

as the primary sources of knowledge. Rather, knowledge is considered to originate in what is called the ready-to-hand mode, a specific kind of nonconscious or automatic voluntariness that involves our engagement in "direct, everyday practical involvement with tools, artifacts, and people" (Packer, 1985, p. 1083).

Engagement in practical activities is experienced as a synchronous whole, because our automatic actions are simultaneously related to a larger web of meanings—a larger web of interrelated possibilities. No real division exists (except theoretically) between the subject (e.g., the mind) and the object (e.g., the environment) because meaning necessarily requires both. However, that this larger web of meanings is a web of interrelated *possibilities* implies that people contribute some type of voluntary or agentic component to their meanings (Slife & Fisher, 2000). Because people are directed voluntarily toward larger patterns of meaning and behaviors (e.g., complex objectives, worldviews), smaller components of these larger patterns seem automatic. Still, these automatic behaviors are not involuntary—though they may be nonconscious—because they ultimately serve larger objectives and worldviews (see Polanyi, 1958, for a separate but similar account).

Even from these brief sketches, it is apparent that either rationalism or hermeneutics is capable of explaining the automaticity data. However, Bargh and Chartrand's (1999) position exemplifies a philosophical favoritism where psychologists are aware of only one philosophical position and thus continually interpret their data (i.e., research findings or clients) in light of that stance. This is the reason that data often seem to point to only one interpretation—scientists have limited themselves to only one philosophical or theoretical tradition.

Philosophers of science, however, demonstrated long ago that theoretical interpretations are always, in principle, underdetermined by the data (see Curd & Cover, 1998; Slife & Williams, 1995). Good science, then, requires scientists to know all the relevant philosophical traditions, so that they can know all of the viable interpretations of their data. Bargh and Chartrand (1999) either were not aware of alternative interpretations of their automaticity data or chose not to acknowledge the host of viable alternatives.

The upshot is that the conclusions scientists reach about data are driven as much by the philosophies they implicitly affirm as by the data themselves. Whether automaticity is viewed as unconscious involuntarism or unconscious voluntarism depends on the theoretical spectacles one is wear-

ing when interpreting the data. Therefore, before a particular interpretation of automaticity is adopted, psychologists ought to be aware of the different theoretical possibilities that exist and inform such a concept, as well as the different conclusions and implications that they suggest. Without such theoretical sophistication, psychology cannot claim to be truly scientific.

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Automatic Assumptions of Automaticity

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Although Bargh and Chartrand's (July 1999) article pointed to the philosophy underlying current psychological theories about human activity, the authors confused many important philosophical issues in presenting their argument. The point with which I take issue is Bargh and Chartrand's misinterpretation of

humanistic psychology. The humanistic movement in psychology was not proposing a "causal self" . . . as [a] mediator between the environment and one's responses to it" (p. 463), as Bargh and Chartrand stated. Instead, the humanists challenged "the predominant view of human beings as primarily responding to, and being shaped by, the various determining influences that impinge upon them from within or without" (Shaffer, 1978, p. 2). The assertion that the causal self mediates stimuli and responses lumps the humanistic theorists with the behaviorists, who endorsed stimulus–organism–response formulations of human behavior (e.g., Hull, 1943; Tolman, 1948). Under the stimulus–organism–response formulations, the aspects of the organism (e.g., intentions, the will) are shaped and caused from without or from within by environmental and/or biological determinants. As a result, the humanists cannot be endorsing a mediational model of activity.

Bargh and Chartrand's (1999) inaccurate description of the humanistic perspective is important because this misunderstanding of the debate between the humanists and the behaviorists allowed the authors to subsume the humanists under the conceptual umbrella of mediational behaviorism. This misunderstood humanistic perspective is on the side of conscious, controlled processing, whereas the classic, immediate (i.e., without mediation) stimulus–response formulations (e.g., Watson, 1913) are on the side of the automatic processes (see Bargh & Chartrand, 1999, p. 463), thus apparently exhausting the major theories on human activity.

However, as argued above, the humanistic perspective is not a mediational model of stimulus–response activity. The humanists deal with the issue of how to conceptualize human activity in a nonmechanistic manner, thereby stepping outside the stimulus–response learning theory. When psychologists realize that stimulus–response is not the only explanatory framework in psychology, then the question of what explanations can underpin so-called automatic processes becomes more interesting.

For instance, automatic activity could be conceptualized, from a correctly understood humanistic perspective, as intentions to act (i.e., think, feel, behave, etc.) that evince faster reaction times (or, better, *action times*) than other intentions. Here, there is a difference of degree in time's passage, but not a difference in the kind of activity taking place; it is still intentional. The *assumption* that so-called reaction time indicates a difference in the kind of activity taking place (Bargh & Chartrand, 1999) only makes sense when

one makes the further assumption that cognitive processing is tied to time's passage. In the foregoing case, if no (or comparatively little) time passes between the presentation of a stimulus and a so-called response, then (on the basis of the assumption that cognitive processing is necessarily tied to time's passage) two conclusions are that (a) no cognitive processing took place, or (b) a different kind of processing took place. However, if a theorist does not assume the predominant view that cognitive processing is tied to time's passage (e.g., Rychlak, 1994), then the relationship between time and activity is largely incidental and is, more importantly, not related to the kind of processing taking place (see Rychlak, 1994, 1997).

Yet, even if a theorist assumes that cognitive processing is tied to time's passage, there is no cogent reason to accept Bargh and Chartrand's (1999) dual-process conceptualization of controlled (conscious) versus automatic (nonconscious) activity. With current computer models of psychological explanations, one could conceptualize automatic responses more parsimoniously as stimuli being processed at some constant rate along with information being stored on the "mental hard drive," akin to the workings of a modem. Under this modem analogy, when people "learn" new information (e.g., how to drive a car), this new information has a fixed file size (e.g., 2,016,000 kilobytes). When a person *first* learns this information, it takes 10 hours (or 36,000 seconds) to process all the information at a constant processing rate of 56 kilobytes per second. Consistent with other cognitive theories (e.g., Rumelhart & McClelland, 1986), this processed information could leave a memory trace (i.e., some information is stored in the mental hard drive). Thus, the next time the drive-car file is opened, it takes less time to process the information because some of it was on the mental hard drive already. Additionally, a person could "bookmark" the drive-car file (i.e., store a majority of the information on the mental hard drive), so that it "loads" extremely quickly (because it requires less external information than before). In this case, automaticity is simply the amount of data on the mental hard drive and the processing time that it takes to integrate additional information (if such additional information is necessary for the completion of some function). Accordingly, no dual-process models are required for explanation.

Bargh and Chartrand's (1999) article offered a narrow, and in some cases inaccurate, picture of the possible theoretical underpinnings of automaticity. The reader should

explore the scope and assumptions of this picture before agreeing with the authors' implicit suggestion that dual-process theorizing based on the supposed qualitative distinction between mediated and immediate stimulus-response formulations is the best way to conceptualize cognitive processing.

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Some Problems With Humean Causality

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Wegner and Wheatly (July 1999) recently aimed to show that mental causation is only apparent, and that the experience of the will "is a result of the same mental processes that people use in the perception of causality more generally" (p. 480). They followed an explicitly Humean argument by contending that "people can experience conscious will quite independent of any actual causal connection between their thoughts and actions" (p. 480) and by assuming that humans believe themselves to be exercising will when three criteria are met: priority, consistency, and exclusivity.

The authors then reported the findings of their empirical study designed to show that these criteria can be fulfilled—and that *apparent* mental causation occurs—even when one's own will and behavior are not, in fact, the cause of a physical event. They concluded, "The experience of the will is the way our minds portray their operations to us, then, not their actual operation. . . . The real causal mechanism is the marvelously intricate web of causation that is the topic of scientific psychology" (p. 490).

David Hume's well-known theory of causality (see, e.g., Hume, 1739/1992)—that people's perceptions of cause and effect are unconfirmable *inferences* based on their experiences of constant conjunction, contiguity, and antecedence—was criticized by Thomas Reid (1785/1990) on the grounds that it left epistemology in a state of profound skepticism. Reid's counterargument was that Humean causality is possible only for a creature aware of its own active (volitional) powers. It is only because I know myself to be the cause of my actions that I am able to conceive of similar causal dependencies when I observe (Humean) constant conjunctions in the external world. Otherwise, such mere coincidences would not suggest any notion of causality. Reid also noted that any number of constant conjunctions (e.g., day and night) never give rise to notions of causation. In all, Hume's regularity theory, notwithstanding its influence and philosophical power, is no longer a viable account of causality as that concept is used within the physical sciences, and it was never a viable account of people's direct awareness of their own volitional powers.

It appears that Reid's (1785/1990) criticism applies equally well to Wegner and Wheatly's (1999) adaptation of Hume, for if they follow Hume in saying that people's perceptions of causal relations are mere inferences, and that the ontological status of such causes can never be known with confidence, then they can have no confidence that *any* observed or inferred factor causes behavior, including "the marvelously intricate web of causation that is the topic of scientific psychology" (p. 490), because such factors would themselves be known as causal agents only through constant conjunction, contiguity, and antecedence. No doubt this Humean emphasis places psychological scientists searching for sources of the will in an odd position, one where they can have no reliable and genuine knowledge regarding *any* putative causal factors.

The skepticism of Hume's position casts equal doubt on the ability to know that a research confederate, rather than a research participant, actually caused the mouse to stop in Wegner and Wheatly's (1999) experi-