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The Automaticity Juggernaut—or, Are We Automatons After All?

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Writing at the very beginnings of scientific psychology, James (1890/1980) considered the “automaton-theory” proffered by La Mettrie (1748/1749), that humans were conscious automatons, but automatons nonetheless—thus erasing Descartes’s distinction between man and animals. Although admitting that “habit covers a very large part of life” (p. 109), James concluded that “to urge the automaton-theory upon us, as it is now urged, on purely *a priori* and *quasi-metaphysical* grounds, is an *unwarrantable impertinence in the present state of psychology*” (p. 141, emphasis original).

James was skeptical about the automaton-theory, but he implied that he was open to new scientific evidence that might prove the theory to be true after all. According to some psychologists, that moment has arrived. In 1999, the *American Psychologist* published a special issue entitled “Behavior—It’s Involuntary” describing the concept of automaticity as a “fundamental breakthrough in the understanding of motivations, free will, and behavioral control”—the breakthrough being the recognition that, in the ordinary course of everyday living, we really are operating on automatic pilot. As the guest editor wrote, “We perceive ourselves to have far more control over our everyday behavior than we actually do... [T]he source of behavioral control comes not from active awareness but from... mental activations of which we are unaware and environmental cues to which we are not consciously attending that have a profound effect on our behavior (Park, 1999, p. 461).

Whereas once psychologists might have believed that unconscious and automatic processes were exceptional, if not downright pathological, apparently

we have now come to understand that they are the normative rule and conscious control the exception. How did this happen, and why?

THE ROOTS OF AUTOMATICITY

The modern notion of automaticity has its origins in research on attention (Kahneman, 1973), and was particularly inspired by the familiar Stroop effect induced by discrepancies between the identities of color words and the ink in which they are printed (MacLeod, 1991). Apparently, subjects cannot help processing the meaning of the word, and this interferes with the manifest task of naming the color in which the word is printed. Studies of reading and visual search also contributed to the elaboration of the concept (LaBerge & Samuels, 1974; Posner & Snyder, 1975; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977, 1984). By the end of the 1970s, cognitive psychologists had settled on a distinction between automatic (or effortless) and controlled (or effortful) information processing in which automatic processes were defined in terms of four core properties:

1. *Inevitable evocation*: Automatic processes are inevitably engaged by the appearance of specific environmental stimuli, regardless of the person's conscious intentions, deployment of attention, or mental set.
2. *Incorrigible completion*: Once evoked, they run to completion in a ballistic fashion, regardless of the person's attempt to control them.
3. *Efficient execution*: Automatic processes are effortless, in that they consume no attentional resources.
4. *Parallel processing*: Automatic processes do not interfere with, and are not subject to interference by, other ongoing processes—except when they compete with these processes for input or output channels, as in the Stroop effect.

Hasher and Zacks (1979) offered an expanded concept of automaticity, in which automatic processes are not only independent of any intentions, but also independent of any other personal or environmental conditions, such as emotional states, distractions, or stresses. Moreover, provided that the person is neurologically intact, they suggested that performance on automatic tasks would be uncorrelated with individual differences in arousal level or intelligence, or with group differences associated with race, ethnicity, socioeconomic status, or education. These features proposals are consistent with a general principle of *automatic invariance*, but it is not clear that these features should have the same status as the canonical attributes outlined above—which Bargh (1994) aptly dubbed “the four horsemen of automaticity.”

The contemporary concept of automaticity has its roots in biological and ethological studies of reflexes, taxes, and instincts—all of which are conceived

as involuntary responses to eliciting or releasing stimuli—and in traditional analyses of classical and instrumental conditioning, in which environmental stimuli are held to acquire the power to elicit specific responses. Thus, although some automatic processes may be innately specified, others appear to become automatized through extensive practice. Because they consume no attentional resources, automatic processes leave no consciously accessible traces in memory. In fact, widespread acceptance of the notion of automaticity was an early milestone in the revival of interest in unconscious mental life (Kihlstrom, 1987; see also Hassin, Uleman, & Bargh, 2005). In theory, at least, automatic processes are unconscious in the strict sense of the term: They are neither available to conscious awareness nor amenable to conscious control.

FROM COGNITIVE TO SOCIAL PSYCHOLOGY— AND BEYOND

The concept of automaticity was an important advance in cognitive theory, as it offered a resolution of the dispute between early- and late-selection theories of attention (Pashler, 1998). According to the early-selection view, preattentive, preconscious processing was limited to analyses of the physical features of a stimulus; in theory, analysis of meaning required the conscious deployment of attention. According to the late-selection view, even meaning analyses were conducted preattentively. Automaticity theory permitted complex, semantic analyses to be carried out preattentively, and thus preconsciously, so long as they were automatized—for example, through extensive practice. In later developments, automaticity became detached from attention theory, and was reinterpreted in terms of memory (J. R. Anderson, 1992; G. D. Logan, 1988). In addition, cognitive psychologists began to develop experimental paradigms, such as the process-dissociation procedure (L. L. Jacoby, 1991), by which they could estimate the contributions of automatic and controlled processes to task performance.

Following its embrace by cognitive psychology, the concept of automaticity quickly spread to other domains, particularly personality and social psychology. For example, Nisbett and Wilson (1977) clearly had automaticity in mind when they argued that we are consciously aware of the *contents* of our minds, such as beliefs and attitudes, but unaware of the *processes* that generated those contents: “We may have no direct access to higher order mental processes such as those involved in evaluation, judgment, problem solving, and the initiation of behavior” (p. 232).

Similarly, Langer asserted that most social interactions are unreflective and mindless, following highly learned, habitual scripts that require very little conscious attention and deliberation: “[M]indlessness may indeed be the most common mode of social interaction” (E. Langer, Blank, & Chanowitz, 1978,

p. 641). "Unless forced to engage in conscious thought, one prefers the mode of interacting with one's environment in a state of relative mindlessness. . . . This may be the case, because thinking is effortful and often just not necessary" (E. J. Langer, 1978, p. 40).

Along these lines, Taylor and Fiske (1978) argued that people are "cognitive misers" laboring under limited cognitive capacity, and preferring "top of the head" judgments to reasoned, thoughtful appraisals. Smith and Miller (1978) were perhaps the first to explicitly invoke the concept of automaticity, as it was then emerging in cognitive psychology, in a commentary on the Nisbett/Wilson paper. From their point of view, limitations on introspective access occurred because salient social stimuli are processed, and responded to, automatically.

Thereafter, a number of social psychologists explicitly referred to the concept of automaticity in designing and interpreting experiments on attitudes and social judgments. For example, Higgins and King (1981) distinguished between two sources of automatic priming effects on social judgments: chronic and temporary. Bargh (1982) showed that presentation of self-relevant adjectives over the unattended channel in a dichotic listening task could disrupt shadowing performance, after the manner of the "cocktail-party phenomenon"; and that parafoveal presentation of hostile trait adjectives could bias interpretation of the "Donald story" used in studies of impression formation and person memory (Bargh & Pietromonaco, 1982).

By the end of the 1980s, the concept of automaticity had been applied across a large number of domains in personality and social psychology, including prejudice, the self-concept, emotion, trait ascriptions, and ruminative thought. A landmark volume edited by Uleman and Bargh (1989) contained chapters detailing the role of automatic, unintended thoughts in a variety of domains, including the activation of self-beliefs and ruminations in anxiety and depression; the influence of feelings on thought and behavior; the ascription of personality traits and the formation of characterological impressions; heuristic information processing in persuasion; and ironic rebound effects.

THE AUTOMATICITY JUGGERNAUT GAINS MOMENTUM

After 1989, the concept of automaticity proliferated rapidly through personality and social psychology (Bargh, 1994). A PsycINFO search reveals that prior to 1975, the terms *automatic* or *automaticity* had appeared in the abstracts of only 29 articles published in personality and social psychology journals—and most of these had to do with automatic writing and other aspects of spiritualism. Another 6 were added by 1980; in the 1980s, there were 40 such articles; and in the 1990s, 115 (for comprehensive coverage of these studies, see

D. M. Wegner & Bargh, 1998). As this chapter was being proofread, in late 2007, the new millennium had added 240 new papers—a geometric increase of interest in automaticity, as opposed to the almost perfectly linear increase in the total number of articles published over the same span of time (see also Bargh, 2007).

In 1997, the *Journal of Experimental Social Psychology* devoted an entire issue to the role of automatic processes in stereotyping and prejudice; the *Journal of Personality and Social Psychology* followed suit in 2001. In between, Greenwald, Banaji, and their colleagues introduced the Implicit Association Test, intended to reveal hidden prejudices, and based on the assumption of an automatic association between certain social stimuli and judgments of “good” or “bad” (Greenwald, McGhee, & Schwartz, 1998; Nosek, Greenwald, & Banaji, 2005),

Of course, the concept of automaticity gained popularity in its home territory of cognitive psychology, as well—but with a difference. Cognitive psychologists have maintained a distinction between automatic and controlled processes, and have spent a great deal of effort in assessing their differential contributions to task performance—as in the process dissociation paradigm (e.g., L. L. Jacoby, 1991). At first, social psychologists followed suit, resulting in a number of *dual-process* theories of attitudes, persuasion, and the like, which described the interplay between automatic and controlled processes (e.g., Chaiken & Trope, 1999). Fairly quickly, however, this balanced perspective began to be replaced by a more single-minded focus on automaticity. For example, Gilbert (1989, p. 189) argued for the benefits of “thinking lightly about others.” And Bargh (2000, p. 938) argued that even intentionally controlled behavior was ultimately automatic in nature, “controlled and determined” by “automatically operating processes.” Thus, rather than taking a balanced view of the differential roles of automatic and controlled processing in social interaction, some social psychologists seem to have embraced a view of social thought and action as almost exclusively automatic in nature.

This evolutionary development can be clearly seen in the work of John Bargh, who has been one of the foremost proponents of the concept of automaticity within social psychology. In 1984, writing on “the limits of automaticity,” Bargh was critical of Langer’s position that social interaction proceeded mindlessly:

A better summary of the mindlessness studies would be that...when people exert little conscious effort in examining their environment they are at the mercy of automatically-produced [*sic*] interpretations....Automatic effects are...typically limited to the perceptual stage of processing. There is no evidence...that social behavior is often, or even sometimes, automatically determined. (Bargh, 1984, pp. 35–36)

But only 5 years, later, his position had shifted considerably, as in the editorial introduction to *Unintended Thought*:

As most social psychological models implicitly assumed the role of deliberate, calculated, conscious, and intentional thought, the degree to which unintended [automatic] thought did occur in naturalistic social settings became of critical importance....Langer (1978) emphatically rejected the assumption of deliberate, conscious, thought as typically underlying social behavior....Our own research programs have followed in this tradition.... (Bargh & Uleman, 1989, pp. xiv-xv)

And in his own contribution to that volume, he writes,

Is this to say that one is usually not in control of one's own judgments and behavior? If by "control" over responses is meant the *ability* to override preconsciously suggested choices, then the answer is that one *can* exert such control in most cases....But if by "control" is meant the actual *exercise* of that ability, then the question remains open....My own hunch is that control over automatic processes is not usually exercised....[I]t would appear that only the illusion of full control is possible, as the actual formation of a judgment or decision....A fitting metaphor for the influence of automatic input on judgment, decisions, and behavior is that of the ambitious royal advisor upon whom a relatively weak king relies heavily for wisdom and guidance. (pp. 39-40)

Only one year later, Bargh took a further step, asserting that automaticity pervades the information processing system, such that automatically evoked mental representations automatically generate corresponding motives, which in turn automatically generate corresponding behaviors (Bargh, 1990; Bargh & Gollwitzer, 1994). Thus, merely reading words related to rudeness or politeness can affect whether a subject will interrupt the experimenter's conversation, whereas reading words related to the elderly stereotype will lead subjects to walk more slowly down the hall (Bargh, Chen, & Burrows, 1996; see also Ferguson & Bargh, 2004).

In a chapter describing "the automaticity of everyday life," Bargh continued to expand the role of automatic processes:

[T]he more we know about the situational causes of psychological phenomena, the less need we have for postulating internal conscious mediating processes to explain these phenomena.... [I]t is hard to escape the forecast that as knowledge progresses regarding psychological phenomena, there will be less of a role played by free will or conscious choice in accounting for them....That trend has already begun..., and it can do nothing but continue. (Bargh, 1997a, p. 1)

Later in the same chapter, Bargh asked, "Is consciousness riding into the sunset?": "Automaticity pervades everyday life, playing an important role in creating the psychological situation from which subjective experience and subsequent conscious and intentional processes originate..." (p. 50).

Actually, in the typical Western, the hero rides into the sunset only after rescuing the sheriff, vanquishing the villain, and kissing the girl—a pretty good situation. The image Bargh really seems to have in mind is of the sun *setting on* consciousness—or, perhaps, consciousness on an ice floe, like the elderly Eskimo, floating out to sea. But just in case the reader missed the message, Bargh quickly repeats it: "I emphatically push the point that automatic, nonconscious processes pervade all aspects of mental and social life, in order to overcome what I consider dominant, even implicit, assumptions to the contrary" (p. 52).

In response to criticism that he might have overestimated the role of automatic processes in social interaction, Bargh (1997b) initially conceded that his "insinuation" that "conscious involvement is...entirely absent" from social interaction might have been "more tactical than sincere" (p. 231). Nevertheless, at the end of that same paper, he reasserted the overwhelming dominance of unconscious automaticity over conscious control: "Bloodied but unbowed, I gamely concede that the commentators did push me back from a position of 100% automaticity—but only to an Ivory© soap bar degree of purity in my beliefs about the degree of automaticity in our psychological reactions from moment to moment" (p. 246). For those who are too young to get the reference, the implication is that social cognition and behavior is 99.44% automatic.

Thus, it no surprise that Bargh has continued to assert "the unbearable automaticity of being": "[M]ost of a person's everyday life is determined not by their conscious intentions and deliberate choices but by mental processes that are put into motion by features of the environment and that operate outside of conscious awareness and guidance" (Bargh & Chartrand, 1999, p. 462).

Bargh's most recent summary of his view is simply entitled "The Automaticity of Social Life" (Bargh & Williams, 2006)—not the more modest "Automaticity *in* Social Life," which might be appropriate if automaticity were just one aspect of what goes on, but rather the sweeping implication that social life *is* automatic. Our impressions to the contrary are apparently illusions of control based on the high memorability of those occasions, roughly 0.56% of the total, when we actually have it and exercise it.

JUMPING ON THE JUGGERNAUT

Bargh is not alone in believing that automatic processes dominate experience, thought, and action, and relegating deliberate, conscious activity to the margins. Although Wegner and Schneider (1989) described a "war of the ghosts

in the mind's machine" between automatic and controlled processes, they also suggested that the former tended to win out over the latter: "When we want to brush our teeth or hop on one foot, we can usually do so; when we want to control our minds, we may find that nothing works as it should. . . . Even William James, that champion of all things mental, warned that consciousness has the potential to make psychology no more than a tumbling-ground for whimsies" (p. 288).

So great was their enthusiasm for unconscious, automatic processes that these authors actually misquoted James. Here he is in full, criticizing von Hartmann (1868/1931) precisely for taking the position advocated by Wegner and Schneider—that unconscious processes rule the universe: "[T]he distinction between *the unconscious and the conscious being of the mental state* is the sovereign means for believing what one likes in psychology, and of turning what might become a science into a tumbling-ground for whimsies" (James, 1890/1980, p. 163, emphasis original). Given that this passage occurs in the context of James's 10-point critique of the notion of unconscious thought, it is clear that James considered *unconscious* processes, not conscious ones, to be the "tumbling-ground for whimsies."¹

Nevertheless, Wegner published a book entitled *The Illusion of Conscious Will*, whose argument he summarized as follows:

[T]he real causal mechanisms underlying behavior are never present in consciousness. Rather, the engines of causation operate without revealing themselves to us and so may be unconscious mechanisms of mind. Much of the recent research suggesting a fundamental role for automatic processes in everyday behavior (Bargh, 1997) can be understood in this light. The real causes of human action are unconscious, so it is not surprising that behavior could often arise—as in automaticity experiments—without the person's having conscious insight into its causation (D. M. Wegner, 2002, p. 97; see also D. M. Wegner & Wheatley, 1999).

Wegner's book included a diagram depicting an "actual causal path" between the "unconscious cause of thought" and "thought," and another between the "unconscious cause of action" and "action," but only an "*apparent* causal path" between thought and action.²

Similarly, Wilson has suggested that conscious processing may be maladaptive because it interferes with unconscious processes that are more closely tuned to the actual state of affairs in the outside world:

...Freud's view of the unconscious was far too limited. When he said . . . that consciousness is the tip of the mental iceberg, he was short of the mark by quite a bit—it may be more the size of a snowball on top of that iceberg. The mind operates most efficiently by relegating a good deal of high-level, sophisticated thinking to the unconscious. . . . The adaptive unconscious

does an excellent job of sizing up the world, warning people of danger, setting goals, and initiating action in a sophisticated and efficient manner. It is a necessary and extensive part of a highly efficient mind. (2002, pp. 6–7; for a critique, see Kihlstrom, 2004b)

The automaticity juggernaut has ranged well beyond the confines of academic psychology. Summarizing much of this research and theory, Sandra Blakeslee, a science correspondent for the *New York Times*, informed her readers that “in navigating the world and deciding what is rewarding, humans are closer to zombies than sentient beings much of the time” (“Hijacking Brain Circuits with a Nickel Slot Machine,” February 19, 2002). More recently, and drawing largely on Gilbert’s and Wilson’s work, Malcolm Gladwell, a staff writer for the *New Yorker*, has written a trade book, *Blink*, touting the virtues of “thinking without thinking” (Gladwell, 2005).

The part of our brain that leaps to conclusions...is called the adaptive unconscious, and the study of this kind of decision making is one of the most important new fields in psychology. The adaptive unconscious is not to be confused with the unconscious described by Sigmund Freud, which was a dark and murky place filled with desires and memories and fantasies that were too disturbing for us to think about consciously. This new notion of the adaptive unconscious is thought of, instead, as a kind of giant computer that quickly and quietly processes a lot of the data we need in order to keep functioning as human beings. (p. 11)

As this chapter was being finished, Gladwell’s book had been on the *New York Times* nonfiction best-seller list for almost 18 months, attesting to the popularity of the concept of automaticity. It has also drawn a stern retort by Malcolm LeGault, entitled *Think: Why Critical Decisions Can’t Be Made in the Blink of an Eye*:

Predictably, as if filling a growing market niche, a new-age, feel-good pop psychology/philosophy has sprung up to bolster the view that understanding gleaned from logic and critical analysis is not all that it’s cracked up to be....In *Blink*, Mr. Gladwell argues that our minds possess a subconscious power to take in large amounts of information and sensory data and correctly size up a situation, solve a problem, and so on, without the heavy, imposing hand of formal thought. (p. 8)

Gladwell’s book has also inspired a parody from the pseudonymous Noah Tall, entitled *Blank: The Power of Not Actually Thinking at All*:

The part of our brain that leaps to conclusions that are reached without any thinking involved is called the *leapativie concluder* or, in some circles, the

concussive unconscious, because the unexpected hunches that suddenly slam into the brain of those who are receptive to unexpected hunches often feel exactly like being hit on the head by a heavy iron frying pan with a nonstick cooking surface... The only reason humans have survived as long as we have despite our forgetfulness, laziness, and downright stupidity is because that tiny frying pan in our head hits us upside the unconscious when our conscious is goofing off. (Tall, 2006, pp. 7–8)

THE THIRD-AND-A-HALF DISCONTINUITY?

Experimental evidence indicates that automatic processes play some role, under some conditions, in social cognition and behavior. On this much we can agree. But what might be called the doctrine of automaticity goes way beyond such restricted conclusions to assert that automatic processes pervade human experience, thought, and action; conscious awareness is largely an afterthought; and conscious control is an illusion. Humans are, in this view, a special class of zombies, virtual automatons who are conscious, as La Mettrie had argued, but for whom consciousness plays little or no functional role in thought and action. The purpose of consciousness is to erect personal theories about why things happen as they do, and why we do what we do. But, on this view, consciousness is largely irrelevant to what actually goes on. Bargh puts the point concisely: “As Skinner argued so pointedly, the more we know about the situational causes of psychological phenomena, the less need we have for postulating internal conscious mediating processes to explain these phenomena” (1997a, p. 1).

Of course, the progress of science will by its very nature correct popular misunderstandings of how the world works, and occasionally reveal surprising, even unpleasant, truths about ourselves. Sigmund Freud famously situated himself in line with Copernicus, who taught us that Earth is not at the center of the universe, and Darwin, who taught us that humans are creatures of nature just like any other. For Freud, the third blow against “human megalomania” was his discovery (as he claimed it was) that conscious experience, thought, and action was determined by unconscious, primitive drives: “[H]uman megalomania will have suffered its third and most wounding blow from the psychological research of the present time which seeks to prove to the ego that it is not even master in its own house, but must content itself with scanty information of what is going on unconsciously in the mind” (Freud, 1915–1917/1961–1963, p. 285; see also Bruner, 1958).

Bargh has explicitly situated himself in this line of scientific progress, substituting for Freud’s irrational “monsters from the Id” a view of humans as operating not necessarily irrationally, but whether rational or not, operating mostly on automatic pilot, uninfluenced by conscious deliberation: “[W]e are

not as conscious, or as free, as we thought we were" (Bargh, 1997a, p. 52). Henceforth, we must live with "the unbearable automaticity of being" (Bargh & Chartrand, 1999).

Like Bargh, Wegner and Smart (1997) also replaced Freud's third discontinuity, substituting automaticity for irrationality. For the record, there also seems to be a fourth discontinuity, between humans and machines, which some visionaries, like Mazlish (1993) and Kurzweil (1999) see as being erased by advances in artificial intelligence. Of course, the idea that humans are simply machines—if machines made of meat—is entirely consonant with the idea that human experience, thought, and action are the product of unconscious processes operating automatically.

It would be one thing if the doctrine of automaticity were backed by sound scientific evidence. Then, we would have no choice but to shrug our shoulders, cast off our sentimental beliefs in conscious control, and free will, and find some way to bear "the unbearable automaticity of being," just as we have learned to live with the knowledge that Earth is not the center of the universe and that humans are not the products of Special Creation. But in fact, the doctrine of automaticity is not true—or, at least, it is not backed by sound scientific evidence. There are at least three reasons for thinking that the third discontinuity, at least the one erased by Bargh and Wegner (never mind Freud) is not quite ready to be expunged.

The first reason, paradoxically, is that the theoretical underpinnings of the concept of automaticity have begun to unravel (G. D. Logan, 1997; Moors & DeHouwer, 2006; Pashler, 1998). In particular, the resource theories of attention on which the concept was originally based have come into question. For example, there does not seem to be a single pool of attentional resources. Nor does even extensive practice with a task render its performance effortless. There is even some data that suggests that attentional capacity is not limited—at least, that its limits are very wide indeed. As noted earlier, alternative theories of automaticity have been proposed, particularly based on memory rather than attention memory. These revisionist theories preserve the legitimacy of the concept of automaticity but tend to undercut the various features by which automatic processes are recognized. So, for example, in J. R. Anderson's (1992) proceduralization view, automatic processes are engaged only when an appropriate cue is presented in the context of a particular goal state; and in Logan's (2002) instance-based theory, automatic processes are evoked only if the subject has the appropriate mental set. Further, once evoked, automatic processes do not necessarily proceed to their conclusion unimpeded, in a ballistic fashion.

One response to this state of affairs is to abandon the assumption that the distinction between automatic and controlled processes is a qualitative, all-or-none matter; rather, it is argued, automaticity varies by degrees (Bargh, 1989, 1994). This response is fine, and almost certainly correct, but it has the

unfortunate consequence of making it difficult to know precisely when a process is automatic, and when it is not. What happens, for example, if a process seems to run off unintentionally, but nevertheless consumes attentional capacity? And, of course, the concession that some tasks are performed *more or less* automatically undercuts the fundamental message of "the automaticity of social life" (Bargh & Williams, 2006).

Moreover, it should be noted that the shift to a continuous view of automaticity has been accompanied by a certain slippage in the operationalization of the concept in psychological experiments. For example, in his earliest research Bargh employed a dichotic listening task (Bargh, 1982) or parafoveal presentation (Bargh & Pietromonaco, 1982) in an effort to conform to a relatively strict operational definition of automaticity. Similarly, Fazio et al. (1986) and Devine (1989) employed extremely short prime-target intervals, in an attempt to prevent their subjects from employing controlled processes. But in more recent work, such strictures are often abandoned. For example, Bargh and his colleagues have presented words in subjects' clear view, and asked them to pronounce them (Bargh, Chaiken, Raymond, & Hymes, 1996), or to assemble them into sentences (Bargh et al., 1996)—tasks that would seem to involve conscious processing. Granted, in these cases the subjects were not specifically instructed to process the relevance of the words to certain attitudes and stereotypes, thus approximating the unintentional nature of automatic processing. But this reliance on only a single feature is a considerable departure from the concept of automaticity as it was originally set out in cognitive psychology.

In fact, within social psychology the concept of automaticity seems to be invoked whenever subjects engage in processing that is incidental to the manifest task set for them by the experimenter—whether this is shadowing text, detecting visual stimuli, pronouncing words, or assembling sentences. But just because something is done incidentally does not necessarily mean that it has been performed unintentionally, much less automatically. In many situations, subjects may have plenty of processing capacity left over, after the manifest task has been performed, and they may use some of it, quite deliberately, to perform other tasks that interest them—such as critically analyzing the experiment's cover story, or speculating about the experimenter's true purposes (Orne, 1962, 1973).

Most critically, the social-psychological literature on automaticity rarely contains any actual comparison of the strength of automatic and controlled processes. These were features of some of the earliest experiments on automaticity: In studies already described, for example, Fazio et al. (1986), and Devine (1989) also employed relatively long prime-target intervals in their experiments, in an attempt to compare the effects automatic and controlled processing. Within cognitive psychology, there has been considerable interest in developing techniques such as the process-dissociation procedure (PDP; L. L. Jacoby, 1991) to

directly compare the contributions of automatic and controlled processes to task performance. For example, Jacoby and his colleagues (1997) showed convincingly that successful recognition was mediated mostly by controlled retrieval in young subjects, but mostly by automatic familiarity in the elderly. The PDP has its critics (e.g., Curran & Hintzman, 1995), but the point is that cognitive psychologists tend to assume that both automatic and controlled processes contribute to task performance, and try to disentangle them. By contrast, an increasingly popular view within social psychology is that automatic processes dominate, and controlled processes are largely irrelevant.

In fact, attempts to use the PDP or some similar procedure to directly compare the strengths of automatic and controlled processes in some social-psychological task are vanishingly rare. As of this writing, fewer than a dozen such papers had appeared in personality and social psychology journals, out of the total corpus of automaticity papers described above. In one recent attempt, Uleman and his colleagues (Uleman, Blader, & Todorov, 2005, Experiment 1) presented subjects with photographs of target individuals, paired with descriptions of their behaviors; immediately afterward, or after 20-minute or 2-day delays, they were asked to rate the targets on a variety of personality traits. In an "inclusion" condition, the subjects were told that the behavior descriptions were informative about the targets' traits, and they should consider them; in an "exclusion" condition, they were told that the behavior descriptions were irrelevant, and they should ignore them. This "method of opposition" pits automatic and controlled processes against each other, and permits an estimate of the contributions of both kinds of processes to performance on the trait-rating task. In fact, the experiment showed that controlled processes dominated automatic ones on the immediate trait ratings; and there was almost a perfect balance between them on the ratings made after both short and long delays. Although it is true, as Uleman et al. note, that delay reduced the impact of controlled processing on task performance, results like this are far from showing that automatic processes are *more* important than controlled processes—much less that controlled, conscious processes are an afterthought, irrelevant to human experience, thought, and action.

Similarly, Payne et al. (2005) employed a variant of the PDP to test two models of the relation between controlled and automatic processing in the "weapon identification effect," by which an ambiguous object is more likely to be identified as a weapon if it is held by a Black than by a White person. Payne (2001) had earlier shown that both automatic and controlled processes play a role in this effect, and that the influence of automatic processes was magnified under conditions of a response deadline. But in a reanalysis of this data, Payne et al. showed that the effect was dominated by controlled processes, and automatic processes played a relatively subordinate role, biasing judgments only when the controlled process was absent. In fact, their analysis specifically rejected the widely popular two-stage view of automaticity in stereotyping,

in which stereotypes are automatically activated and must be overcome by controlled processes (see also Payne & Stewart, 2007). At any rate, it should come as no surprise that automatic processes play an especially important role when subjects are required to respond within 500 msec of a stimulus.

THE ALLURE OF AUTOMATICITY

It is one thing to assert that automatic processes play a role in social interactions, along with controlled processes, with the proviso that some automatic processes are more automatic than others. It is another thing entirely to embrace and promote the idea that automatic processes dominate human experience, thought, and action to the virtual exclusion of everything else. Although there is plenty of evidence that automatic processes play some role in social cognition and behavior, as they probably do in almost every aspect of human performance, nothing in any experimental demonstration of automaticity demands such a sweeping inference.

So why are some social psychologists inclined to take this further, empirically unjustified, and logically unnecessary, step? Perhaps, if the step is not motivated by empirical data, then it is motivated by something closer to the *a priori* and *quasi-metaphysical* reasons criticized by James more than a century ago.

Partly, the enthusiasm for automaticity seems to reflect a reaction against the “cognitive revolution” in social psychology, with its (tacit) view of social interaction as mediated by conscious, deliberate, rational thought—as reflected, for example, in balance theory (Heider, 1946, 1958), cognitive consistency theory (Festinger, 1957; see also Abelson et al., 1968), cognitive algebra (N. H. Anderson, 1974), and early formulations of attribution theory (Kelley, 1967). It is also probably not an accident that social psychologists’ interest in automaticity began to develop at roughly the same time as the “affective counterrevolution” emerged in social psychology, with its view of affective states as automatically generated by environmental stimuli, independent of cognitive analysis (Zajonc, 1980, 1984). In fact, Zajonc (1999) has explicitly connected the two themes of automaticity and emotion.

Then, too, the biologization of social psychology may contribute to a reduced role for conscious control in theories of social interaction. To the extent that the reasons for particular patterns of social interaction are to be found in “selfish” genes whose only goal is their own reproduction (Dawkins, 1976), there seems to be little room for the kind of conscious, deliberate thought that we commonly associate with human intelligence. So, too, if social interaction is driven by mental and behavioral instincts that we share with our nonhuman ancestors (Barkow, Cosmides, & Tooby, 1992; Buss, 1999). Finally, social neuroscience (Cacioppo, Berntson, & McClintock, 2000) can, unless we are careful, veer into a reductionism that leaves conscious thought and other aspects

of commonsense "folk psychology" entirely out of the explanation of behavior (Churchland, 1986).

Although each trend entails risks, both the emergence of an affective psychology paralleling cognitive psychology and an interest in the neural and other biological underpinnings of social interaction should be seen as positive developments within social psychology. But there also seems to be a darker side to the current interest in automaticity. Currently, mainstream social psychology is characterized by a focus on judgment error, normative violations, and other aspects of social *misbehavior* (Krueger & Funder, 2004). Although it may be true (or at least arguable) that science learns more from counterintuitive findings that undercut commonsense "folk psychology," it is also true that this emphasis on the negative can degenerate into what might be called a "People Are Stupid" school of psychology (Kihlstrom, 2004a). That is, as we go about the ordinary course of everyday living, we do not think very hard about anything, and rely on biases, heuristics, and other processes that lead us into judgmental error (e.g., Nisbett & Ross, 1980; Ross, 1977; see also Gilovich, 1991). In this view, the evidence for irrationality consists not just in demonstrations of various heuristics and biases in judgment, because some of these might merely be evidence of bounded rationality (Simon, 1957), but also evidence of unconscious, automatic processes. It is not just that we do not think too hard about things; we also do not pay too much attention to what is going on around us or to what we are doing (Gilbert & Gill, 2000).

Nor do we know too much about why we do what we do (Nisbett & Wilson, 1977; T. D. Wilson & Stone, 1985; W. R. Wilson, 1979). Thought and behavior just happens, automatically, in response to environmental stimuli, and our belief that we control what we think and do amounts to little more than an illusion, an after-the-fact rationale. In fact, our attempts to consciously control our experience, thought, and action typically backfire (D. M. Wegner, 1989), and we would be better off if we relied on automatic processes (T. D. Wilson, 2002).

Also on the dark side is a long-standing, but again largely unspoken, alliance between social psychology and behaviorism (Zimbardo, 1999). Just as Watson (1913, 1919) and Skinner (1938, 1953, 1977, 1990) viewed behavior as under the control of environmental stimuli, so social psychology has historically been defined as concerned with the influence of the social situation on the individual's experience, thought, and action. Floyd Allport (1924), in his pioneering text on social psychology, adopted an expressly behavioristic stance, interpreting social behavior either as the response to the stimulus of another person's behavior or as a stimulus to another person's response. The behaviorist emphasis on the situation was codified by Gordon Allport 30 years later (1954), when he defined social psychology as the study of "how the thought, feeling, and behavior of individuals are influenced by the actual, imagined, or implied presence of other human beings" (p. 1).³

We can see the behaviorist emphasis on social behavior as response to environmental stimuli in the “Four As” of social psychology—aggression, altruism, attitude change, and attraction; in the classic studies of social facilitation and other aspects of social impact, conformity, persuasion; and elsewhere on almost any randomly selected page of a typical social psychology textbook. The doctrine of situationism is so firmly entrenched in social psychology that Ross and Nisbett (1991) identified “the principle of situationism” as the first leg of “the tripod on which social psychology rests” (p. 8). Although the cognitive perspective in social psychology that emerged in the 1960s often stressed the importance of the *perceived* situation, in fact many of the classic studies in the field made little or no reference to the internal cognitive processes by which individuals constructed the mental representations of the situation that actually governed their behavior.

As Berkowitz and Devine (1995) have noted, all of this classic literature can be reinterpreted in terms of the automatic elicitation of feelings, thoughts, and actions by environmental stimuli. Wegner and Bargh (D. M. Wegner & Bargh, 1998) agree:

Classic social psychology...makes people appear to be automatons. The situational influences on behavior investigated in these [classic] studies were (a) *unintended* on the part of the individual, (b) not something of which the person was *aware*, (c) a response to the situation occurring before the individual had a chance to reflect on what to do (i.e., *efficient*) or (d) *difficult to control* or inhibit even when the person is cognizant of the influence. As it happens, these are characteristics of automatic psychological processes, not of conscious control, and comprise a handy working definition of automaticity. (p. 447)

Of course, it should be noted that these classic experiments were all conducted before the concept of automaticity emerged in cognitive psychology. Therefore, we do not really know whether the effects they yielded were unintended, unaware, efficient, or difficult to inhibit.

A recent overview of social psychology intended for neuroscientists made the connection between situationism and automaticity even clearer:

If a social psychologist was going to be marooned on a deserted island and could only take one principle of social psychology with him it would undoubtedly be “the power of the situation.” All of the most classic studies in the early days of social psychology demonstrated that situations can exert a powerful force over the actions of individuals....

If the power of the situation is the first principle of social psychology, a second principle is that people are largely unaware of the influence of situations on behavior, whether it is their own or someone else's behavior. (Lieberman, 2005, p. 746)

The reason that people are blind to situational influences is that situational influences operate automatically and unconsciously.

Bargh himself has clearly connected behaviorism, situationism, and automaticity with the problem of free will (1997a, p. 1):

Now, as the purview of social psychology is precisely to discover those situational causes of thinking, feeling, and acting in the real or implied presence of other people . . . , it is hard to escape the forecast that as knowledge progresses regarding psychological phenomena, there will be less of a role played by free will or conscious choice in accounting for them. In other words, because of social psychology's natural focus on the situational determinants of thinking, feeling, and doing, it is inevitable that social psychological phenomena will be found to be automatic in nature.

The automaticity juggernaut is not strictly a return to stimulus-response behaviorism, because it agrees that cognitive processes mediate between stimulus and response. Thus it is able to maintain a superficial allegiance to cognitivism while harkening back to a radical situationism. If the cognitive processes underlying interpersonal relations behavior are automatically triggered by environmental cues, then behavior is determined by the environment; if social behavior is not absolutely automatic, at least not *too much* thought has gone into it. Inspired by the late Susan Sontag, we can think of this as behaviorism with a cognitive face.

ARE WE AUTOMATONS AFTER ALL?

Although the cognitive revolution made the study of consciousness respectable again (Hilgard, 1980), the topic of consciousness has always made some psychologists (and other cognitive scientists) nervous, resulting in what Flanagan (1992) has dubbed *conscious shyness*. In part, conscious shyness reflects a kind of positivist reserve, itself a holdover from behaviorism, which prefers behavior over self-reports as the data for psychology; in part, it reflects a strategic preference for approaching consciousness obliquely, through studies of perception, memory, and the like that do not expressly evoke the concept of consciousness. But there is more to it than that. In Flanagan's view, *conscious inessentialism*, or the idea that conscious awareness and control is not necessary for many aspects of cognition, feeds the *epiphenomenalist suspicion* that consciousness plays no causal role in behavior after all. In this view, we may be conscious zombies, but we are zombies nonetheless.

By embracing the concept of automaticity, we can admit that we have consciousness, and even search for its neural correlates, without also admitting that consciousness has anything to do with causing our behavior. As noted earlier,

D. M. Wegner (2002) has vigorously argued that conscious control is an illusion, and that our conscious intentions are previews of action, not the causes of it. As he puts it, "This is the way it needs to be for progress in the explanation of human psychology. The agent self cannot be a real entity that causes actions, but only a virtual entity, an apparent mental causer" (2005, p. 23). This quote makes it clear that the automaticity juggernaut is fueled by pre-theoretical ideological commitments, rather than any empirical findings—not just to the doctrine of situationism, or to the behaviorist viewpoint, but to a particular view of what science is, and what kinds of explanations a scientific theory allows.

Indeed, epiphenomenalism, in turn, links to a perennial problem for psychology, and indeed for all the social sciences, which is the question of free will and determinism (Rogers & Skinner, 1956). To some theorists, the idea that consciousness actually plays a causal role in behavior seems to violate the fundamental assumption of the scientific enterprise—that every event has a physical cause, and that human—or, for that matter, superhuman—agency has no place in scientific explanation. Given the choice between adhering to the assumption of determinism and taking consciousness seriously, some scientists choose the former, construing thought and action as automatic and consciousness as epiphenomenal, without causal efficacy. Thus, Bargh and Ferguson (2000) write that automaticity succeeded where behaviorism failed, solving the problem of free will by showing how behavior could be determined by the stimulus environment after all:

[T]he same higher mental processes that have traditionally served as quintessential examples of choice and free will—such as goal pursuit, judgment, and interpersonal behavior—have been shown recently to occur in the absence of conscious choice or guidance. It would seem, therefore, that the mid-century failure of behaviorism to demonstrate the determinism of complex higher order human behavior and mental processes occurred not because those processes were not determined but rather because behaviorists denied the existence of the necessary intraindividual, psychological explanatory mechanisms...mediating between the environment and those higher processes...

[T]he failure of behaviorism in no way constituted the failure of determinism. We...present the case for the determinism of higher mental processes by reviewing the evidence showing that these processes, as well as complex forms of social behavior over time, can occur automatically, triggered by environmental events and without an intervening act of conscious will or subsequent conscious guidance. (p. 926)

One is tempted to ask whether we really had a cognitive revolution in psychology for this—to learn that Skinner had it right after all, that we really are all under the control of environmental events, and that all he missed was the wiring diagram that connects stimulus with response.

For Wegner (2002), as for Bargh and Ferguson (2000), it seems that automaticity is the key to the scientific status of psychology itself. Automaticity does more than demystify unconscious mental life: It permits us to bypass the will (Bargh, 2005), and allow psychology to adopt the pinball determinism of classical physics. Bargh, Wegner, and others, faced with an apparent conflict between free will and determinism, choose determinism, and automaticity is a means for doing just that. At the same time, this may be a false choice. Certainly there is nothing in the scientific evidence concerning the role of automatic processes in social behavior that would compel us to choose automaticity over control.

As Searle (1992, 2000a, 2000b, 2001a, 2001b) has argued, whenever we are confronted by a choice between two equally compelling beliefs, such as our experience of free will and our scientific commitment to determinism, it is likely that the choice has been poorly framed to begin with. Perhaps we need to jettison the notion of free will as a sentimental component of folk psychology that must be abandoned in the face of the progress of science. Or perhaps the proper stance is to accept the experience of conscious will as valid, and try to explain how free will can enter into the causal scheme of things in a material world of neurons, synapses, and neurotransmitters. The choice is ours to make: Our choice will determine whether we will have a science of the mind worth having.

NOTES

1. James is often misunderstood here. James identified consciousness with thinking, defined broadly to include feeling as well. Accordingly, "unconscious thought" struck him as an oxymoron. Still, his studies of hypnosis and hysteria led him to thinking and feeling could occur outside of phenomenal awareness. Hence his metaphor of the stream of consciousness, which could be divided, with one stream out of contact with the other—an idea subsequently revived in Hilgard's (1977) neodissociation theory of divided consciousness.

2. For critical analyses of Wegner's arguments, see Kihlstrom (2004c), and other commentaries accompanying the book précis, as well as Wegner's reply, published in *Behavioral & Brain Sciences* (2004), Vol. 27, No. 6.

3. This is ironical in the extreme, given that Gordon Allport and Skinner were such vigorous adversaries that the Harvard psychology department had to be split in order to accommodate them (E. R. Hilgard, 1987).

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Psychology and Free Will

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OXFORD
UNIVERSITY PRESS
2008

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New Delhi Shanghai Taipei Toronto

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Published by Oxford University Press, Inc.
198 Madison Avenue, New York, New York 10016
www.oup.com

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Library of Congress Cataloging-in-Publication Data
Baer, John.

Are we free? : psychology and free will /
John Baer, James C. Kaufman, Roy F. Baumeister.
p. cm.

Includes bibliographical references and index.

ISBN 978-0-19-518963-6

I. Free will and determinism.

I. Kaufman, James C.

II. Baumeister, Roy F.

III. Title.

BF621.B28 2008

123.'5—dc22 2007036151

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9 8 7 6 5 4 3 2 1

Printed in the United States of America
on acid-free paper