Q Methodology and the Operant Construct

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Abstract: *The Q methodology operant construct is examined in terms of some implications of operantcy for the comprehensive approach to psychological subjectivity. After briefly noting B. F. Skinner's operant and an early reference to the construct by W. Stephenson, the developer of Q methodology, this paper explores seven ways in which operantcy facilitates the study of subjectivity. These include [1] subjectivity as purely behavioral, and not as one side of some mind-body dualism; [2] the sorter's perspective as primary, rather than secondary, to that of a test constructor; [3] operant factor structure as emitted and inherently meaningful; [4] factors as interpretable in their own right, and not as tests of preconceived hypotheses; [5] operant factors as naturally-occurring and confrontable; [6] complementarity, whereby in the same experiment some factors may be paradoxical yet still essential for describing the outcome; and [7] the field system alternative of quantum physics as opposed to the causal determinism found in classical physics. The main conclusion is that the operant is used in Q methodology in ways that are consistent with the latest developments in the logic of science.*

Introduction

Q methodology underwent a significant development with the appearance of a dedicated newsletter in 1977. That the newsletter later became a regularized, peer-reviewed journal of international scholarship under its original title, further helped to establish Q methodology as an identifiable area of specialization. The title of the newsletter was noteworthy by itself: In selecting *Operant Subjectivity* as the banner under which Q methodological scholarship could be published internationally, the editor emphasized a major theoretical component of the specialty and simultaneously highlighted the centrality of the operant construct to Stephenson's distinctive approach to subjectivity. Stephenson did not refer to the operant in his definitive presentation in 1953,

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however; instead, in the initial issue of *Operant Subjectivity*, the editor reprinted a little-distributed chapter entitled "Factors as Operant Subjectivity" (Stephenson 1970/1977) that had been originally published in a mimeographed compendium in 1970.

The purpose of this paper is to examine the operant construct in Q methodology. The relatively belated arrival of the operant and especially the status which has accrued to the construct call for dedicated consideration of this important component of Q methodology. (See Brown 1980; Stephenson 1970/1977.) Further justifying the present paper's aim is Skinnerian behaviorism's prior application of the operant to mark off its fundamental subject matter and theoretical approach.

The presentation to follow was guided by the goal of providing an answer to the question, How is the operant construct used in Q methodology? A functionally equivalent question is: Why does Q methodology require an operant construct? The guiding question is straightforward, but the route to addressing it is not. This is because Q methodology is a comprehensive approach to the study of behavior that includes a coherent "set of statistical, philosophy-of-science, and psychological principles" (Stephenson 1953, 1). Therefore, an appropriate answer to our question must show how the operant integrates with other components of the overall framework of Q methodology.

Early Reference to Operantcy in Q Methodology

An *operant*, according to Skinner (1953, 65), is "a set of acts" rather than a single response. On a particular occasion, for instance, a pigeon may raise its head a certain number of millimeters, and this constitutes a discrete response; however, the pigeon will not necessarily raise its head again by exactly that same number of millimeters, and it is the head-raising as *a general class of responses* (comparable to a Q factor as a class of responses) that constitutes an operant. An operant also has the characteristic of not requiring *elicitation* in the Pavlovian sense of a response preceded by stimulation, i.e., it is "spontaneous." Although committed to the study of observable events, Skinner did not deny the existence of personal experiences, which were mainly distinguished by their limited accessibility (Moore 1975, 127), but until the advent of Q methodology there was no systematic way of accessing these experiences without compromising fidelity to observables.

Perhaps the first reference to operants as they pertain to Q methodology is to be found in Stephenson's 1961 "Scientific Creed" trilogy. In the third of these papers, Stephenson crisply summarized Q methodology as beginning with this approach's solution to the problem of fundamental units for psychology — a person's self-referent statements — that individuals use to express themselves as Q sorts (i.e., they distribute the statements according to personal points of view or preferences under various conditions of instruction).

The researcher treats Q sorts as abstractions of sorters' selves and engages in further abstractive activity when different sorts are correlated and factored, resulting in classes of Q sorts (factors).[1] Stephenson describes the Q sort phase as follows:

> The aspects of self are abstractions: yet they bear a certain homologous relation to the real things, as minute billiard balls do to molecules [which serve as fundamental units in physical science]. The abstractions moreover, are operations, operant by the person himself, as truly and as significantly as any of Skinner's pigeons is operant. (Stephenson 1961, 20)

Stephenson provided neither a clarifying discussion of operant nor reference to a specific place in which it was discussed at length by Skinner, whose following comment is as influential as any:

> The word "operant" ... emphasizes the fact that the behavior *operates* upon the environment to generate consequences. The consequences define the properties with respect to which responses are called similar. The term will be used both as an adjective (operant behavior) and as a noun to designate the behavior defined by a given consequence. (Skinner 1953, 65)

It is unclear precisely how in his 1961 paper Stephenson connected Skinner's operant with Q sorts. However, his subsequent presentations suggest Stephenson was beginning to appreciate previously unrecognized implications of freely allowing individuals to behave under circumscribed conditions.

Major Characteristics of the Operant in Q Methodology

[1] Q Factor Structure is Operant and Subjective

In his 1961 paper, Stephenson had yet to tie operantcy to Q factor structure, except by implication. In this early use of operant, Stephenson restricted the construct to the Q sort phase of his methodology. In the 1970 chapter that served as the lead article for that first issue of *Operant Subjectivity*, Stephenson (1970/1977) offered Q factors themselves as operants — *subjective operants*. From then onward, Q methodology has become hallmarked by derivations of operant factor structure.

Not only is Q factor structure operant, but it also provides measurement of subjectivity in accord with the major characteristic of Q methodology — a science of subjectivity by way of self-referential communicability (Stephenson, 1987). It is possible that once Stephenson set forth with his aim of formulating Q technique (raw procedures, including sorting items and deriving factors) such that it was as compatible with modern science as he could make it (Stephenson, 1953), he was destined to arrive at a construct such

[1] Q factor structure is the end point of Q methodology measurement operations. Factor structure is made up of factors which result from the statistical classification of individual Q sorts. Ultimately, the administrator must interpret factors, often in conjunction with input from sorters.

as the subjective operant. This is because in his search for the most current thinking in science and the logic of science upon which to establish his methodology, Stephenson came across the advanced thinking of J. R. Kantor, Arthur F. Bentley, Gilbert Ryle, Ludwig Wittgenstein, and Egon Brunswik (Stephenson 1953). Stephenson recognized the currency of these theoreticians' and philosophers' views, all of which ruled out a conventional dualistic conception of subjectivity, i.e., a conception in which subjective pertains to a form of internal, hidden mentality that contrasts with a scientifically knowable objective which is materialistic and bodily. These remarkable thinkers did not offer materialism, often found in psychology as reductionistic behaviorism, as a way out of mind-body dualism. Instead they offered a sophisticated behavioral outlook, according to which behavior was a central construct of all science, including psychology, and all events, whether conventionally called objective or subjective, were equally a matter of behavior.

Skinner's operant has always been pregnant with the essentials of what is required to encompass mentality within a nondualistic behaviorism (Delprato and Midgley 1992). It is not unreasonable to propose that Stephenson (1961) sensed the potential of the operant for a behavioral science of subjectivity even though he did not elaborate on the construct itself. Further predisposing Stephenson to the operant was his admitted exposure to what he considered to be an early form of the construct in Charles Spearman's methodology (Stephenson, 1970/77).

To this point, we find that Q factor structure is operant because of the inherent behavioral nature of all it represents. Much more is implied. The characteristics of subjective operants discussed below provide further clarification of how operantcy is at the heart of Q methodology. Taken together, the various interrelated faces of Q operants provide a substantial picture of the overall nature of Q methodology from the standpoint of one of its fundamental precepts.

[2] Operant Factor Structure is Independent of Construction Effects

High on the list of what Stephenson sought to communicate with the operant was that Q factors "have no critical dependency on test 'construction' effects" (1970/77, 8). In the same paper, Stephenson relayed how Spearman's (1927) thinking prepared him for an approach to psychological measurement that yielded outcomes that did not vary with the specifics of the measurement procedures (e.g., test construction). What this means for Q methodology is that different appropriately derived Q samples from a population of items (concourse) yield much the same factor structure, as has been demonstrated by Thomas and Baas (1992-3). The independence of operant factor structures from the specific operations from which they emerge means that the individual sorter's responses are not interpreted on the basis of the point of view that the

test constructor used to create the measuring instrument. Instead of reaching conclusions about an individual's subjective feelings (describable, say, as depression on the basis of responses to scales of depression developed by someone other than the behaver), the individual's perspective is primary. Rather than the individual's point of view being determined by the prior meaning of the measurement scale, Q measurement operations afford sorters the opportunity to express their point of view independent of the standpoint, or understanding, of someone else.

[3] Operant Factor Structure is not Evaluated

It follows that if the sorter is primary in determining the meaning of factors in Q methodology, then there are no right/wrong or good/bad responses as administrators might search for with many conventional assessments. Factors are taken in their own right; there is no attempt to assess the individual's point of view in relation to an external criterion. Thus, typical applications of validating techniques do not apply (Brown 1980; 1992-93). One of the marks of objectivity is a capacity for verification. Stephenson (1980) does not oppose objective science that is concerned with non-self-referent statements about nature, e.g., "One foot of snow is on the ground." There are many reasons to evaluate objective statements. Stephenson's aim was to develop a subjective science that did not force the logic and methods of conventional objective science onto subjectivity and did not set subjectivity apart as on the mental side of a mental-physical dualism. Stephenson's solution was to take the mark of subjectivity to be self-reference where each objective statement about the world can be the source of innumerable self-referent statements, e.g., "Great, this snow means no school today." "I'd like to have the money it is going to cost me to have this snow removed." Self-referent statements, i.e., subjectivity, are not right or wrong. They simply occur in context in the same way that pecks of a pigeon in a free operant experimental setting are said to be emitted as opposed to elicited by antecedent stimuli (Skinner 1953). Moreover, whereas a Q sort is not spontaneous in the sense that the participant is invited by an investigator to provide it (antecedent stimulus operations), it is spontaneous in the sense that no one instructed the person to organize the statements in the specific pattern which they finally assume.

[4] Constructs of Operant Factor Structure follow Operations

Conventional methodology begins with constructs, operationally defines them, and ends up with empirical measures and tests of the constructs. It is this process that justifies the constructor-defined scales used to supply meaning to, and evaluate, test-takers' responses. For example, Skinner's (1947) basic steps for constructing a theory were: (a) decide on events we seek to understand, (b) collect data, and (c) develop explanatory constructs. The operant is not required for Skinner's theory-building enterprise, but it does provide a general

framework for an alternative to the hypothetico-deductive approach to constructs. This is because the operant is free to take directions not thought of beforehand by the researcher. The operant approach turns this around, because operant factor structure does not provide a test of some preconceived construct or hypothesis. Rather, factors are interpreted in themselves, following the operant principle of behavior-in-itself as primary. That is, in the case of Q operants, "nothing is postulated beforehand; the behavior is merely there" (Brown 1980, 4). The postulate of *operations as prior to constructs* helps clarify the next characteristic.

[5] Operants are Naturally-Occurring Events

Q methodology theorists have in several places stressed factors as naturalistic (Stephenson 1973; 1986; 1987). By this is meant that operant factors exist in the same way that other objects and events are found in the world. Operant factors are of the world in the manner of eyes and ears. They are not hypothetical entities. This is one way Q methodology follows Kantor's (1959) interbehaviorism, and Stephenson (1953) treated this postulate as foundational. Kantor pointed the way to handling the full complexity and subtlety of human psychological events in terms of confrontables, i.e., spatiotemporal things and events. Because they are naturally occurring confrontable events, subjective operants are as objective for the persons who render them as are the length of their arms and the color of their eyes. Furthermore, operants are reproducible (Brown 1980).

[6] Complementarity applies to Operant Factor Structure

Stephenson continued to build the logical structure of Q methodology throughout his career by successively elaborating on considerations that were inherent in previous versions of his approach. One of the most significant and integrative of these was the development of the quantum-theoretical nature of Q methodology (e.g., Stephenson 1987). The quantum-Q connection is intricate. One implication is that Bohr's principle of complementarity applies to operant factor structure (Stephenson 1988-89). The connection between complementarity and operant factor structure is best demonstrated in single-case studies and can be summarized as follows: (a) The experimental requirements of Q methodology yield operant factor structures which consist of two or more factors; and each Q factor may indicate aspects of oneself (response functions) that emerge to prominence under different conditions; (b) Q factors are commonly unknown beforehand to either the sorter or the researcher, and some Q factors may appear paradoxical; (c) all Q factors are equally viable, i.e., no one of them describes the subjectivity of the individual better than any other; therefore, (d) all the factors will be essential for describing the outcome of the experiment (Stephenson 1987). Just as light can appear to be both particle- and wave-like, depending on measurements, so a

single personality can be both conformist and rebellious, as has been shown by Rhoads (2001). (See also Brown 2001.)

[7] Causal Determinism does not apply to Operants

When Stephenson increasingly connected Q methodology to quantum theory, he was following through with his long-held goal of making the methodology as current as possible. This meant adopting postulates compatible with the most recently developed general approach to science, an approach still with us today after first appearing at the beginning of the twentieth century, several years before Stephenson earned his doctorate in physics (University of Durham 1926). Physicists were the first scientists to shed materialistic and reductionistic lineal mechanisms (which still continue to dominate psychology) in favor of field system constructions that include those found in quantum theory (Einstein and Infeld 1938; Kantor 1946; Smith and Smith 1996; Stephenson 1982; Zimmerman 1979). The field system constructions accommodate the implications of complementarity for operant factors. Moreover, field systems make possible the notion that conventional causal determinism does not apply to operants (Stephenson 1982, 1986; 1987; 1988-89) any more than "the backswing of a golfer is the cause of the stroke that strikes the ball" (Skinner 1990, 1208), although it may be part of a common sequence. This means that operant factors, the outcome measures of Q methodology, are behaviors that do not have antecedent causes as would be required if the cause-and-effect model applied to operant factors. (See also Skinner 1953; 1981).

According to Stephenson (1982), cause and effect explanations are replaced in Q methodology by "the unpredictable, quantumized effects of factor theory, where the outcome is self-reference" (p. 244). In straightforward terms, upon identifying factors, Q methodologists do not follow the strategy of mechanistic science that involves reaching conclusions about hypothetical causal agents. Instead, the task of Q methodological research is to interpret factors in their own right and this means in terms of the sorter's lived experience. There is no search for causes-in-themselves. Q operants are not created by the conditions leading to their emergence, but they are always a function of such conditions that are conjointly those of the experimental setting and the sorter's lived life, past and present.

Conclusions

If this paper moved toward the development of an adequate answer about the question of how the operant is used in Q methodology, the answer might be summed succinctly but not frivolously as "In ways consistent with the latest developments in the logic of science." Well-credentialed social scientists have occasionally commented to the authors that they found Stephenson's writing

difficult to understand. It is possible that Q methodology's departure from conventional thinking about humans and from mainstream ways of studying behavior lies at the heart of such reports.

Each of the seven major characteristics of operants in Q methodology includes one or more implications that run counter to conventional approaches marked by:

- mind-body dualism,
- objective-subjective distinctions based on dualism,
- procedures designed to elicit constructs or to test hypotheses,
- predetermination of what responses mean and how they are to be evaluated,
- search for presumed hidden internal mental forms and processes, and
- attempts to unveil singular determinants of outcomes or linear combinations thereof.

Q methodology certainly takes the conventionalist to unfamiliar ground, as exemplified by the many faces of the operant offered here.

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