

The Notion of Events and Three Ways of Knowing: Problems with
Mentalistic Explanations, Freewill, Self, Soul, and Intrinsic Motivation

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It would seem that science could be understood as the observation and interpretation (or explanation) of events. But what does it mean to observe an event? G. K. Chesterton once pointed out that a young lady might call her sweetheart by some very intimate names, but you would certainly never get her to repeat those names in a laboratory setting at the behest of some scientist. Nonetheless, she does address her significant other in this fashion, a fashion not amenable to scientific observation. Would we say that because the event (calling her SO "sweet'ums", for example) is not observable to scientists that it eo ipso does or did not occur? Is this apparent scientific invisibility an artifact of the human nature of the subject of the experiment? Or is it an artifact of the observer scientist's being a fellow human, and not the right significant one to boot?

These are the kinds of questions that Michael Lammport Commons, Ph.D., is addressing in today's article titled " The Notion of Events and Three Ways of Knowing: Problems with mentalistic explanations, freewill, self, soul, and intrinsic motivation." As Prof. Commons observes:

"Behavioral constructs (such as stimuli, behaviors, or consequences) are events. In the case of a verbal report, an observer may hear it. A microphone and meter will show it. There is a difference between the appearance of a perceived event and the actual event. Perceptual activity can transform events. Illusions refer to those instances where people report the appearance of stimuli in ways that distort the physical properties of the objects or events."

And so the question remains: how do we know that we know that what we think happened actually happened? This is the fundamental question of the epistemology of science.

Dr. Commons did his undergraduate work at the University of California-Berkeley, and then at Los Angeles, where in 1965 he obtained a B.A. in mathematics and in psychology. In 1967 he earned his M.A., and M.Phil., and in 1973 his Ph.D., in psychology from Columbia University. Before coming to Harvard University in 1977 as a postdoctoral fellow and then becoming research associate in psychology, he was an assistant professor at Northern Michigan University.

Currently, he is Lecturer and Research Associate, Department of Psychiatry at Harvard Medical School, Massachusetts Mental Health Center and Research Scientist for the Program in Psychiatry and the Law there and Director of the Dare Institute, Cambridge, MA. He is cofounder of Society for Quantitative Analyses of Behavior, and of The Society for Research in Adult Development, and the Special Interest Group, Development and Behavior Analysis in the Association for Behavior Analysis and is Founder of the Journal of Adult Development. He was senior editor of Quantitative Analyses of Behavior, Volumes 1-11. Most recently Dr. Commons has been the associate editor for a Special Issue of Journal of Experimental Analysis of Behavior on the Nature of Reinforcement. Recently, he has contributed the following chapters: A comparison and synthesis of Kohlberg's cognitive-developmental and Gewirtz's learning-developmental attachment theories in J. L. Gewirtz & W. M. Kurtines (Eds.), *Intersections with attachment*; The philosophical legacy of behaviorism.. In B. A. Thyer (Ed.). *The philosophical foundations of behaviorism*. His most recent articles are: A quantitative behavior-analytic theory of development, *Mexican Journal of Experimental Analysis of Behavior*, Organizing Components into Combinations: How Stage Transition Works, *Journal of Adult Development*.

Dr. Commons' area of research interest is the quantitative analysis of the construction, understanding and experiencing of reality as it develops across the life span and evolutionarily. He is interested in how these elements affect decision processes, life-span attachment and alliance formation in a number of domains including the ethical, moral, epistemological, esthetic and evaluative. He studies these cross-culturally in a number of sectors--the social, educational, political, medical, legal and private.

-Stacey E. Ake

The Notion of Events and Three Ways of Knowing: Problems with mentalistic explanations, freewill, self, soul, and intrinsic motivation

Perturbations

In order to build a scientific theory it is necessary to start off by giving some informal definitions of the basic units to be studied. This theory starts by introducing the notion of a perturbation. Perturbations are changes or disturbances in the universe that may be directly observed or may not. From a traditional point of view, the background for any perturbation is noise-statistically random fluctuations in the current state of affairs. That noise consists of changes in the situation that do not appear to be systematic.

Events

Scientific accounts of behavior are built out of both analytical and empirical accounts of events.

One problem that continually arises is what perturbations to consider as existing, or in other words, what constitutes an event. There only seems to be one necessary restriction on saying that something exists. The restriction is rather weak compared to those required by operationalism but strong with respect to intuitionism and phenomenology. With the scientific theory that follows, we have to consider events as the basis. This notion is less restrictive than behaviorists' notions of stimuli and responses and so allows the theory to consider events that may not be clearly stimuli or responses. On the other hand, we do not want to make the mistake of Piagetians that thoughts, "schema," and verbalizations that belong to mental structures are the only causes of actions.

How do we know that something is an event? Events are potentially detectable perturbations. Perturbations are classed as events when they achieve some potential to be observed, witnessed, and in some way distinguished from the remaining noise by two independent paths of detection. The term event is used here to include all such perturbations, both public and private. The notion of paths of detection is not deniable or reducible lest we get into an infinite regress. These paths do not require direct observation. Note also that more experiencers or more experiences do not count as more independent paths.

Potential events may be inferred as long as there are two distinct paths leading to that inference, such as the case with electrons. Electrons may be detected through a multitude of paths by which inferences as to the existence of an "electron event" can be made. One can measure the magnetic moment of a single electron moving along a path in a magnetic field, the electric charge in an electric field, or the ionizing potential in a liquid hydrogen bubble chamber. There are numerous other ways of detecting the electron.

The reason two paths are required for events is because one path alone could mean that the perturbation could serve as its own causal explanation of itself. Some perturbations are deemed as having the status of being only singly detectable by one path. For example, if someone reports that the president is talking to them, there is one path, their report. They do not have a radio, telephone or any other such device and the president is nowhere close by. One other path is necessary to confirm that the president is actually talking to them and they are not reporting a hallucination. Behaviors and causes detected from a personal experience alone have this character. Robert Stickgold (personal communication, 1999) has shown that people think that of what they think, see, and dream as "real" while thinking, seeing, and dreaming. The status of events and perturbations is even more complex when activity is not potentially observable, as is with gyrations of the soul or will. These perturbations may be studied in theological and theosophical terms (Lowenthal, 1989). The best we can do within science is to discuss the report of these perturbations as data to be explained or refer to these perturbations in metaphorical terms.

Behavioral constructs (such as stimuli, behaviors, or consequences) are events. In the case of a verbal report, an observer may hear it. A microphone and meter will show it. There is a difference between the appearance of a perceived event and the actual event. Perceptual activity can transform events. Illusions refer to those instances where people report the appearance of stimuli in ways that distort the physical properties of the objects or events. Let us say one was looking at a color patch and the person said, "I see the color brown." But the color brown has no unique spectral existence. The report of brown arises from an infinite number of mixes of spectral colors. Yet, with the same perceptual apparatus, people correctly report all the spectral colors. We consider that the perception or sense of free will is also a result of perceptual activity that transforms external and internal events. When discriminations are easy to make, people report that they have a sense of will when making correct choices. When discriminations are hard to make, people report that they have no sense of will in making their choices.

Public Events

Public events are such that can be observed by more than one person (Skinner, 1957). External stimuli and behaviors are events. The two paths can be seen as follows. In addition to the subject, others may detect stimuli and behaviors. The behaviors may include language and emotion as well as other responses. Internal behaviors such as one's heartbeat are also public. One uses a stethoscope as a transducer to make the heart beat audible, and an electrocardiogram to make its activity visible.

Private Events

Some private perturbations may also be events according to the above criteria. These include internal stimuli, states, and behaviors. Internal stimuli might include internal pain (toothache) or pleasure, brain activity associated with dreams, or internal events modifying awareness of external events. For example, one of these internal events might include internal emotional activity that enhances attention to possible sources of reinforcement on one hand or distracts from attending to present events on the other hand. These states might include feelings, and tendencies to respond, such as attitudes and preferences. Internal behaviors might include images, illusions, thoughts, reflections, fantasies, delusions, hallucinations and intentions to act. For example, awareness may be considered internal behavior that is a response to either internal or external events. Awareness is sometimes described as the focusing of attention, or remembering internal events. Reports of awareness can be referred to as attentional behavior. That which is reported may acquire a relatively distinct and clear meaning. Presently, we only have one path to detect these internal perturbations--the subject's report. Because varying things in the environment affect reports of a number of these internal perturbations, one might think a possible second path may be inferred. Therefore, the reports are events, not perturbations (Skinner, 1957). Some of these events are already being detected by electronic-physiological means. With the potential to be detected, directly or indirectly, electrically or chemically, such internal perturbations may be classed as events and behaviors.

Private Events or Perturbations?

Where does this leave the cognitivist constructs of "internal mental life" that stem from fields such as cognitive development or psychodynamic theories? From a behavioral perspective, Commons (1991) and Gewirtz (1991) prefer to use alternatives that are based on events. These researchers may then take subjects' reports of internal events as potentially conditioned behavior just like any other. For example, attachment to an object can be a coherent system of responses cued and maintained by the appearance and behavior of an object person.

Another example might be traditional notions of the self. From a behavioral perspective, the self is viewed as an abstraction comprised simply of representations. Furthermore, a definition of a coherent

system of responses might include: pervasively imitated behavior, rule-governed behavior, behavior in response to verbal communication, elicited emotional behavior, observed public behavior and unobserved private behavior (Commons, 1991; Gewirtz, 1991).

Three Ways of Knowing

With the definitions of perturbations and events, it is possible to show what are the minimum conditions necessary for having a scientific theory. One needs to recognize the different ways in which we might know and understand behavior. The argument is very simple. There are three ways of knowing, and they are outlined below according to the following categories:

Ways of knowing Example of Fields Number of Paths

1 Way: Analytic: always true no matter what "data" or "experience" shows Examples: Mathematics, Logic, Parts of Philosophy Number: No paths of detections of perturbations.

2 Way: Phenomenological: a property of organisms and sometimes organisms interacting with environments. Examples: Religion, Law, Art, Literature, Dance and Music Number: One path of detection. This means that if one observes an action and hypothesizes a cause, such as free will, then the behavior may represent one path of detection. Detecting the behavior, however, does not prove that the hypothetical event is an actual event. If only one path is available, that is, if only one effect can be detected-that is the experience (and its report). There is no way to determine the cause of that experience. The experience is sometimes erroneously said to "cause itself."

3 Way: Empirical: moves scientific towards the truth. Examples: Science, History Number: We maintain that an event can be said to be real in a scientific sense if and only if it is detectable by two independent paths. An independent second path for detecting the hypothesized causal event must be found.

There can be combinations such as 1 and 3, which define most of science. Problems arise with combinations of 2 with 1 (Folk Psychology of Aristotle), 2 with 3 (current mixes of experimental and phenomenological accounts of free will such as Libet's). These can lead to various dangerous policies and practices. That does not mean that 2 is not prized for itself. It is.

The Detection of Events by Organisms

Organisms, including people, are sensitive to events in the environment. Some aspects of events and some relationships between events can predict future events. Researchers consider those events and relationships as signals. Sensitivity to specific signals changes with developmental stage at which the organism functions.

Tasks

One major basis for behavioral theory is task analysis. The study of ideal tasks, including their instantiation in the real world, has been the basis of the branch of stimulus control called Psychophysics. Tasks are defined as sequences of contingencies, each presenting stimuli and requiring a behavior or a sequence of behaviors that must occur in some non-arbitrary fashion. Properties of tasks (usually the stimuli) are varied and responses to them measured and analyzed. In the present use of task analysis, the complexity of behaviors necessary to complete a task can be specified using the complexity definitions described next. One examines behavior with respect to the analytically known complexity of the task.

Portions of this paper appear will appear in Commons, M. L., & Miller, P. M. (In press). Quantitative behavioral-developmental model of events and of hierarchical complexity's treatment of stage. Behavior Analyst Today.

References

- Acredolo, C. (1995). Intuition and gist. Special Issue: A symposium on fuzzy-trace theory. *In Learning & Individual Differences*, 7(2) 83-86.
- Commons, M. L. (1991). A comparison and synthesis of Kohlberg's cognitive-developmental and Gewirtz's learning-developmental attachment theories. In J. L. Gewirtz & W. M. Kurtines (Eds.), *Intersections with attachment* (pp. 257-291). Hillsdale, NJ: Erlbaum.
- Gewirtz, J. L. (1991). Identification, attachment, and their developmental sequencing in a conditioning frame. In J. L. Gewirtz & W. M. Kurtines (Eds.), *Intersections with attachment* (pp. 247-255). Hillsdale, New Jersey: Erlbaum.
- Lowenthal, L. (1989). *Critical theory and Frankfurt theorists: Lectures, Correspondence, Conversations*. New Brunswick, NJ: Transaction Books
- Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century- Century-Crofts.
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