ONTLOGICAL AND EPISTEMOLOGICAL TERRAINS REVISITED

ALBERT BANDURA
Department of Psychology, Stanford University, U.S.A.

Summary — The present commentary discusses the scientific legitimacy of theories confined to correlations of observables and those that specify the mechanisms governing the relations between observable events. Operant analysts frame the theoretical differences misleadingly when the operant approach is portrayed as addressing environmental influence for effecting change but cognitive approaches are depicted as disembodied from environmental influences and thus can only provide correlates with action. In point of fact, both approaches encompass environmental influences. The major issues in contention are whether human thinking is entirely or only partially shaped by environmental influences; whether the influences in the person–environment relation flow unidirectionally or bidirectionally; and whether human thought serves a determinative function or is a functionless epiphenomenon. Proponents of epiphenomenalism regard other people’s thinking as functionless by-products of conditioned responses, but present their own thoughts on matters as the right ones that provide functional guides for structuring interventions. This commentary discusses the self-negating nature of the epiphenomenalism argument. It also corrects misunderstandings and misrepresentations of self-efficacy theory. Copyright © 1996 Elsevier Science Ltd

It is a common practice for behaviorists to proclaim that the only legitimate scientific enterprise is one that links directly observable events. This position fails to recognize that scientific advances are promoted by two kinds of theories. One form seeks to identify relations between directly observable events but shies away from the underlying mechanisms governing the observable phenomena. The second form seeks to elucidate the mechanisms that explain the relations between observable events. In commenting on the issue of observability in scientific inquiry, Nagel (1961) explains that some of the most comprehensive theories of the natural sciences are not about factors that are “observable.” Physicists, for example, have done remarkably well with atomic theory even though atoms are not given to direct public view. Several of the commentators in the previous special issue (Reyna, 1995) address the structure and the scientific legitimacy of the two types of theories (Corrigan, 1995; Dougher, 1995;

Address correspondence to Albert Bandura, Department of Psychology, Stanford University, Stanford, CA 94305-2130, U.S.A.

323
Spaulding, 1995). I do not harbor any illusions that the exchanges on this topic will produce any conversions to alternative epistemologies. But if they help to temper the behavioristic stance that there is only one legitimate type of scientific inquiry and anyone who does not conform to it is trading in fictions, the exchanges may have served some purpose. The factors posited by sociocognitive theories have been shown to possess explanatory, predictive and operative value. Such achievements are not realizable with fictions.

A commentator once remarked colorfully that a human being is not a sack of potatoes. Humans have evolved an extraordinary capacity for thought. This remarkable capability for symbolization provides humans with a powerful tool for comprehending their environment and for creating and regulating environmental conditions that touch virtually every aspect of their lives. Thoughts have existence that is not publically observable, but they have indicants through which they can be known indirectly. People can tell you what they are thinking—how they are construing events, the value they place on them, their action plans and strategies, their outcome expectations, their aspirations and self-evaluative standards, their self-appraisals, and how they give structure, meaning and continuity to their life experiences. These indicants of thought are separate from the behavior to be explained.

Data provided by verbal probes yield functional dependencies between indirectly assessed thoughts and subsequent behavior (Bandura, 1986; Dulaney, 1968; Ericsson & Simon, 1980). Indeed, innumerable studies have shown that people's reported thoughts about outcome contingencies are better predictors of behavior change than sheer frequency of reinforcement (Brewer, 1974; Farber, 1963; Gholson, 1980; Spielberger & DeNike, 1966). In these studies, reinforcement produces little change until the individuals figure out what the experimenter wants them to do, whereupon they respond either dutifully, desultorily, or oppositionally (Farber, 1963). These early studies demonstrated that thought mediates the effects of response consequences. Cognitive theorists moved beyond these simple performances to alter complex levels of human functioning. To cite but one example, they built successful expert systems for decision making in diverse pursuits based on structural and process models of reasoning (Feigenbaum, 1977; Shortliffe, Buchanan & Feigenbaum, 1979). They did so by drawing on the concurrent reports of the thought processes of experts as they go about analyzing and generating appropriate solutions to problems in complex work environments. The volume by Ericsson and Simon (1994) documents how understanding the functional value of cognition can be advanced by treating thought processes and thought probes creatively rather than dismissively. The power of human thought has been vastly enhanced by combining inventive thinking with computer technology in cognitively-guided productions. People are now freed from costly and time consuming physical enactments by designing, testing and refining electronically whatever they seek to create.

Operant analysts tell us that Skinner does not deny private events. To say that one recognizes private events is to make a trivial statement. A sentient human being would have to be in a comatose state not to recognize internal events. The issue in contention is not whether private events exist but the functional properties they have in conceptual schemes. Operant analysts frame the causality issue as a linear chain with the cognitive system serving as a redundant link devoid of any generative, creative, proactive or other determinative properties. Environmental events are said to produce the internal events but they are only linking proxies for the environmental inputs. People are merely repositories for past stimulus inputs and conduits for external stimulation but they can add nothing to their performance. Through conceptual juggling, the determinants of human action are regressed to an "initiating cause" located in the environment, thus rendering human thought completely redundant.
The cognitive bypass in the linear chaining rests on two premises: thought is completely shaped by past stimulus inputs and the individual adds nothing to it; thinking is not a functional activity with any generative or determinative properties. In short, human thought is claimed to be entirely externally implanted and acausal. It comes as no surprise that, in the exteriorization of cognitive regulation, Catania (1995) selected a fixed arithmetic rule that is applied mechanically to produce the identical outcome each time. Most human transactions cannot be managed in such a rigid manner. Life would be incredibly dull if it could. Because of the complexity and changeability of environmental conditions, people can be taught general guides of action but they have to assess situational demands, make decisions about suitable courses of action under given circumstances, appraise their capabilities to execute them, and give thought to possible outcomes of the options they consider. Thought is obviously partly influenced by experience, but thought is not completely shaped by past stimulus inputs. The limitations of regression to sole environmental authorship is strikingly evident in the creative nature of human endeavors. Try regressing Bach’s prodigious creativity to an “initiating cause” such as his technical instruction in music.

In the operant view, to find the laws of human behavior one needs only to correlate observable environment with observable behavior. But there is a nettling problem with this conceptual scheme. Human behavior does not covary all that well with situational events. People are often unresponsive to situational cues and unaffected by the consequences of their actions. Therefore, operant analysts had to look elsewhere for a better explanation of human behavior. The explanatory burden fell increasingly on determinants inside the organism, namely the implanted history of reinforcement. Behavior was conceptualized as controlled by external stimulation acting together with the implanted organismic state. The $S^d \rightarrow R \rightarrow S^r$ model thus grew into the mediational $S^d \rightarrow O \rightarrow R \rightarrow S^r$ model with the accumulated environmental history residing in the mediating $O$. Like other internal determinants, ontogenic history is neither observable nor directly accessible. Operant analysts extol the nonobservables they like, but decry those posited in other theories. The commentaries in this journal would lead one to believe that the dispute over internal determinants is exclusively between behaviorists and cognitivists. In point of fact, there is a growing rift among operant analysts about the shift of emphasis within their own conceptual framework from models of environment-based control to organism-based control (Machado, 1993). In short, operant analysts are deep into internal determinants. One can expect more fissures in this conceptual terrain as operant analysts increasingly acknowledge the influential role of organism-based control in human adaptation and change.

The operant analytic position on internal events is difficult to pin down because the characterizations vary widely. Internal events are alternatively depicted as explanatory fictions, as epiphenomenal by-products of conditioned responses, or as acausal conduits in the chain of events. Catania (1995) portrays internal events as intermediate causes. He is very much of a cognitivist in his example of a person performing mental calculations to solve multiplication problems. In acknowledging cognitive activities generating solutions that guide actions, Catania assigns causal properties to cognitions but then promptly demotes them by environmental regression. They are simply internal proxies for external inputs. To grant thought generative and determinative functional properties is, in Catania’s view, to embrace “creationism.” Let us consider the issue of creativity.

In his analysis of creativity, Skinner (1972) maintained that, in creating poems, poets add nothing to the product. They are merely the receptacle where external input and internalized history generate those novel poems. In his lecture on “having” a poem, Skinner (1972) argued
that producing a poem is no different in creative achievement from a hen laying an egg. Neither the struggling poet nor the dutiful hen is originating anything. The creations are merely the products of external stimuli acting on the implanted vestiges of the past. The host poets, who bask in undeserved glory, undergo poems rather than construct them. In applying this non-agentic view to their own commentaries, proponents would have to acknowledge that they are not originating anything. They are simply a locus undergoing an article through the auspices of the history of reinforcement prompted externally. Conceptual commentaries thus become contests of evoked conditioned histories.

Unlike the dependable hens, which are genetically programmed to deposit the same type of egg day in and day out wherever they may be, each of the creative eggs laid by the Bachs, Shakespeares, Picassos and the Beatles are strikingly different from each other. Efforts to define creativity out of existence by analogy to inborn bodily functions performed mechanically and invariantly can hardly be taken seriously. Bach’s magnificent masterpieces, which fill 60 volumes of prolific originality, are not completely reducible to his prior instruction in the mechanics of musical composition, his predecessors’ musical works and a catalogue of stimulus inputs. Since Bach was not genetically endowed with fully orchestrated Brandenburg concertos, from which repository did the environmental reinforcers select these artistic creations? Reinforcement cannot select what is nonexistent in a repertoire. One can, of course, create simple new responses by waiting around for random variations to produce some approximate elements to reward. But how did environmental selection write those several hundred church cantatas within a relatively short period? Given Bach’s prolific output it would take countless lifetimes to shape up such artistic creations by selective reinforcement of random variations, if it could be achieved at all by this slow laborious process. Indeed, it took 10 editors more than 50 years just to assemble everything Bach had composed covering virtually every field of musical writing. Although human ingenuity incorporates some aspects of past experience, innovators transform it, add novel features to it and thereby create something new that is not just a conglomerate or replica of the past. People act upon the environment just as the environment acts upon them. Through this transactional process they produce things that did not previously exist. Transactional models involving two-way causation have largely replaced one-sided behavioristic models in which autonomous environmental forces select responses from a host organism reacting thoughtlessly. (We shall return to the generative quality of human thought in evaluating behavioristic efforts at environmental regression of self-efficacy judgment.)

The implanted history now occupies a central role in the operant analytic scheme. But the nature and mode of operation of this nonobservable determinant are shrouded in ambiguity. The vast research on attentional, perceptual, representational and memorial processes indicates that what is internalized is not isomorphic with the information conveyed by external occurrences. Personal biases influence what is attended to and how the events given salience are construed, as revealed in experiments demonstrating that believing is seeing. The extracted information is further altered as it is transformed and organized for memory representation. People operate as partial authors not only of their past experiences but of their memory of them as well. The retrieved history is a reconstruction rather than a faithful reproduction. In accord with a transactional model of causation, humans help to make their own history through idiosyncratic construal, selection and construction of environments rather than have it simply implanted in them by autonomous environmental forces (Bandura, 1986; Neisser, 1976; Nisbett & Ross, 1980; Snyder, 1981). It is cognitively-oriented research that is contributing most to the understanding of ontogenic history—how events are perceived, how the personally edited
information is coded for memory representation, how it is reactivated and acted upon by cognitive operations to guide human judgment and action.

The lack of one-to-one correspondence between external inputs and ontogenic history underscores the need for a methodology to assess the nature of personal histories. Having introduced into their conceptual scheme an organismic factor that is hidden from the senses, operant analysts have to explain how it works. Is the implanted history merely an acausal predictor of behavior or does it operate determinatively? If it is given determinative properties, how do operant analysts exempt it from the regress argument that, if external events influence organismic history, it is a redundant reflector of them? But whatever it is, and however the history operates, operant analysts had better tell us how to assess it in humans so that their claims about its origins, nature and functions can be empirically tested.

Dougher (1995), commenting from an operant perspective, attributes different functional properties to the alternative types of theories described earlier. Those that specify mechanisms linking observables presumably can only predict, whereas the ones that link observables without knowing the processes through which effects are produced serve both prediction and control. The latter theories are said to be pragmatic; the former are predictive. Dougher does not explain why a good model of how inputs affect outcomes strips a theory of any operative power. Knowing how things work has not disabled theories positing explanatory mechanisms in the natural sciences. Quite the contrary. Physicists built bombs of massive destruction based on theories about release of immense energy by the splitting of an atomic nucleus which is unobservable. Knowledge of how things work substantially aids both prediction and change. Consider an example in the motivational realm. Lee, Locke and Phan (in press) report that people paid on an hourly, bonus, or piece-rate basis differ widely in their performances under the same monetary incentive system even after level of ability is controlled. They find that people's efficacy beliefs and the goals they set for themselves account for the subsequent performance variability. The stronger the people's perceived efficacy for high attainments the higher the personal goals they set and the more they accomplish. Such findings indicate that, in this particular pursuit, human performance can be better explained, predicted and raised by enhancing efficacy beliefs and aspiration along with incentive inducements than by restrictive allegiance to incentives alone. Post hoc attributions of performance variability to unknown phylogenetic and ontogenic histories is an explanatory refuge that offers little for prediction or control.

There is nothing in the logic or substance of theories specifying mechanisms accounting for the covariation between observables that deprives them of any value to guide interventions. Such theories are not seeking predictive correspondence just for correspondence sake. Predictive verification of a theory has programatic payoffs. Indeed, as is often said, there is nothing more practical than a good theory. Theories about explanatory mechanisms specify how manipulatable events should be structured to produce desired effects. For example, knowledge of the cognitive subfunctions mediating observational learning informs the construction and implementation of modeling influences in programs of personal and social change (Bandura, 1986). Similarly, self-efficacy theory presents a network of functional dependencies that provides the basis for structuring interventions (Bandura, 1997). It specifies in considerable detail the diverse sources of efficacy beliefs and how these multiple influences must be orchestrated to promote a resilient sense of efficacy. The fact that structured events contribute to the formation of efficacy beliefs does not mean that the environment is the sole cause. People act on the environment in ways that make them partial authors of their self beliefs. Because of the bidirectionality of influence, efficacy beliefs are formed through the
codetermination of personal and environmental influences acting together. Regression of causation solely to the environmental contribution fails to recognize the dynamic interplay between personal, behavioral and environmental influences in the multicausality.

As previously noted, operant analysts contend that the operant approach addresses environmental influences for effecting change, whereas the cognitive approach is disembodied from environmental influences and can only provide correlates with action. This portrayal not only frames the differences misleading but is contradicted by the extensive successful applications of sociocognitive principles for personal and social change (Bandura, 1986, 1988, 1992; Maddux, 1995; Schwarzer, 1992). In point of fact, both approaches encompass environmental influences, although social cognitive theory favors a wider range of influences (Bandura, 1986). The main issues in contention, as discussed in preceding sections, are whether human thinking is entirely or only partially shaped by environmental influences; whether the influences in the person–environment relation flow unidirectionally or bidirectionally; and whether human thought serves a determinative function or is a functionless epiphenomenon.

Self-efficacy theory further specifies the cognitive, motivational and affective processes through which efficacy beliefs regulate human action. Beliefs of personal efficacy are not simply inert predictors of future performance. People act on their efficacy beliefs in ways that bring about those performances. Those who strongly believe that they can produce desired effects by their actions approach difficult tasks as challenges to be mastered rather than as threats to be avoided. They set themselves challenging goals and maintain strong commitment to them. They heighten and sustain their efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable. They approach threatening situations with assurance that they can exercise control over them. Such an efficacious outlook produces personal accomplishments, reduces stress and lowers vulnerability to depression.

In contrast, people who doubt their capabilities shy away from difficult tasks, which they view as personal threats. They have low aspirations and weak commitment to the goals they choose to pursue. When faced with difficult tasks, they dwell on their personal deficiencies, on the obstacles they will encounter, and all kinds of adverse outcomes rather than concentrate on how to perform successfully. They slacken their efforts and give up quickly in the face of difficulties. They are slow to recover their sense of efficacy following failure or setbacks. Because they view insufficient performance as deficient aptitude it does not require much failure for them to lose faith in their capabilities. They fall easy victim to stress and depression. In sum, people are active producers rather than merely passive foretellers of their performances.

The behavior analytic approach to social modeling is rooted in the three-component contingency, $S^d \rightarrow R \rightarrow S'$. Catania (1995) explains that this arrangement builds higher-order behavior classes rather than just increasing the rates of individually reinforced responses. He cites generalized imitation as an excellent case in point. Observational learning poses interesting challenges for this type of explanation. Observers do not perform any matching behavior in the setting in which it is modeled, neither the model nor the observers are reinforced, and whatever responses acquired through observation are first performed days, weeks, or months later. Under this set of conditions, which represents the pervasive form of observational learning, two of the elements ($R \rightarrow S'$) in the three-component contingency are absent during acquisition, and the third element ($S^d$, the modeling cue) is absent from the situation in which the observationally learned behavior was first performed.

Operant analysts searched for a reinforcer that governed modeling phenomena. They did so within a mimicry paradigm in which a model demonstrates responses one at a time, tells
children to imitate them and rewards each correct imitation. After a while, children imitate nonrewarded responses as long as imitation of some of the modeled responses is rewarded. These findings were taken as evidence that reinforcement creates a generalized behavior class of social matching, that response similarity had become a conditioned reinforcer, and that nonreinforced imitations were maintained by conditioned reinforcement.

Humans are not mindless vessels implanted by reinforcers with generalized behavior classes. Close empirical scrutiny of prompted mimicry under these situational conditions demonstrated that nonreinforced imitations represented a simple failure in discrimination (Bandura & Barab, 1971). Children faithfully imitate the behavior of a female model when rewarded for doing so but quickly ignore the behavior of a male model when it brings them no rewards. When the discriminability of the rewarded modeled behavior is varied, children dutifully imitate rewarded motor responses, cease imitating discriminable nonrewarded verbal responses, but imitate motor responses that have no features that made them easily discriminable from the other rewarded motor responses.

A host of other studies, extensively reviewed elsewhere (Bandura, 1986), consistently demonstrate that whether or not children exhibit nonreinforced imitations is a matter of discrimination not conditioned reinforcement. The selective imitation is based on model characteristic, behavior typographies and contextual cues predictive of response outcomes. The mimicry paradigm is, of course, heavily infused with social demands for mimicry. Past experiences teach children that it is prudent to do what adults command them to do. Some children who discriminate the differential payoffs associated with different categories of modeled behaviors, nevertheless continue to imitate nonreinforced ones because of the coercive demands. As would be expected, nonreinforced imitations quickly cease when the social pressure for mimicry is removed. So much for imitation as a generalized behavior class supported by similarity as a conditioned reinforcer.

Treating humans as thinking organisms enables researchers to gain a fuller understanding of why people behave the way they do. When children in the preceding experiment were later asked why they sometimes imitated nonrewarded responses, some believed that the model demanded it ("I supposed to"); others performed nonrewarded imitations in the mistaken hope that the rewarding model would become more beneficent ("I thought if I kept trying lots of times he might get used to it and start up giving candy like the lady did"); and still others acted like seasoned scientists testing hypotheses about outcome contingencies by systematically varying their behavior and observing its effects ("Sometimes I'd do it and sometimes not to see if I'd get any candy.") Cognitive prohibitionism erects blinders to important classes of determinants of human behavior.

Social modeling provides a good example of how the two types of theories address the same phenomena. Operant analysts study modeling as correlation of observables. By manipulating stimuli and reinforcers one can push the rates of imitative responses up or down and link them to particular situational cues. Should the environmental manipulations fail to produce results, one restructures the environmental demands, raises the reinforcing sanctions or varies both factors in continued efforts to produce the imitative responses.

Social cognitive theory focuses on the mechanisms governing the adoption and regulation of modeled behavior (Bandura, 1986). Modeling operates through four major subfunctions (Figure 1). Attentional processes determine what is selectively observed and extracted from the profusion of modeling influences. People cannot be much influenced by modeled events if they do not remember them. Representational processes transform the modeled information into symbolic codes for memory representation. The better the symbolic coding of the modeled
activities the better the activities are learned and retained (Carroll & Bandura, 1990; Gerst, 1971). In the third subfunction, which involves behavioral production processes, the symbolic codes are transformed into appropriate courses of action through a conception-matching process. Social cognitive theory distinguishes between acquisition and performance because people do not perform everything they learn. The fourth subfunction of modeling concerns motivational processes. Performance of observationally learned behavior is influenced by three major types of incentive motivators—direct, vicarious and self-administered. Different lines of research verify the influential contribution of each of these subfunctions to social modeling. Knowledge of operative mechanisms provides the guidelines for how to devise programs of personal and social change.

When analyzed in terms of constituent subfunctions, facility in observational learning is not primarily a matter of learning to imitate or building a general category of behavior. Rather developing adeptness in observational learning involves acquiring multiple subskills in selective observation, symbolic coding and rehearsal, coordinating sensory–motor and conceptual–motor systems, and judging probable outcomes for adopting modeled patterns of behavior. Observational learning is hindered by deficits and enhanced by proficiency in its constituent subfunctions.

Social modeling is not merely a process of response mimicry. Indeed, it would be of limited value if people could only mimic what they see and hear. Modeling influences convey rules for generative and innovative behavior as well. This higher-level observational learning is achieved through abstract modeling. Exemplars may differ widely in content and other details but exemplify the same underlying structure. In abstract modeling, observers extract the rules and structure governing the behavioral expressions. They then use this knowledge to generate new instances of behavior that go beyond what they have seen or heard (Bandura, 1986; Rosenthal & Zimmerman, 1978). Much human learning is aimed at developing cognitive skills on how to gain and use knowledge for future use. Observational learning of thinking skills is greatly facilitated by having models verbalize their thoughts aloud as they engage in problem-solving activities (Meichenbaum, 1984). The thoughts guiding their decisions and action plans and strategies are thus made observable and observationally learnable.

The capacity for self-reactive influence enables people to regulate their own motivation and behavior rather than respond automatically to whatever situational influences happen to impinge upon them. In this self-regulatory process, people adopt self-evaluative standards,
monitor their performances, evaluate them relative to their standards and the constellation of contextual events operating at the time, and react self-approvingly or self-critically. Much human behavior is regulated by anticipatory self-evaluative reaction. People also motivate themselves to perform onerous tasks by making rewarding activities contingent on task completion, as when students make recreational activities contingent on completing certain academic assignments. The various subfunctions governing human self-regulation are summarized in Figure 2. Thus, one line of research conducted within the sociocognitive framework examined different aspects of self-regulatory processes (Bandura, 1986, 1991a). These programs of research clarified how self-evaluative standards are constructed; the factors weighted in the evaluative judgments that set the occasion for positive or negative self-reactions; the comparative power of self-regulation and external regulation; the conditions under which self-evaluative outcomes override the influence of material outcomes; and the mechanisms through which self-sanctions are selectively engaged and disengaged from socially detrimental conduct.

Catania (1975) rejected the notion that organisms can reinforce their own behavior. I have responded elsewhere at some length to his arguments, so I have no interest in rehearsing this issue here (Bandura, 1976). That exchange was essentially about the differing conceptions of "reinforcement" in sociocognitive and operant analytic frameworks. In the research under discussion, the term "self-reinforcement" referred to the operation of making rewards that are fully under one's control conditional on a given performance, not to a process of stamping in responses. In short, it is a self-reward operation supporting self-regulative behavior. Social cognitive theory views reinforcement as mainly a motivational device operating through outcome expectations for prospective courses of action. In humans, of course, the types of outcomes people anticipate depend largely on their judgments of how well they will be able to perform in given situations.
The contexts of human development and functioning vary in the values and styles of behavior they model, the resources and opportunity structures they provide, the constraints they impose, and the incentive structures they employ. The functional value of a given type of behavior can, therefore, change substantially across social milieus. The interrelationships among contextual influences operating in familial, educational, neighborhood and peer subsystems and their impact on behavioral functioning have been the subject of extensive study (Furstenberg, Eccles, Elder, Cook & Sameroff, 1997). Many of the influences in social systems operate collectively rather than manifested isolatedly by individuals. Research on perceived collective efficacy examines group functioning as the product of the interactive and coordinative dynamics of its members (Bandura, in press). Interactive dynamics create an emergent property that is more than the sum of the individual attributes. The stronger the beliefs people hold about their collective capabilities the more they achieve. This is true regardless of whether the group’s sense of efficacy develops naturally or is created experimentally.

Some operant analysts are becoming contextualists as the commentaries reveal (Reyna, 1995). The issue of interest concerns the type of contextualisms being promoted. Does it recognize people as producers as well as products of contextual influences? Are humans simply reactive to environmental forces or reflectively proactive in their functioning? Or is the operant contextualism the old unidirectional environmental control clothed in new wrappings? The operant traditionalists have always recognized that context affects the probability of a given behavior. So the notion of contextual control is hardly new. Moreover, operant contextualists continue to subscribe to the traditional operant view of environmentally implanted acausal cognition. The operant contextualists also adhere faithfully to the single-case design, which is the preferred operant methodology. So what is new about functional contextualism? It appears to be mainly a repackaging of the standard product with the addition of a few epistemological features that are creating further fissures in the operant domain. The contextualists emphasize the uniqueness of individual acts in context and, therefore, do not necessarily assume generalizable principles about influences on behavior. They reject a mechanistic model of behavior that is independent of contextual influences. Some operant analysts are taking their contextual colleagues to task for invoking a simplistic mechanistic model for rejection, simply renaming stimulus control as contextualism without adding anything new, failing to specify a nonmechanistic process governing the relation between context and action, and having little concrete to show for their efforts (Marr, 1993; Shoneberger, 1995; Shull & Lawrence, 1993; Sidman, 1990). One might also add that a lot of cognitive influences, translated into behavioristic parlance and exteriorized in the environment, seem to be entering into functional contextualism. As operant analysts expand their field of inquiry to complex human behavior and modes of influence beyond reinforcement methods, one can expect an increase in the appearance of cognitive factors in operant analyses and practices.

Hawkins (1995) tells us that he is a “cognitive–behaviorist.” In his conceptual scheme, cognition regulates how people feel, think and behave. Given that cognitive behaviorists subscribe to cognitive causation, why is Hawkins arguing that thoughts about one’s capabilities do not exist? It is puzzling to see a cognitive behaviorist deny private events when even operant analysts acknowledge their existence. After asserting the nonexistence of efficacy cognitions, Hawkins contradicts himself by resurrecting them, but as epiphenomenal by-products of performance. But this only gets him further conceptual incoherence and self-negation of his stated theoretical position.

It is conceptually inconsistent to be an adherent to a theory that cognition regulates action,
but then to selectively strip cognitions about personal capabilities of any regulative function. Does Hawkins acknowledge the existence and regulative function of the cognitions he likes, or is he proposing a blanket cognitive prohibitionism? If so, what does the cognitively hyphenated theoretical affiliation he claims really mean? The epiphenomenal argument Hawkins is invoking selectively against cognitions concerning personal efficacy is self-annihilative because it applies equally to the cognitions he may favor. Hawkins never explains the ontological and epistemological basis for the selective disallowance of not only the regulative function of thoughts of personal efficacy but even their very existence.

Contrary to Hawkins’ selective cognitive exclusion, a mounting body of evidence from diverse lines of research verifies that judgments of personal efficacy are a major basis of human action (Bandura, 1992, 1997). Unless people believe they can produce desired effects by their actions they have little incentive to act. There are many activities which, if done well, guarantee valued outcomes but they are not pursued by people who doubt they can do what it takes to succeed. A low sense of efficacy can thus nullify the motivating potential of alluring outcomes. Conversely, firm belief in one’s efficacy can sustain efforts over prolonged periods in the face of uncertain or repeated negative outcomes. Indeed, high accomplishments require a resilient sense of personal efficacy because the road to success is usually strewn with countless impediments, failures, adversities and setbacks.

Perceived self-efficacy occupies a pivotal role in causal structures because such beliefs affect other classes of determinants as well. These include aspirations and the outcomes expected for one’s efforts, the quality of analytic thinking, resilience under taxing environmental circumstances and vulnerability to stress and depression. In most of the important problems of choice that people face, they act on their beliefs of personal efficacy in choosing the particular courses of action to pursue.

The central behavioristic contention is that beliefs of personal efficacy to manage events are epiphenomena of conditioned responses. Through the regressive machination, efficacy beliefs are converted to functionless residues of conditioned responses. The claim that perceived self-efficacy is a reflection of past performance has long lost its credibility based on evidence from experimental variations in efficacy beliefs under conditions in which there are no relevant performances to generate epiphenomena. For example, in efficacy beliefs systematically varied by vicarious means, phobics simply observe coping strategies being modeled until their perceived self-efficacy is raised to preselected levels but they themselves do not perform any actions (Bandura, Reese & Adams, 1982). When later tested, the higher their beliefs in their coping capabilities the bolder they behave. As noted in my earlier commentary (Bandura, 1995) this is equally true for individuals who were so phobic that they could not perform a single response in the pretest assessment and, hence, had no pretreatment performance information from which to foretell what they could do after observing the models. The only thing their past behavior could tell them is that they could do nothing.

In studies that create differential levels of perceived efficacy using arbitrary anchors, subjects pick a number from a set concealed in a bag as an arbitrary reference point from which to judge their efficacy to solve problems (Cervone & Peake, 1986). The act of picking a number from a bag has absolutely nothing to do with solving intellectual problems, but it raises or lowers judgment of personal efficacy to solve problems depending on the size of the irrelevant number drawn. The higher the instated efficacy belief the more perseverant the performance. The anchoring influence has no effect on performance unless it alters beliefs of personal efficacy. This is another instance in which the epiphenomenon argument lacks any plausibility because no relevant behavior was performed to generate any efficacy epiphenomena.
Numerous experiments have been conducted in which efficacy beliefs are arbitrarily raised and lowered by providing subjects with veridical feedback about their own performance but bogus information of how others performed on the task. The multiple-trial experiment by Bandura and Jourden (1991) is one such example. Beliefs of personal efficacy arbitrarily raised in this manner are accompanied by efficient strategic thinking, adoption of challenging goals and high performance accomplishments. By contrast, efficacy beliefs lowered by how others allegedly did are accompanied by erratic thinking, goal abandonment, deficient performance and self-dissatisfaction. In some studies, such as the one conducted by Litt (1988), the bogus comparative information contradicts and overrides the impact of past performance on belief of personal efficacy.

Hawkins argues that the comparative information constitutes the performance that generates the efficacy epiphenomenon. Let us examine the logic of this reasoning. According to the epiphenomenal argument, thoughts are the co-occurring products of performances. Hawkins presents a most peculiar form of epiphenomenalism. Unbeknown to individuals that they will receive comparative information some time later, the co-occurring by-products of their performance are mysteriously suspended or somehow obliterated by phony information voiced by others that is completely irrelevant to, or contradicts, their actual performances. In point of fact, their efficacy beliefs are a product of social persuasion not of their performances. Sociocognitive theory provides a great deal of particularized knowledge on how best to structure persuasive influences to increase their efficacy-enhancing impact.

In multivariate investigations using panel designs, of which there are now many, it is almost routine to test for the unique contribution of efficacy belief to performance after controlling not only for past performance but for a host of other possible determinants. The results of these studies show that perceived self-efficacy is a significant contributor to performance over and above the influence of other factors (Bandura, 1997). This is a conservative estimate of the regulatory function of perceived self-efficacy because of statistical overcontrol. Behavior is not a cause of behavior. Correlations between prior and subsequent behavior simply reflect the degree of commonality of their determinants. If the determinants are similar across time, the performances will be highly correlated. Simply showing that past behavior is a predictor of future behavior reduces to the mundane notion that unspecified causes operating similarly on different occasions will produce similar performances. To stop there adds little, if anything, to the understanding of human behavior.

Many motivational and self-regulatory influences contribute to level of performance. Past performance is a confounded index of the set of unspecified determinants operating at the time. A sense of personal efficacy is an important part of that constellation of unmeasured determinants. Thus, past performance is itself affected by beliefs of personal efficacy. It is not as though efficacy beliefs operate on later performance but are totally absent as a determinant from prior performance. Because efficacy beliefs affect both prior and later performance, using unadjusted past performance scores also removes some of the effects of efficacy beliefs on future performance. Therefore, to avoid overcorrection, the contribution of perceived efficacy to prior performance should be removed from it before prior performance is introduced in the analyses of the contribution of perceived efficacy to future performance. In short, it is easy to apply statistical controls ritualistically but it requires careful analytic thought to use them appropriately. In any event, the issue of prior performance as the wellspring of efficacy belief is irrelevant in the experimental investigations reviewed earlier in which efficacy beliefs are raised and lowered without involvement of any performances. Despite the substantial body of empirical evidence to the contrary, Hawkins continues to hold to the view that efficacy beliefs
are epiphenomena of prior performance. This assertion seems to rely more on conceptual conviction than on science.

Perceived self-efficacy has been consistently conceptualized and operationalized in terms of beliefs in one’s capabilities to produce given levels of attainments. However, the events over which personal influence is exercised varies widely depending on what one seeks to manage. It may entail effecting change in one’s motivation, thought processes, affective states, actions or altering the practices of social systems. Although the nature of attainments varies, the basic conception of perceived self-efficacy as perceived capability to produce effects is unvarying. Corcoran (1995) strings together partial quotations addressing different aspects of perceived self-efficacy, some of which are definitional, others specifying perceived efficacy as one of the mechanisms of human agency, and still others distinguishing efficacy as a generative capability from views of capability as fixed acts in a behavioral repertoire. This is designed to convey the impression of variation in the basic definition of perceived self-efficacy. He then writes statements of his own and sets them in quotation marks, which readers may mistakenly assume are quotations from articles on self-efficacy.

I have commented elsewhere (Bandura, 1991b, 1995) in some detail on points reiterated in Corcoran’s (1995) commentary and will readdress only the more relevant ones here. Corcoran grounded some of his views regarding self-efficacy beliefs in a disputable dichotomy that shooting basketballs through hoops involves skill but exercising control over addictive behavior does not. Many areas of human functioning are primarily concerned with perceived self-regulatory efficacy to guide and motivate oneself to get things done that one knows how to do. The issue is not whether one can do them occasionally, but whether one has the efficacy to do them regularly in the face of varied impediments. Shooting basketballs through hoops and controlling addictive behavior both involve the exercise of skills, but the latter relies on self-regulatory skills, the former on motor skills. It is not as though simply deciding to cease addictive behavior promptly eliminates it without the individual repeatedly mobilizing social, cognitive and affective self-regulatory skills and strategies to bring it all about, and to continue to override instigators to resume use of the substance. Informative studies are being conducted into the influential role of perceived self-regulatory efficacy in the self-management of nicotine, alcohol and drug dependence (Annis & Davis, 1989; Bandura, 1997; DiClemente, Fairhurst & Piotrowski, 1995; Marlatt, Baer & Quigley, 1995). Efficacy beliefs predict initiation of habit change, maintenance of abstinence, vulnerability to relapse, and recovery from lapses. Similarly, handling writhing reptiles requires a lot of versatile coping efficacy. The issue in contention is not a “distinction between the living and the nonliving world,” as Corcoran frames it, but the requirement of different types of efficacy beliefs to meet different types of challenges.

Judgment of capability is conceptually and operationally separable from expression of a behavioral intention. Indeed, the separation of efficacy belief and intention is fully corroborated empirically. Regardless of the activity domain, efficacy belief affects performance both directly and through its impact on intention (deVries & Backbier, 1994; deVries, Dijkstra & Kuhlman, 1988; Dzewaltowski, 1989; Dzewaltowski, Noble & Shaw, 1990; Kok, deVries, Mudde & Strecher, 1991; Schwarz & Fuchs, 1995). The results of numerous studies similarly show that perceived control affects behavior both directly and through its impact on intention (Ajzen & Madden, 1986). Because perceived self-efficacy is a major determinant of intention, the two are obviously positively correlated. Corcoran picks a single instance involving a high correlation and then jumps to the generalization that perceived capability and behavioral intention are indistinguishable.
Contrary to this claim, systematic analyses of the pattern of relations of these two factors to each other and to behavior demonstrate their conceptual separateness.

Beliefs of personal efficacy play an especially influential role during the development of competencies and their utilization under changeable environmental conditions. For example, people rely on their perceived efficacy in choosing what types of traffic situations to get into while they are developing their driving skills. But after they routinize their driving activities they do not have to continue to reappraise their driving efficacy each time they set forth on a familiar route with their automobile. This does not mean that efficacy belief is an important contributor to skill development but operates as less of a factor after the skill is routinized. Quite the contrary. As long as people continue to believe in their capability to perform a given activity they act habitually on that belief without having to keep reminding themselves of it. Should they cease to believe their operative capabilities they would behave differently. If significant changes occur in task demands or situational circumstances—such as driving in treacherous mountainous terrains, under hazardous weather conditions, in congested traffic in unfamiliar cities, or in foreign countries—personal efficacy is promptly reappraised as the guide for action under the altered conditions.

Routinization is advantageous when the ways that have been adopted are the optimal ones and remain so under a variety of circumstances. However, routinization is self-limiting when people settle for low-level pursuits on the basis of perceived inefficacy and no longer reappraise their capabilities or raise their vision for themselves. Corcoran repeats the old argument that people do not judge their personal efficacy each time they perform a routinized activity. It is time to retire this type of analysis. In their daily lives, people repeatedly confront situations where they have to choose among different options. Many of these choices have short-run effects that are of no lasting consequence. Of greater importance are efficacy-based choices that have more enduring outcomes or even alter the course lives take. A substantial body of evidence demonstrates that efficacy beliefs play an influential role in determining the set of options given any consideration (Bandura, 1997; Lent, Brown & Hackett, 1994; Wood & Bandura, 1989). People do not regard options in domains of perceived inefficacy worth considering whatever benefits they may hold. Such exclusions of large classes of options are made rapidly on self-efficacy grounds with little thought of costs and benefits. Perceived efficacy not only sets the slate of options for consideration, but influences how options are construed, perceptions of opportunities, impediments and risks, and the outcomes expected for different courses of action (Bandura, 1997). This rich body of knowledge refutes Corcoran’s trivialization of the role of judgments of personal efficacy in human decision making.

Corcoran’s argument excluding efficacy belief from routinized action applies equally to his analysis of choice behavior in terms of outcome expectations. Once commuters convince themselves that it is better to drive to work than to use public transportation, they no longer have to compute cost-benefit analyses each time they are about to set out to work. They do so without reanalysis as long as they continue to believe that it is in their best interest to drive. Should they cease believing in the comparative benefits of driving they would take public transport.

I am at a loss to explain some of the odd statements in Corcoran’s commentary. Consider the claim that I have never specified the relations among the various factors in social cognitive theory. Not only are the causal structures specified, but they have been subjected to stringent empirical tests with causal modeling methods in multivariate designs (Bandura, Barbaranelli, Caprara & Pastorelli, 1996; Ozer & Bandura, 1990; Wood & Bandura, 1989; Zimmerman & Bandura, 1994; Zimmerman, Bandura & Martinez-Pons, 1992).
Lee (1995) claims that judgments of personal efficacy do not account for a large share of variance in performance. Catania (1995) echoes this claim without any empirical documentation. In point of fact, effect sizes vary from large to smaller ones as a function of a number of factors that affect the strength of the relation. These factors are identified and empirically documented in the recent book (Bandura, 1997). Many of them create artifactual discordances. For example, long temporal disparities between assessment of self-efficacy and action will yield a lower relation if self-efficacy has changed in the interim. Mismatch or only partial correspondence between what is assessed in self-efficacy and in performance lowers the relation because of the incongruity. Limited scope of self-efficacy assessment is another factor that reduces effect size. To cite a common example, weight is determined partly by what people eat and by their level of exercise. A study that assesses efficacy to stick to dietary change and to an exercise routine will yield a larger effect size than if only dietary efficacy is measured, as is usually the case. In academic functioning, which is multidetermined, perceived academic efficacy to regulate ones’ own learning activities, social efficacy to cultivate supportive interpersonal relationships, and self-regulatory efficacy to resist peer pressures for activities that undermine academic pursuits together account for substantially more variance in academic achievement than does academic efficacy alone.

The adequacy of the postulated causal structure guiding the research is still another influential element. Thus, if the factor to which self-efficacy is targeted is a relatively small contributor to the given performance, perceived efficacy cannot emerge as a strong contributor because the activity to which it is tied carries limited weight in the causal structure. Reversal of causal ordering of factors in analyses similarly reduces effect size. For example, the higher the perceived efficacy the higher the goals people set for themselves and the stronger the commitment to them. Self-efficacy will be shown to have a larger effect size if, as postulated, it is causally prior to goals in regression analyses than if the order is inverted.

Faulty assessments of self-efficacy or performance are additional attenuators. Domain-related measures of self-efficacy yield much larger effect sizes than do discontextualized global measures. Performance is rarely, if ever, measured with complete accuracy, as evident in coefficients of reliability. Instability of the performance measure places an upper limit on how highly self-efficacy can correlate with performance. In socially appraised performance, disparities between self-efficacy and performance attainments can arise, not because people do not act on their efficacy beliefs, but because they may not be adequately informed about what evaluators consider to be important in judging the performances. These are but a few of the many factors that must be taken into account in evaluating effect sizes.

It should be noted in passing that perceived efficacy is but one determinant that operates in concert with other determinants in social cognitive theory in governing human motivation and action. Included among these additional cognitive determinants are outcome expectations in the form of physical, social and self-evaluative effects, proximal and distal aspirations and perceived personal, situational and sociostructural impediments. The contribution of efficacy beliefs to human functioning is being increasingly assessed within the totality of the theory (Bandura, 1997). The full set of cognitive determinants typically account for a substantial share of the variance in human behavior.

Perceived self-efficacy is embedded in a theory of human agency that addresses the origins of personal efficacy, its diverse effects, the processes through which it produces its effects and the modes by which it can be altered. Each of these aspects involves complex matters that require extensive conceptual and empirical analyses. Since omniscience is hard to come by, no
conceptual scheme ever spells out in complete detail, at the outset, everything that could possibly be said about the subject matter. Lee wants a complete model of cognitive processing of efficacy-relevant information. Theory formation takes time. The progress we are making in specifying and testing given aspects of the theory is bringing us closer to an understanding of how people form and change their efficacy judgments (Bandura, 1997).

Social cognitive theory specifies four major modes of influence. These include enactive experience, vicarious experience through modeling, social persuasion, and inferences from somatic states. Information that is relevant for judging personal efficacy, whether conveyed enactively, vicariously, persuasively, or physiologically is not inherently enlightening. It is only raw data. It becomes instructive through cognitive processing of efficacy information and reflective thought. One must distinguish between information conveyed by experienced events and information as selected, weighted, and integrated into self-efficacy judgments. A host of factors, including personal, social, and situational ones, affect how direct and socially-mediated experiences are cognitively interpreted.

The cognitive processing of efficacy information involves two separable functions. The first concerns the types of information people attend to and use as indicators of personal efficacy. The theory specifies the set of efficacy indicators that are distinctive for each of the four modes of conveying information about personal capabilities. The major efficacy indicators are summarized in Table 1. The findings of different lines of research verify their impact and refine our understanding of the judgmental process. The array of factors selected provides the information base on which the self-appraisal process operates. The second function concerns the combination rules or heuristics people use to weight and integrate efficacy information from different sources in constructing beliefs about their personal efficacy. Researchers are beginning to address how people combine and integrate the different sources of efficacy information. But there is much work to be done in this aspect of the efficacy judgmental process.

Lee (1995) presents an unrestrained political indictment of cognitive theories. Cognitivists are charged with two major offenses. They embrace a dualistic view in which human action is "determined by the soul, spirit or mind," to the neglect of environmental control of "actual behavior." This widespread allegiance to the soul as the wellspring of human action, Lee argues, explains the contemporary disaffection with behaviorism. But the cognitive dualists do more than just divert attention from the true causes of human behavior. The belief that cognitions "exist independently of the material world" has pernicious societal ramifications. The dualistic "ideology of cognitive psychology" leads advocates of this disembodied view to change people's cognitions to conform to existing reality rather than to change the objective reality. Cognitivists are thus defenders of the status quo and give short shrift to issues of inequality, poverty and violence. There is a bit of a problem in the logicality of this argument. If cognitions have no functional value as Lee firmly believes, and cognitivists are busily changing other people's cognitions, then they cannot be breeding conformity because what they are changing allegedly has absolutely no behavioral effects.

Lee informs readers that cognitivists are not in a "deliberate conspiracy to maintain social inequity." Rather, cognitivists' social and political conservatism allegedly stems from the fact that their "pleasant, comfortable and desirable lives," lead them unwittingly to fit people to the prevailing social mold. This political indictment will probably take most readers by surprise because it is the behaviorists who are routinely accused of training functionaries how to shape conformance to institutional systems through reward and punishment, rather than changing the structures of the social systems themselves. Indeed, a major commission on the ethics of
Table 1

The Distinctive Sets of Factors Within Each of the Four Modes of Influence That Can Affect the Construction of Efficacy Beliefs

Enactive efficacy information
- Interpretive biases
- Perceived task difficulty and diagnosticity
- Effort expenditure
- Amount of external aid received
- Situational circumstances of performance
- Transient affective and physical states
- Temporal pattern of successes and failures
- Selective bias in self-monitoring of performance
- Selective bias in memory for performance attainments

Vicarious efficacy information
- Model attribute similarity
- Model performance similarity
- Model historical similarity
- Multiplicity and diversity of modeling
- Mastery or coping modeling
- Exemplification of coping strategies
- Portrayal of task demands

Persuasory efficacy information
- Credibility
- Expertness
- Consensus
- Degree of appraisal disparity
- Familiarity with task demands

Somatic and affective efficacy information
- Degree of attentional focus on somatic states
- Interpretive biases regarding somatic states
- Perceived source of affective arousal
- Level of arousal
- Situational circumstances of arousal

behavior modification was explicitly created to devise social mechanisms to curb the coercive use of reinforcement procedures in the service of institutional control (Stolz, 1978).

Lee's political creed rests insecurely on two false assumptions if it is meant as a critique of my views on cognition and its functional role in human adaptation and change. I am at a loss to know where Lee got the idea that I am a proponent of dualism. I have never espoused a dualistic doctrine. Quite the contrary. In Social foundations of thought and action (Bandura, 1986), I explicitly disavow such a view. Mental events are brain activities not immaterial entities residing apart from neural systems. I explain that, were one to perform Bunge's (Bunge,
hypothesical brain transplant, the donor’s unique psychic life would accompany the brain to the new host, rather than remain behind with the donor as a mental entity in a separate realm. However, materialism does not imply reductionism. Thought processes are emergent brain activities that are not ontologically reducible. In his treatise on the overriding paradigmatic shift to cognitivism, Sperry (1993) spells out some of the details of a nondualistic mentalism. Mental states are dynamic emergent properties of generating brain processes. Emergent properties differ in novel ways from the elements of which they are built. To use Bunge’s (Bunge, 1977) analogy, the emergent properties of water, such as fluidity, viscosity, and transparency are not simply the aggregate properties of its microcomponents of oxygen and hydrogen. Certain brain structures are specialized for mentation. The higher psychoneural systems are involved in the regulation of visceral, motoric and other subsystems. Thus, an emergent interactive agency assumes ontological nonreductionism and ontological plurality.

Thought processes are not only emergent brain activities, but they exert determinative influence. The human mind is generative, creative and proactive not just reactive. The construal of cognitions as cerebral occurrences raises the intriguing issues of how people come to be producers of thoughts that may be novel, inventive, visionary or that take complete leave of reality as in flights of fancy. One can cognize several novel acts with no external cueing and choose to execute one of them. Such cognitive productions and proactiveness address, at the psychological level, the fundamental issues of intentionality and the exercise of human agency. Knowledge of lawful relations established at the psychological level provide guidelines for examining the phenomena at other levels of analysis.

Lee’s political arguments additionally rely on a caricature of insolated cognitivism that social cognitive theory explicitly rejects. A major function of human thought is to predict events and to figure out ways of exercising control over those that are important. In the theory of triadic reciprocal causation, sociostructural and personal determinants are treated as interacting cofactors within a unified causal structure (Bandura, 1986). In these agentic transactions, people are producers as well as products of social systems. Research conducted within this interactional perspective sheds light on how socioeconomic conditions, familial, peer and self processes operate in concert to produce developmental outcomes (Bandura et al., 1996; Elder, 1994, 1995).

People do not live their lives as isolates. They work together to produce results they desire. Social cognitive theory extends the analysis of mechanisms of human agency to the exercise of collective agency. People’s shared beliefs in their efficacy to produce desired effects collectively is a crucial ingredient of collective agency. Such beliefs influence the type of futures they seek to achieve, how they manage their resources, the plans and strategies they construct, how much effort they put into their group endeavor, their staying power when collective efforts fail to produce quick results or encounter forcible opposition, and their vulnerability to discouragement.

Some writers mistakenly equate self-efficacy with Western individualism. In point of fact, a strong sense of efficacy is vital for successful functioning regardless of whether it is achieved individually or by group members working together. In a series of informative studies, Earley (1993, 1994) has advanced understanding of how personal and collective efficacy beliefs contribute to productivity by members of collectivist cultures as well as those raised in individualistic cultures. I devote a major section in the recent book on Self-efficacy: The exercise of control to the exercise of collective efficacy for social change. It reviews a large body of research that specifies the conditions under which beliefs of political efficacy and perceptions of the system’s responsiveness jointly influence whether efforts at social change
take conventional or confrontational forms. It presents promising approaches to building community wide efficacy for social change and how to structure social diffusion programs to ensure more equitable distribution of benefits of new technologies. The accelerated pace of technological change and extensive globalization of human interdependence is producing wrenching social changes that dislocate lives. The volume provides an analysis of the many conditions of contemporary life that can undermine a sense of collective efficacy and the new social alignments through which people are seeking to regain some measure of control in their lives.

This volume reviews a variety of other societal applications of social cognitive theory. The burgeoning population growth is the foremost and, by far, the most urgent global problem. Unless we check the explosive population growth we will rapidly destroy the interdependent ecosystems that sustain life. Media formats founded on sociocognitive principles are being diffused internationally and achieving success in reducing family size and raising the status of women in societies where they are relegated to a subservient role. In applications of this format in Africa, it is reducing sexual and drug injection practices that increase vulnerability to infection with the AIDS virus. New health promotion systems structured around self-regulatory principles with computer-assisted implementation are successfully reducing major health risks, retarding the progression of heart disease and enhancing health functioning. Chronic disease has become the dominant form of illness and the major cause of disability that does not lend itself well to biomedical approaches devised primarily to treat acute illness. Self-management programs based on sociocognitive principles are enabling people to live more productive lives with less pain and distress and large savings in health costs. These widespread applications of sociocognitive principles for human betterment stand in stark contrast to Lee’s political rhetoric.

It is ironic that in attacking dualism, Lee is propounding a dualistic view of individuals and society. For the most part, social structures represent authorized social practices carried out by human beings occupying designated roles (Giddens, 1984). It is not a dichotomy between a disembodied social structure and personal agency but a dynamic interplay between individuals and those who preside over the institutionalized operations of social systems. These are agentic transactions between institutional functionaries and those who seek to change their practices. Social cognitive theory rejects a dualism between individuals and society and between social structure and personal agency.

Lee’s unsubstantiated empirical claim that operant analysts are the ones who are creating the remedies for societal problems gets her into another contradictory predicament. I should remind Lee of Skinner’s assertion that “a person does not act upon the world, the world acts upon him” (Skinner, 1971). This view of unidirectional environmental control must apply to operant analysts as well as to other folks. Viewed from this perspective, operant analysts can be conduits for environmental forces but they themselves cannot be creators of programs for environmental change. In portraying operant analysts as agents of change, proponents of this view conveniently exempt themselves from their own theory. People are said to be shaped and controlled by environmental contingencies but once they adopt the operant doctrine they are elevated to intentional agents capable of creating wondrous programs to solve societal problems.

I noted with bemused interest that none of the proponents of epiphenomenalism addressed the egocentric predicament created by fervent advocacy of the rightness of such a view. I am puzzled and disappointed by the collective non-answer. In their writings, operant analysts regard other people’s cognitions as functionless residues of conditioned responses but present
their own thoughts on matters as the right ones that serve as functional guides on how to structure contingent rewards and punishments to manage behavior. This is not an issue to be dismissed by complaints of ad hominemism. Readers are entitled to know whether operant analysts give the same ontological status to their own thinking as they do to the thinking of others. If thoughts are merely functionless by-products of conditioned responses, and proponents regard their own thoughts as such, it is pointless to argue that those by-products have any special truth value. Why do epiphenomenalists foist their functionless cognitions on others or publish them in periodicals? I would still like to know how epiphenomenalists exempt themselves from the self-destruct nature of the epiphenomenalism argument.

References


