.
Mischel, W., Shoda, Y., & Rodriguez, M.I. (1989). Delay of gratification in children. *Science,* 244, 933-938.
Murphy, M.M., Douglass, J.S., Johnson, R.K., & Spence, L.A. (2008). Drinking flavored or plain milk is positively associated with nutrient intake and is not associated with adverse effects on weight status in US children and adolescents. *Journal of the American Dietetic Association,* 108, 631-639.
Neal, D.T., Wood, W., & Quinn, J.M. (2006). Habits—A repeat performance. *Current Directions in Psychological Science,* 15, 198-202.
Neumann, P.J., & Weinstein, M.C. (2010). Legislating against use of cost-effectiveness information. *New England Journal of Medicine,* 363, 1495-1497.
Ortiz, S.E. (2013). Identifying Alternative Frames and Values to Increase Public Support for Health Policies that Target Obesity. Department of Health Policy & Management. Los Angeles: University of California, Los Angeles.
Osman, M. (2004). An evaluation of dual-process theories of reasoning. *Psychonomic bulletin & review,* 11, 988-1010.
Phillips, C.B. (2006). Medicine goes to school: teachers as sickness brokers for ADHD. *PLoS medicine,* 3, e182.
Rice, T. (2013). The behavioral economics of health and health care. *Annual Review of Public Health,* 34, 431-447.
Rice, T., & Cummings, J. (2010). Reducing the number of drug plans for seniors: A proposal and analysis of three case studies. *Journal of health politics, policy and law,* 35, 961-997.
Romm, J.J. (2012). *Language Intelligence: Lessons on persuasion from Jesus, Shakespeare, Lincoln, and Lady Gaga*.
Rosenstock, L., & Lee, L.J. (2002). Attacks on science: the risks to evidence-based policy. *American Journal of Public Health,* 92, 14.
Scharf, R.J., Demmer, R.T., & DeBoer, M.D. (2013). Longitudinal evaluation of milk type consumed and weight status in preschoolers. *Archives of disease in childhood,* 98, 335-340.
Scheffler, R.M., Hinshaw, S.P., Modrek, S., & Levine, P. (2007). The global market for ADHD medications. *Health Affairs,* 26, 450-457.
Schwarz, A. (2013). The Selling of Attention Deficit Disorder. *The New York Times*.
Sloman, S.A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin,* 119, 3.
Smith-Howard, K. (2013). *Pure and Modern Milk: An Environmental History Since 1900*. New York: Oxford University Press.
Stoelhorst, J.W. (2008). The explanatory logic and ontological commitments of generalized Darwinism. *Journal of Economic Methodology,* 15, 343-363.
Thaler, R.H., & Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven: Yale University Press.
Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science,* 211, 453-458.
Twomey, P. (1998). Reviving Veblenian economic psychology. *Cambridge Journal of Economics,* 22, 433-448.

Winzenberg, T., Shaw, K., Fryer, J., & Jones, G. (2006). Effects of calcium supplementation on bone density in healthy children: meta-analysis of randomised controlled trials. *BMJ: British Medical Journal (International Edition)*.

Wood, W., Quinn, J.M., & Kashy, D.A. (2002). Habits in everyday life: thought, emotion, and action. *Journal of Personality and Social Psychology,* 83, 1281.

Yancey, A.K., Cole, B.L., Brown, R., Williams, J.D., Hillier, A., Kline, R.S., et al. (2009). A Cross-Sectional Prevalence Study of Ethnically Targeted and General Audience Outdoor Obesity-Related Advertising. *Milbank Quarterly,* 87, 155-184.

Zimmerman, F.J. (2011). Using Marketing Muscle to Sell Fat: The Rise of Obesity in the Modern Economy. *Annual Review of Public Health,* 32.

Zimmerman, F.J. (2013). Habit, custom, and power: A multi-level theory of population health. *Social Science & Medicine,* 80, 47-56.