7 Free Will Is Un-natural

John A. Bargh

The history of social psychology, and especially its subfield of social cognition, is replete with surprising findings of complex judgmental and behavioral phenomena that operate outside of conscious awareness and even intention (Wegner & Bargh, 1998). Yet the surprising nature of these findings comes no longer from their relative infrequency, for they have become all too commonplace in the research literature. Instead, the surprise comes from the continuing overarching assumption of the field regarding the primacy of conscious will. Based most likely on our (i.e., research psychologists') own subjective experience as human beings, the early process models of each new phenomenon tend to start with the assumption of a major role played by conscious choice and decisions, intention and awareness, in producing the phenomenon in question. Then further findings start coming in showing that, "surprisingly," much of the phenomenon can be explained without need of stages or steps involving conscious intention or awareness.

In the rest of the natural sciences, especially evolutionary biology and neuroscience, the assumption of conscious primacy is not nearly as prevalent as it is in psychology. Thus one goal for the present chapter is to help bring psychology more in line with the rest of the natural sciences, in which complex and highly intelligent design in living things is not assumed to be driven by conscious, intentional processes on the part of the plant or animal, but instead by "blind" natural selection processes (see Dawkins, 1976; Dennett, 1995). As Dennett (1991, p. 251) put it, "in biology, we have learned to resist the temptation to explain *design in organisms* by positing a single great Intelligence that does all

the work.... We must build up the same resistance to the temptation to explain *action* as arising from the imperatives of an internal action-orderer who does too much of the work."

The present analysis of the scientific status of the free will concept is therefore in the spirit of the Integrated Causal Model of Tooby and Cosmides (1992) and their forerunners (e.g., Campbell, 1974; Keil, 1979), which take as their starting point not subjective human phenomenology (the strong subjective feeling we have of free will) or the (misleading) model of a serial computer waiting for external commands before operating, but our own deep evolutionary past, in which adaptive features are "designed" into us incrementally by the same processes of natural selection as operated on all other living things. Seen from this different perspective, the recent barrage of "surprising" and sometimes even controversial findings in social psychology regarding consciousness and free will should become less so, and perhaps even predictable.

There are all sorts of confusions regarding the concept of free will, so before proceeding any further, we need to make clear what the psychological concept of free will *is* in order to avoid some of the more common misunderstandings. One of these is between the psychological and the political concepts of free will, so we will start by distinguishing these.

THE PSYCHOLOGICAL VERSUS THE POLITICAL CONCEPT OF FREE WILL

Although the two are often confused, free will as a psychological concept is not the same as free will, or freedom, as a political- or societal-level concept. For one thing, freedom at the political level does not have the same concerns as freedom of the individual will. The main concern of the private, individual domain is with life and survival—the focus is on the home, family, and children. But the public, political domain cannot be mainly concerned with individual survival because its focus on the state of the world transcends the births and deaths of individual members of the society (Arendt, 2005, p. 44). The ancient Greek philosophers, for example, gave a great deal of attention to political freedom, but never even mentioned free will in any of their works. It was St. Paul who discovered the notion of the individual will (Romans, chapter 7), which was then developed more fully by another early Christian thinker, St. Augustine.

Paul wrote that he knew what the good was, he wanted to do it, but could not always do it. In saying this, he introduced the key notion of individual control and responsibility for doing the right thing, and "strength of will" as an important determinant of whether an individual will successfully do it instead of yielding to the temptations of the flesh. St. Augustine built upon this idea in his explanation for how evil could coexist in a world along with a wise, good, all-powerful God. For Augustine, the just reward of eternal heaven and

individual salvation required the possibility within each individual of both good and bad behavior (see Neiman, 2002). Accountability at the final judgment, in the divine scheme of things, required free individual control over actions.

Thus free will as a psychological concept concerns the individual, and actions that are under the individual's power to perform. However, *free will* or freedom as a political- or societal-level concept (which is often confused with the psychological sense of the notion), concerns the plurality and actions that depend on or are restricted by the consent or cooperation of others. In other words, a person has free will in the political sense if he or she is not acting under coercion, if his or her actions are not determined by external forces; as long as the causes of the action are internal to the individual (motives, needs, preferences, desires), the person is acting "freely."

In this light, a commonly heard argument in favor of free will—that it exists "because I can choose to (or not to) do *X*," makes sense from the political perspective, but not within the psychological domain, where it only begs the question. The psychological status of freedom of the will depends on whether those *choices* are determined or not by identifiable forces—and, as we shall see, on whether such choices are even necessary in the first place. This is, of course, a higher standard than the litmus test for free will in politics: The latter requires only an absence of external determination; the former requires an absence of both external and internal determination of the action.

As Arendt (1978, p. 448) concluded, "the Christian and modern notion of free will has no ground in political experience." The philosopher of science Karl Popper (1965, p. 128) has noted that phenomena that are apparent at the level of resolution used in one branch of science (in this case, political science) may disappear at the finer levels which are the basis for other branches (here, psychology): "The 'dots' produced by the coarse 'screens' used in the reproductions of photographs in our daily papers are satisfactory representations when looked at superficially, but cannot stand closer inspection with a magnifying glass. So, too, the reproductions of the world by our forms of intuition and categories break down as soon as they are required to give a somewhat closer representation of their objects, as is the case in wave mechanics and nuclear physics."

INFLUENCED VERSUS *DETERMINED*

The psychological issue of whether free will exists thus boils down to whether *undetermined choices* of action exist and occur. No one today would deny that people have preferences, motivations, desires, goals, and so on, and that these at least *influence* what we do. This is after all the very subject matter of psychological science. But the doctrine of free will within psychology holds as axiomatic (see Locke & Kristof, 1996) that the *choices* made on the basis of these influences are free, made by a consciousness that is the source of

"original intentionality" (Searle, 1983). Now we have distilled the essence of the question of free will, in the psychological domain: Are behaviors, judgments, and other higher mental processes the product of free conscious choices, as *influenced* by internal psychological states (motives, preferences, etc.), or are those higher mental processes *determined* by those states? The *influence* model can be likened to an executive officer who takes suggestions from subordinates as to what to do but nonetheless makes the decisions; the *determination* model has those subordinates directly in charge with no need of an independent Decider.

Yet any scientific—as opposed to philosophic—approach to the question of free will cannot rely upon extraphysical explanatory concepts, as Searle (1983) did with the concept of original intentionality, and as John Locke did before him with his mind-first cosmology (see Dennett, 1991). Locke had argued that *mind* was the originator of thought and action, but that nothing (save one's own past personal experience) caused mind. Similarly, for Searle, only humans (not other living things) are said to have original intentionality, by which he meant that intentions (the will) originate in the mind and are not themselves the causal product of any physical or mechanical forces. As Konrad Lorenz (1962, p. 23) admonished us, "it is the duty of the natural scientist to attempt a natural explanation before he contents himself with drawing upon factors extraneous to nature." Treating free will as a force outside the laws of nature in the Locke/Searle manner is similar to how intuition and creativity have long been popularly viewed as being due to some kind of mysterious "spark" or quasi-magical process. In all three cases, the argument that the phenomenon is an originator and not itself caused by some other process is actually just an admission that *we don't know* what causes it; as Spinoza (1677/1951, p. 134) put it, "men believe themselves to be free, simply because they are conscious of their actions, and unconscious of the causes whereby those actions are determined."

THE PHENOMENAL PAST VERSUS THE PHENOMENAL (NEAR) FUTURE

It is not merely ignorance of the underlying causes of our actions that gives us such a strong subjective sense that they are spontaneous and thereby "free," however. There is also a fundamental difference in *time perspective* between our experiences of our own behavior versus that of other people (Arendt, 1978). Our experience of the outside world of others' actions is retrospective in nature, it deals with what they have done. Scientists analyzing the reasons for behavior deal with *faits accompli*, behaviors that exist in the past, which is the world of causation. But our own internal perspective on our own behavior is *prospective* in its focus, dealing with the relatively uncertain and unpredictable future. The philosopher Harry Frankfurt (1971) has noted that we tend

to invoke the notions of choice or free will only when describing our *own* behavior, *not* that of other people. And more recently, Pronin and Kugler (in press) have documented this attributional difference experimentally; choice or deliberation does not come up in accounts of why others did what they did, only for one's own behaviors. When we are accounting for other people's behavior we are like scientists, because the perceived and experienced behavior of others is in the past; but only we as individuals have privileged access to our own phenomenal state prior to acting. Arendt (1978) makes the following comments:

> In the perspective of memory, that is, looked at retrospectively, a freely performed act loses its air of contingency under the impact of now being an accomplished fact, of having become part and parcel of the reality in which we live. The impact of reality is overwhelming to the point that we are unable to "think it away"; the act appears to us now in the guise of necessity.…

Once things have happened, and have receded into the past, they become part of the world of facts, of causes, and we just naturally, even inescapably feel that they were determined, caused, and that nothing else could have happened. We may not be able to predict what will happen but once it does, we feel we "knew it all along," and believe what happened was inevitable. This fundamental difference between our subjective certainty and confidence about the past, versus our uncertainty and trepidation about the future, manifests itself in many judgment biases that have been documented by decision researchers. The *hindsight bias* (e.g., Fischhoff, 1975; Hawkins & Hastie, 1990) is our feeling after an event has occurred that "we knew it all along" coupled with an actual inability to recall what it was we had expected or predicted prior to the outcome. The *just-world bias* (Lerner, 1980) is our tendency to believe that things are as they are because that is how they ought to be. The *status quo effect* is related to the just-world bias, in that people are biased to prefer the current state of affairs (the status quo) and are reluctant to change it (e.g., Samuelson & Zeckhauser, 1988; Kay, Jimenez, & Jost, 2002). (A standard experimental demonstration of the status quo effect is to tell one group of participants that a certain policy is in place and an alternative has been proposed, and switching the in-place and alternative policies for another group: When asked which policy they prefer, both groups prefer the one that they had been told is already in place, even though they are quite different.) The past for us feels phenomenally determined and, after the fact of course, is experienced as having been inevitable.

But we are not very good at predicting the future; even experts such as in sports and politics are often wrong in their prognostications and still, after the fact, freely discuss what has just happened in causal terms as if it were

inevitable and "of course" this is what happened. In the *hindsight effect*, our very memories are biased in the direction of having predicted the outcome that actually occurred (see Ross, 1989), and as Dawes (1993) has noted, over time this creates our strong belief that the world is more predictable than it really is. In actuality, the world is full of randomness and uncertainty. The novelist Milan Kundera uses this as a running theme of his novels, relentlessly pointing out to the reader the many coincidences and chance happenings that had to have occurred for his protagonists to have ever met in the first place (e.g., *The Unbearable Lightness of Being*). Dawes (1993) has shown mathematically that it has to be the case that retrospective analysis of the causes of an event—say, the clinical psychologist's locating the cause of a patient's depression in her mother's cold and distant attitude toward her as a child—significantly overestimates the actual strength of the causal relation, compared to purely predictive studies of the same relationship. He concludes the following from his analysis:

> What are the implications? …We are interested in predicting the unusual from the unusual. When we do so, however, a fundamental asymmetry results. The degree of predictability appears to be systematically greater when the analysis is retrospective than when it is prospective."…Even those who believe in destiny or God's Plan for the future do not claim to know exactly what it is. In contrast, "history" appears to be understandable, whether it is our own or that of others we retrospectively assess.…We tend to derogate the role of random influences in how we got to here, in contrast to their role in where we will go from here. For example, past personal sufferings or economic recessions are easily explained in terms of psychological or economic conditions or "forces" ("causes"), while whether we are entering such an unhappy period now is a matter of "speculation." (Dawes, 1993, pp. 7, 17)

Especially in contrast with our subjective sense of the determined past, the experience of our own behavior in the present seems particularly spontaneous and "free." Because we do not experience at the same time all of the unconscious influences and impulses that produced that behavior (see Bargh & Morsella, 2007), our phenomenal experience is hugely biased in the direction of feeling that we have much more freedom than we actually do. But our feelings, like much else about us, have evolved because of their adaptive significance and are essential for normal cognitive functioning (e.g., Gray, Schaefer, Braver, & Most, 2005; Tranel, Bechara, & Damasio, 2000). We have also learned that feelings of being in control are far more beneficial to our functioning than are feelings of helplessness; thus these subjective feelings of free will are one of the "positive illusions" (Taylor, 1989) we hold dear. Yet this benefit is irrelevant to the scientific status or truth value regarding the actual existence of free will; however positive and adaptive the feeling, it is still an illusion.

CONSEQUENCES OF THE UNPREDICTABLE FUTURE FOR THE EXISTENCE OF FREE WILL

The fact of the uncertain and unpredictable future has strong implications for the existence and scope of free will. Imagine that your job was to design and create a device that had to function far into the future, long after you were no longer around, or a space probe that would eventually get too far away from Earth to receive your commands. In these examples, the success and survival of your creation will eventually depend on its making its own decisions, based on local conditions you cannot anticipate, but decisions nonetheless derived from the general purposes and parameters you originally designed into it.

In his seminal work *The Selfish Gene,* Dawkins (1976) drew just such an analogy between how genes "design" (through the blind process of natural selection) their "survival machines" on which they depend for their propagation into future generations. Because natural selection processes, through gene mutations, operate over vast units of time, they cannot in any way adapt in real time to changes or events in the environment. Thus, genetic controls over behavior are relatively inflexible and can't adapt quickly to sudden changes in the environment. (This is largely why 99% of the species that ever existed are now extinct.) All they can do is to instantiate the few specific principles most likely to be adaptive even far into the future—such as strong motives to survive, to eat, to reproduce—along with those general principles or strategies that give the organism some adaptive advantage that increases the gene's chances of being passed down to the next generation. In harmony with Dawes (1993) and other decision scientists as to our overestimation of the predictability of the world, Dawkins (1976, p. 55) notes that "prediction in a complex world is a chancy business. Every decision that a survival machine takes is a gamble, and it is the business of genes to program brains in advance so that on average they take decisions that pay off."

LEVELS OF CONTROL: GENETIC, CULTURAL, PSYCHOLOGICAL

It is for this reason that evolution has shaped us to be *open-ended* systems (Mayr, 1976, p. 695). This gives room for "fine-tuning" of the human infant to local conditions, as through culture and learning. The genetic determinants of our behavior reflect only the most basic truths that are important for our (and the genes that we carry; Dawkins, 1976) survival and reproduction, truths that have been abstracted out of eons of our ancestors' evolutionary history. The mechanism through which genes drive our present-day behavior is through evolved motives (Tomasello, Carpenter, Call, Behne, & Moll, 2005). The active goal or motive is the "local agent" by which the genetic influence finds expression

(see also Neuberg, Kenrick, Maner, & Schaller, 2004). As Tomasello et al. (2005) and others have noted, this is how evolution works—through motives and strategies, desired goals and end-states, that we seek to get to from whatever starting point in history and geographical location the cards of fate have dealt us—*not* through rigid and fixed responses to specific events or stimuli, because these cannot be anticipated; the world itself is evolving and changing with the turn of the centuries and millennia.

Take, for example, the pied flycatcher, an English bird that navigates by night based on the patterns of stars in the sky (Grocott, 2003). Clearly this is an evolved skill, but it cannot be entirely innate, and must be an open-ended adaptation, because the pattern of stars and constellations in the sky is constantly changing as the Earth moves on its own path through the galaxy (as are the other celestial bodies in the night sky). The night sky in the northern (and southern, of course) hemisphere is very different today than it was just a few hundred years ago! So it is not that these birds have evolved to have a perfect map of a constant night sky available to them, as an internal representation, to guide their flight. What they have evolved is this: the general ability to navigate in very precise fashion from the current pattern of stars and constellations, the pattern that exists when they are born. Their parents take them out several times for night flights after they are born and able to fly, and it is during these practice flights that they absorb—*download*, if you will—the current, contemporary pattern of stars. Evolution has, of course, also given them the ability to do this downloading, and to represent it, and to base their flight behaviors on it—but this is the *hardware*. For the hardware to work, the little birds need to download the *software* of the current star pattern; thus it is an open-ended ability or system, one that must adapt to current, local conditions if it is to work at all.

And this is what human culture gives us, in analogous fashion: the local conditions, mainly social, of the world (and the particular region of the world) into which we happen to have been born. Dawkins (1976) noted that phenotypic plasticity (the openness of the evolved system) enables the infant to absorb, entirely automatically and unconsciously, "an already invented and largely debugged system of habits in the partly unstructured brain" (p. 193). This cultural knowledge is a giant step toward adaptation to the current local environment that the genetic determinants of our development could in no way accomplish. In this way, a human infant can be relocated immediately after birth to any place and any culture in the world and that child will adapt to and speak the language of that culture just as well as any child born there. As Dennett (1991, p. 200) pointed out, "one of the first major steps a human brain takes in the massive process of postnatal self-design is to get itself adjusted to the local conditions that matter the most: it swiftly (in 2 or 3 years) turns itself into a Swahili or Japanese or English brain." Thus one's particular language and culture are not genetically determined; it is only the ability to become, so quickly, a member of any culture that is determined by one's genes.

Culture, including language, norms, values, and so on, is "downloaded" after birth, and it reduces greatly the unpredictability of the child's world, and his or her uncertainty as to how to act and behave in it. As the cultural anthropologist Dan Sperber (1980, p. 26) has argued, "public representations come before private ones, a child is born into a world full of public representations and is bombarded with them from the first moments of life." Again, the culture we soak up in such an amazingly fast and thorough manner (as in the case of language acquisition) early in life—as well as continually thereafter—exerts powerful constraining and controlling influences on our choices and behavior in life. These are as strong as evolutionary forces, if not stronger, for people are willing to die for their culture, their country, their religion, which cannot possibly be what their selfish genes had in mind for them.

There is yet a third level of adaptation, producing an even finer level of predictability and control for the emergent adult human. This is *learning*, the psychological level of adaptation, in which the child's particular experiences shape him or her with expectations of what happens next—given event A, event B is what usually follows—and this knowledge of outcomes helps to direct and constrain the child's behavior at a finer level of local adaptation than even the general culture.

Thus, *evolution* gives us the general motives and strategies for survival, *culture* gives us the general rules and knowledge of how to live in the particular part of the world and the particular group of people into which we happen to have been born, and *learning* from our own direct experience gives us even finer-grained understanding and predictive anticipations. Note, however, that these are not *independent* influences; as Dawkins (1976, p. 193) points out, our ability to absorb culture depends on phenotypic plasticity (the openness of the evolved system). This in turn depends on genetic variation—that is, we as humans *acquired* the ability to acquire culture through natural selection. Similarly, in the case of learning, for it to be adaptive we must be predisposed (through natural selection processes) to learn about only certain aspects of the environment over others, because of the overwhelming amount and variety of information that constantly impinges upon us (Lorenz, 1962; see also Campbell, 1960; Norretranders, 1998; Plotkin & Odling-Smee, 1982).

PREFERENCES

We are also predisposed, from evolution but also culture and early learning, to prefer certain objects and aspects of our environment over others. We are often guided by our "feelings," intuitions, and "gut reactions"; indeed these preferences have been shown to be indispensable to adaptive behavior, especially to prioritizing what is important versus not so important to do or attend to (e.g., Damasio, 1996; also Schwarz & Clore, 1996). These feelings or guides do

not arise out of thin air: Our present preferences are derived from those that served adaptive and functional ends in the past. As Dennett (1995) argued, the perspective of a conscious observer is a more sophisticated descendant of the ancient perspectives of the first replicators, who simply divided their worlds into good versus bad. The psychologist and evolutionary epistemologist Donald Campbell (1974) called these "shortcut processes" because they save us from having to figure out, each of us individually from scratch, what are the good and helpful things and which are the dangerous and unhelpful things.

In Campbell's (1974) view, knowledge processes are part of a nested hierarchical system. A basic tenet of evolutionary theory is that evolution builds gradually on what it has to work with at that moment; changes are gradual and incremental. Knowledge gained at a lower level of blind selection, the shortcuts and other "good tricks" (Dennett, 1995) that consistently worked over our long-term evolutionary past, can be fed upward as a starting point—appearing as a priori knowledge, the source of which we are unaware. These are the bases of our mysterious hunches and intuitions, and even our creative new answers and solutions were given a starting boost by our evolved tendencies.

That our consciously expressed preferences are based on such primordial preferences, at least as a starting point, helps to make some recent surprising findings more sensical. There is a long-standing research domain in social psychology on *automatic attitudes* (e.g., Fazio, Sanbonmatsu, Powell, & Kardes, 1986; also Bargh, Chaiken, Govender, & Pratto, 1992), in which a person's attitudes are shown to become active automatically upon the mere presence of the attitude object (or its name) in the stimulus environment (see Ferguson, 2007, for review). In other words, pretty much everything we encounter is evaluated, unintentionally and unconsciously, as either good or bad immediately after we encounter it (i.e., within 250 milliseconds). But this research had always focused on actual attitude objects with which people had some degree of experience (e.g., tuna, poison, birthdays, flies), so the understanding was that this effect required a consciously formed attitude or preference to occur. Duckworth, Bargh, Garcia, and Chaiken (2002), however, showed that the same effect occurred, within the same paradigm, for *novel* attitude objects that were nonrepresentational in nature, such as snippets of abstract art. This was surprising because the participants had never encountered these stimuli before, yet they immediately classified them as good or as bad within a quarter of a second.

Interestingly, we had selected these novel attitude objects on the basis of pretesting with another group of participants, who were exposed to them consciously and then took as long as they needed to say whether they liked them or not. We then took the ones most of these pretest participants liked, and the ones most of them disliked, and used them in the experiment with a new set of participants. And for these experimental participants, the "good" and the "bad" novel attitude objects showed the same automatic attitude effect, and of nearly identical size, as the real attitude objects used in previous research.

Now for this effect to be obtained, the experimental participants had to have evaluated the novel attitude objects that they had never seen before and to which they were exposed for only 250 milliseconds in the same way as had participants who had as much time as they needed and who evaluated the objects consciously and intentionally. Because logically the pretest participants who evaluated the items consciously would be expected to also have the same automatic evaluative processes as the experimental participants, one can conclude that they too had "known" the goodness versus badness of the stimuli immediately, and this must have served the as the basis for their longer, deliberative conscious evaluation. Again, from the starting assumption that automatic evaluative processes are based only or mainly on consciously made evaluations based on personal experience with them (e.g., Fazio et al., 1986), the Duckworth et al. (2002) findings of the automatic evaluation of entirely novel objects are surprising and even controversial. If, however, unconscious preference processes serve as the starting point on which our subsequent conscious evaluative processes then build, as Campbell (1974) argued, those findings make perfect sense.

Moreover, research has shown these automatically activated attitudes and preferences to be directly connected to behavioral mechanisms (just as are priming effects from the behavior of other people around us, the perceived goals of those people, and so on). Chen and Bargh (1999) showed that participants are faster to make approach movements of the arm (pulling a lever toward oneself) when responding to positive attitude objects, and faster to make avoidance movements (pushing the lever away) when responding to negative attitude objects, even though their conscious task in the experiment was just a reaction time task to "knock off the screen" the names of these objects when they appeared. And this unconscious behavioral tendency to approach what is good and avoid what is bad extends even to novel objects never encountered before; Duckworth et al. (2002) replicated the Chen-Bargh automatic evaluation-action link for the novel attitude objects in their study.

Immediate, unconsciously produced evaluations can produce even more powerful and abstract behavioral effects than simple arm movements. In a recent study by Todorov et al. (2005), ratings of competence of U.S. congressional election candidates, based solely on facial appearance with the faces presented for just 1 second each, predicted the outcomes of the 2004 U.S. congressional elections better than chance—for example, 68.8% of the Senate races in 2004 were successfully predicted from these immediate, intuitive inferences. Voting choices, of course, are important decisions and widely assumed to be based on deliberate, conscious, and rational processes, yet these findings suggest that even important decisions are influenced and predicted by immediate unconscious evaluative processes.

Here is another example that most people find surprising, again because it involves important life decisions. It has long been known that we have a strong preference and liking for people who are similar to ourselves in appearance,

attitudes, and beliefs, and this plays a significant role in interpersonal attraction (Byrne, 1971). Recent research has shown that this similarity-liking effect extends to new people who resemble significant others such as our parents (Andersen & Chen, 2002), although people are not aware of and do not report any such resemblance as a factor in their liking. The similarity effect is so strong, in fact, that it extends even to preferences for places to live and occupational choices that are similar to ourselves in merely superficial ways.

For example, compared to what you'd expect by chance alone, there are more people named Ken who moved to live in Kentucky, Florences who moved to Florida, and more named Louis who moved to St. Louis; there are more Dennises and Denises who become dentists and Lauras and Lawrences who become lawyers, compared to people with names that do not share letters with these occupations. If your first or last name begins with "H," you are more likely than chance to own a hardware store, and if one of your names begin with "R," you are more likely to own a roofing company, with "C" a computer company, and with "T" a travel business (for 20 such studies, see Jones, Pelham, Carvallo, & Mirenberg, 2004; Mirenberg, 2004; Pelham, Mirenberg, & Jones, 2002). This is not at all to say that name-letter similarity is the only basis for our choice of domiciles and professions, but that it is a statistically significant influence on those choices. Most people find this, well, surprising, and it is clearly an unconscious influence as no one would claim name-letter overlap as a reason for making these important life choices.

Other superficial similarities, such as sharing a birthday with another person, produce the same powerful effects. Walton and Cohen (2006) manipulated whether their participants had the same birthday or not with a fellow student, described in a (fictitious) newspaper article (which listed the student's birth date incidentally in a brief biography sideline to the main article) as having just won a prestigious award for mathematical achievement. Compared to the different-birthday condition, those students who shared a birthday with the award winner actually had higher grades at the end of the semester in their math classes.

What is the basis for such "implicit egotism"? Evolutionary biologists have traced this tendency to a *kin selectionbias* that gave our genes a further reproductive and survival advantage (Williams, 1966); this is one of the pillars of "selfish gene" theory (Dawkins, 1976), in which genes, not we, as individuals, are argued to be the unit of natural selection. According to selfish-gene theory, over evolutionary history we tend to like those who resemble us because they tended to share genes with us—resemblance in appearance was correlated with resemblance in genetic makeup. (Note how this extends to one's parents as well as in Andersen's "transference" research, because they each share half of our genes.) And the contemporary social psychological research described above is showing just how powerful this similarity-preference effect is, as it extends to all sorts of features stored within our self-representations (note again how it

is the *mental representation* that mediates these effects), beyond just physical appearance, to our names, our particular birth dates, and other self-attributes important to our identities.

CONTEXTUAL PRIMING: NATURAL, UNCONSCIOUS ADAPTATION TO THE PRESENT

The open-ended nature of our evolved design has also caused us to be highly sensitive and reactive to the on-line, right-now *present*. Social psychologists over the past 30 years have been studying these sensitivities under the rubric of *contextual priming effects*. The unpredictability of the future, as it relentlessly approaches us, requires us to be continuously *reactive* to unfolding events. Because we can't know with any degree of certainty what will happen in advance (in most natural situations), we have to react and adapt to what is currently going on—and the evolved design of our minds causes the on-line presence of these events and objects and people to automatically activate our internal representations of them. With the activation of the representations comes, concomitantly, all of the internal information (affect, goals, behaviors, knowledge) relevant to responding back to the current environment (Bargh, 1997).

Events in the current situation automatically activate or *prime* their corresponding mental representations inside of us, and this passive activation persists for a short time thereafter (Higgins, 1996; Higgins, Bargh, & Lombardi, 1985). This is important because the increase, over baseline levels, in activation makes these concepts more *accessible* to further activation by events, creating what Bruner (1957) termed *perceptual readinesses* to interpret the events around us (particularly social behaviors, which nearly always can be interpreted in multiple ways) in line with what has just recently happened. Over time, accessibilities can become chronic, reflecting the long-term probabilities in one's environment. If the two forms, temporary and chronic, happen to conflict with other—such as when your typically quiet and bookish Uncle Albert starts to dance on top of the dinner table after Thanksgiving dinner—the temporarily accessible construct ("wild and crazy guy") overrides the chronically active construct (Higgins & Bargh, 1987) for the time being. The chronic expectations do soon return to preeminence when the temporary accessibility effect decays back to baseline (Higgins, Bargh, & Lombardi, 1985; Bargh, Lombardi, & Higgins, 1988).

That the temporary accessibility effect trumps the chronic one when the two are in conflict is another example of the adaptive nature of accessibility effects, because for temporary priming effects to be useful at all, they have to win out in the short term. Otherwise, we'd always be at the mercy of our long-term past, and never able to adapt to changing circumstances, except only after considerable (probably painful, being so wrong about things for so long) additional experience, sufficient to change the chronic set. In these ways, priming

and construct accessibilities tune us to the long- and short-term probabilities within our current environment and represent another way in which unconscious processes are open-ended and flexibly adapt to current conditions.

Imitation and Mimicry

The priming effects of people's behavior and other situational features on us extend beyond influencing our perceptual interpretations and expectations, however. They also directly influence our own behavior, beginning soon after birth. Infants naturally learn much about how to behave by mere passive imitation of fellow children and also their adult caretakers; indeed, Meltzoff (2002) concluded from decades of researching this phenomenon that infants can imitate body movements and facial acts at birth, and that this ability represents a "primordial connection between infant and caretaker" (p. 19).

These imitative impulses, triggered by the perceived behavior of others, continue to be activated throughout one's life, causing children and adults to have default tendencies to act the same as those around us are acting—producing behavioral and emotional contagion effects. Thus, how other people are acting around us in the present is yet a further unconscious influence or guide as to how we ourselves should act. As Dawkins (1976) pointed out, the best behavioral strategy (from the point of view of evolution and adaptation) "depends on what the majority of the population is doing" (p. 69; see Maynard Smith, 1982; Maynard Smith & Parker, 1976). Thus, "blindly" or unconsciously adopting what others around you are doing, especially in new situations or with strangers, makes good adaptive sense as a default option or starting point for your own behavior. This tendency, and its unconscious and unintentional nature, has been repeatedly demonstrated in human adults in the research of Chartrand and colleagues (e.g., Chartrand & Bargh, 1999; Chartrand, Maddux, & Lakin, 2005; Lakin & Chartrand, 2003). People don't know and even don't believe after you tell them that they had engaged in these imitative behaviors—on several occasions they insisted on seeing their own videotapes before they would believe it. Not only do people tend to adopt the physical behavior (posture, facial gestures, arm and hand movements) of strangers with whom they interact, without intending to or being aware they are doing so, such unconscious imitation also tends to increase liking and bonding between the individuals—serving as a kind of natural "social glue" (Chartrand & Bargh, 1999; Giles, Coupland, & Coupland, 1991; Lakin & Chartrand, 2003).

Importantly, Meltzoff has shown via experiments with infants given pacifiers that their imitative abilities, even soon after birth, depend on an *internal-representation* of the outside behavior. Although the infants are prevented from immediate imitation by the pacifier in their mouths, when it is taken out they do then imitate the prior facial gesture of the caretaker. Starting from birth,

then, these internal representations are the interface between environment and mind, and the basis of unconscious contextual priming influences.

It is by reference to these same internal representations, then, that the adult human being is wide open to external influences, and even control, over his or her behavior. Fifty years ago, B. F. Skinner (1957) attempted to show that all behavior was under the direct control of the stimulus environment, but as single reflex acts, without reference to any internal mental representations. The transparent failure of this attempt was one reason for the cognitive revolution in psychology (Chomsky, 1959; Koestler, 1967; Neisser, 1967). However, by theoretically extending the reach of external stimuli to the internal representations of the environment that they automatically activate (e.g., types of behavior, goals, social groups, specific other people), much of what Skinner (1957) claimed in terms of direct environmental control over the higher mental processes has now been validated in contemporary research on priming effects across a variety of psychological phenomena (see Bargh & Ferguson, 2000). Yes, the internal mechanisms are cognitive, they are "mental," but they are not dependent on a homuncular "ghost in the machine" (Ryle, 1949) as they can operate entirely unconsciously.

MIND READING AND GOAL PRIMING

Along with the physical aspects of others' behavior, we are also highly attuned to the intentions or purposes that underlie that behavior. Meltzoff (1995) and Tomasello et al. (2005) have shown in studies of 18-month-old children that they encode and represent not only the actual behavior of their caretakers but what the caretaker is trying to do as well—if, for example, the caretaker is repeatedly unsuccessful at putting some toys away in a box, the child will not imitate the unsuccessful attempts but the intended act of putting the toy away properly. With adult participants, Knuf, Aschersleben, and Prinz (2001) deployed some sleight of hand with mirrors in order to disentangle perceptual from intentional mimicry (priming) and showed that perception-behavior effects are governed more strongly by representations of intended events than by representations of perceived events. Prinz (2002) concluded from these studies that "we have every reason to believe that intentional induction is no less automatic than perceptual induction…[and] that understanding actions and their consequences in terms of their underlying intentional semantics develops very early in life and then remains so deeply rooted in our cognitive machinery that we have no way to escape from it" (p. 159).

Such "mind-reading" ability has now been well documented in the developmental literature on "theory of mind" and has found strong recent support in cognitive neuroscience as well, with the discovery of *mirror neurons* in the premotor cortex that become active both when you perceive a given type of action and

when you engage in that action yourself (see Bargh, 2005; Frith & Wolpert, 2003; Meltzoff & Prinz, 2002). This tight, automatic connection between our perceptual and our actional representations suggests that we are prewired to have behavioral and goal-pursuit tendencies in line with those around us, whose behavior we are currently perceiving and decoding in terms of underlying intent.

This is the evolutionary structural support for yet another type of priming effect that has been demonstrated in social cognition research over the past decade: goal priming. Information-processing goals such as judgment and memorization, achievement goals such as high performance on a task, and interpersonal goals such as competition or cooperation have all been successfully primed using subtle manipulations (sometimes even subliminally)—that is, activated unconsciously, without the person's awareness or intent. Across many such studies, the consistent outcome is that unconscious goal pursuit produces the same outcomes as when that goal is pursued consciously and intentionally (see Bargh, 2005; Chartrand & Bargh, 2002; Dijksterhuis, Chartrand, & Aarts, 2007). For example, subliminal priming of the goal of cooperation causes participants playing the role of a fishing company to voluntarily put more fish back into a lake in order to replenish the fish population, compared to a control condition (Bargh, Gollwitzer, Lee-Chai, & Troetschel, 2001).

Moreover, the qualities of the underlying process seem to be the same, for participants with interrupted nonconscious goals tend to want to resume and complete a boring task even when they have more attractive alternatives, and will show more persistence on a task in the face of obstacles, compared to control conditions (Bargh et al., 2001)—features long known to hold for conscious goal pursuits (Lewin, 1926). People will even be in a worse mood after "failing" at a primed goal they didn't even know they had, and a happier mood after "succeeding" at that goal (Chartrand & Bargh, 2002), just as in conscious goal pursuits. And in none of these studies are participants able to accurately report on what they'd just done, in terms of the goal they'd been pursuing. For example, the correlation between self-reported cooperation and actual cooperative behavior during the experiment was around .30 in a condition in which participants were explicitly instructed to cooperate, but near zero in the cooperation-priming (unconscious) condition, though the two conditions produced equivalent amounts of cooperation (Bargh et al., 2001, Study 2).

Note in regard to this finding of unconscious motivation to cooperate that Tomasello et al. (2005) have identified cooperation and helping as an evolved motive, one that they argue is the key difference between humans and other primates. Tetlock (2002) has similarly argued, with supportive evidence, for evolved social motives of accountability to the others in one's social group (the intuitive politician mind-set) and of enforcing group standards on others (the prosecutorial mind-set). This is important regarding the present argument against the existence of free will (at the psychological level), because many would take from the nonexistence of free will that people have no responsibility

for their actions and therefore can act entirely selfishly and without regard to the consequences of their actions for others. Thus even if behavior is (multiply) determined and "free will" does not exist at a psychological level, part of the determination of behavior includes motivations to be responsible to others and to be vigilant about and act against their own potential irresponsibilities.

IF NOT FROM FREE WILL, WHERE DO OUR BEHAVIORS ORIGINATE?

Historically, free will has been the answer to the question of where our actions originate, of where they come from in the first place. But there is now an alternative answer to the question because (as outlined above) there is no shortage of ideas or suggestions from our unconscious as to what to do in any given situation. There are a multitude of adaptive behavioral impulses generated at any given time from our evolved motives and preferences, from our cultural norms and values, from our own past experiences in that situation, as well as from what other people are currently doing in that situation. And all of these unconscious inputs from the past and present of our world—even activated attitudes and preferences—have been shown to be directly connected to behavioral mechanisms, that is, to *action tendencies.* Recent neuroscience research has confirmed the close, automatic connection between our perceptual and our actional representations in both primates and humans. Similarly, priming research in social cognition has documented how sensitive we are to the behavior and goals of those around us and how we find it a positive, rewarding experience to be doing the same thing as they are, and work on automatic attitudes has shown our immediately generated likes and dislikes to be directly connected to muscular action tendencies to either approach or avoid the object.

Before there was consciousness, there already were all the unconscious modules and components that evolved to serve adaptive ends—selective sensitivity to the important and dangerous aspects of the environment (in large part, other members of our own species with whom we directly competed for the same needed resources from the environment), basic motivations to survive, eat, reproduce, to avoid what was known to be bad for us and to approach that which was good for us. According to Dennett (1991), primate brains are "based on millennia of earlier nervous systems; they were regularly flooded with multimodal information, and this gave them a new problem, one of higher-level control. There wasn't a convenient captain already on board, so these conflicts had to sort themselves out without any higher executive" (p. 188). Conflict exists at every level—for example, in sexual reproduction, the male and female alleles can be "in conflict" with each other (e.g., blue vs. brown eyes)—but for the most part, these conflicts are resolved for us unconsciously (see Morsella, 2005).

CONNECTING A PARALLEL MIND TO A SERIAL WORLD

This means that the "blind" unconscious mental modules that serve us so well from a functional perspective must be capable of some form of adaptive integration to produce single, serial decisions and behavior in real time. (This is the problem of connecting the parallel brain to the serial world in which we can only do one thing at a time; Bargh, 1997, 2006.) This supposition will again help us make sense of two more current puzzles, one that was posed 50 years ago, and another just recently.

The first of these is how quickly and suddenly, in terms of evolutionary timescales, we acquired language (see Pinker, 1994). It was not gradual, and did not depend on our brains growing to a certain critical size, for Neanderthal brains, which did not have language, were if anything larger than our contemporary brains (Calvin, 1989). Language is a complex skill that could not possibly be acquired so quickly in young children through normal, slow, trial-and-error learning processes (Chomsky, 1959); it develops spontaneously in nearly all children worldwide regardless of their levels of intelligence. The language production mechanism, "through use of 'phrase structure,' takes a web of thoughts and outputs them in form of words spoken one at a time, without a conscious effort or formal instruction, and is deployed without awareness of its underlying logic" (Pinker, 1994, pp. 101–2).

The speed with which we acquired language as a species, and the exponential advances in culture and knowledge we've made since then (see Diamond, 1992), suggests that as an ability it piggybacked or was "scaffolded" onto an existing structure, or what Dennett (1995) called a "good trick"—a solution nature has come up with for a problem that tends to be used over and over again in nature (e.g., the independent evolution of eyes in many different species). The evolutionary theorist Calvin (1989) argued similarly that innate language abilities themselves are quite recent, even rushed, additions to our genetic makeup, and as such are very likely exaptations of previously existing sequencing circuitry in the brain. What this means for present purposes is that not only did sophisticated unconscious modules evolve that give us today the building blocks of adaptive motives, preferences, and behavioral impulses, all operating unconsciously, there was also evolved a mechanism to integrate or interface these separate, parallel inputs into serial behavioral and judgmental responses. Our ability to take a vague thought and have it come out of our mouths in a complete coherent sentence, the production of which happens unconsciously, is a paramount example of this. *It is not something we need consciousness or free will for.* It is not the case that notwithstanding all of these wonderful adaptive unconscious inputs, we still need a central conscious executive, operating spontaneously and freely, to make behavioral decisions based on these inputs. All of

those separate types of input, as documented above, have their own direct connections to behavioral mechanisms. And there also must have been some mechanism to integrate the multiple parallel unconscious inputs into serial responses, because this is a problem we faced as a species in the distant past before the development of consciousness and language, as evidenced by the opportunistic exploitation or "co-option" of the mechanism by language.

Note, too, in this regard the recent "surprising" findings of Dijksterhuis, Bos, Nordgren, and van Baaren (2005), who showed that better decisions are made when a person is distracted while making them than when able to devote total conscious attention and deliberation to the process. In these studies, across a variety of domains, participants were first presented with the relevant facts, and then made decisions as to the best house to buy or which soccer team would win a particular match. Some then had to do a secondary task and so were distracted during the decision time interval, and others were not. Those who were distracted consistently outperformed the "conscious" group in these choices (the studies were designed so that there was a best or optimal solution by objective standards).

From the perspective of modern decision theory these are very surprising findings, but from the present perspective it makes sense that left to its own devices of integrating various disparate pieces of information and coming to the best answer—the task for which the unconscious mind evolved for eons prior to the late add-on of conscious processing—the unconscious route worked best. The conscious process, unlike the unconscious, was driven by whatever particular heuristic or theory the participant might possess as to how to make the decision (e.g., "Eindhoven never loses on Sunday," "Stone houses have the best resale value"), and other research has shown such lay theories to be of dubious validity or value (see Nisbett & Wilson, 1977; Wilson & Brekke, 1994); moreover, conscious but not unconscious processes suffer from capacity limitations on the processing of multiple pieces of information in parallel (e.g., Miller, 1956). Again, the finding that people make better decisions when the integration processes are unconscious, rather than conscious, is surprising and controversial only if one is assuming that free will or conscious processes are required to solve such integration and combination problems.

THE PRIMACY OF THE UNCONSCIOUS

Multiple sources of behavioral impulses, coming from evolution, culture, learning, and the current environment, reverse the usual assumptions of how we generate our behavior. As we stand, each moment, on the threshold of the near future, experiencing the uncertainty and spontaneity of our own actions, we are not aware of and do not experience all of these unconscious influences acting upon us. Our subjective phenomenology has given us the strong sense, difficult

to overcome, that our ethereal free will is the source of our behaviors, judgments, and goal pursuits.

Again, given as well the field of psychology's meta-assumption of the primacy of conscious will, the extensive documentation of unconscious controls from our distant and recent past and our present seem surprising and controversial. But reversing the causal assumption and recognizing the substantial role played by unconscious forces of evolutionary design, cultural assimilation in early childhood, and our minds as wide open to environmental priming influences, makes these and other similar findings much less controversial and more understandable. The lines of priming research described above show how action and motivational tendencies can be put into motion and cause us to behave in a certain way, without our being aware of the source of those tendencies.

But there are other demonstrations outside of priming research. Take, for example, Libet's (1986) well-known *time of intention* studies, Wegner's (2002) *misattribution of will* studies, and Baumeister, Bratslavsky, Muraven, and Tice's (1998; Muraven, Tice, & Baumeister, 1998) striking demonstrations of *ego depletion* effects. In the Libet paradigm, participants are free to make a button-pressing or other response whenever they choose (simulating the state of free will) and are asked only to note when (by reference to a sweep-hand clock in front of them) they had made the intention to respond. Libet at the same time was measuring brain activation potentials associated with the instigation of action (i.e., the P300 wave). The "surprising" finding was that the action potential consistently came 300–500 milliseconds *before* the participant's conscious awareness of intending to make the response. Consistent with the present argument that our action impulses are generated for us through unconscious mechanisms, the impulses, even in this paradigm emphasizing free will or action, came prior to the person's conscious awareness of having made them (but see Dennett & Kinsbourne, 1992).

Wegner's research (Wegner & Wheatley, 1999) makes this point in a different way, by showing how people's feeling of having willed a given event to occur is an *attribution* or inference (not a direct readout of actual causation) based on key variables such as the timing of their thoughts of performing the action relative to the action occurring, through a novel paradigm in which these variables could be manipulated without the person's knowledge. The right combination of these variables produced feelings in the participants of having willed the event when in fact it was not under their control at all. Finally, the ego depletion studies (Baumeister et al., 1998), in which making even a simple conscious choice or decision significantly decreased a person's ability to engage in self-control, were surprising because they showed how little conscious self-regulatory capacity we actually have (far less than one would expect if conscious choice and intention was required for nearly all of our mundane behaviors, as long argued by Bandura [1986] among others).

Each of these lines of research converge on the conclusion that the will is not the source of ideas of what to do next. Impulses come from a variety of unconscious sources, as described above, prior to consciousness becoming aware of them (Gazzaniga, 1985). Twenty years ago, Libet's (1986) claim seemed preposterous to many, because we did not know much about where these mysterious "impulses" came from (if not from conscious will), but now we do know enough about them to bring Libet's claim into the mainstream.

CONCLUSIONS

I have argued here for a new way of looking at the issue of free will, one that begins with the assumption of mainly unconscious instead of conscious causation of action and phenomenal experience, and that is better aligned with our knowledge of the rest of nature, in which examples of amazing, complex yet unconsciously operating design (in animals and plants) are plentiful (see Dawkins, 1976; Dennett, 1995). As has often been noted (e.g., Blackmore, 1999; Dawkins, 1976, p. 67), the value of a new perspective can be seen in terms of what phenomena it can readily explain that were previously difficult to account for. Among such phenomena that were surprising from the starting assumption of conscious choice and free will, but which make sense within the present perspective of the primacy of unconscious forces, are (1) the automatic evaluation of novel objects, (2) the immediate connection between automatic evaluation and behavioral (motoric) tendencies, (3) the name-letter and birth-date effect on important life decisions, (4) the unconscious mimicry of others' behavior, (5) unconscious goal pursuit over time in the absence of ability to accurately self-report on one's intentions, (6) the very recent and rapid acquisition of language abilities in evolutionary history, (7) that unconsciously made decisions involving integration of relevant features are superior in quality to consciously made ones, (8) the misattribution of free will, (9), that brain-wave impulses to act precede conscious awareness of the intention to act, and (10) the scarcity of conscious self-regulatory capacity. To me, this is rather impressive evidence for the value of the new perspective, in which unconscious, not conscious, causes are primary, and unconscious, not conscious, processes are assumed at the outset of any new line of inquiry.

Regarding the psychological concept of free will, the evidence reviewed above, along with the substantial banks of knowledge already gained in the other natural sciences, leads to the conclusion that there is no need to posit the existence of free will in order to explain the generation of behavioral impulses, and there is no need to posit free will in order to explain how those (unconscious) impulses are sorted out and integrated to produce human behavior and the other higher mental processes. The phenomenological feeling of free will is very real, just as real for those scientists who argue against its actual existence as for everyone else, but this strong feeling is an illusion, just as much as we

experience the sun moving through the sky, when in fact it is we who are doing the moving. Each of us lives in a difficult to predict present and near future, which includes our own behavior in it, and which therefore makes our behavior feel spontaneous and undetermined—but what we don't experience, yet which are just as real, are the multitude of unconscious influences and determinants of what we think, act, and feel.

Finally, as psychologists who are also natural scientists, we need to keep in mind that the "unconscious mind" is the rule in nature, not the exception. It is, perhaps, time for us to stop being so surprised.

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