THE INTERBEHAVIORIST

A Quarterly Newsletter of Interbehavioral Psychology

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QUOTATION

The development of methods of printing pictures in the fifteenth century heralded the downfall of the tyranny of words in man's systems of knowledge. Modern science and technology gradually took shape as indispensible pictoral components were cut or engraved or etched on printing surfaces for widespread dissemination. The import of this analysis is that purely verbal structures are apt to get out of hand and lose contact with reality unless they can be checked and corrected against observable specific events. It occurs to us that the dangers of verbal abstraction are still with us.

- Smith and Smith, 1966

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The Interbehaviorist is a quarterly publication of news, information, discussion, journal and book notes, book reviews, comments, and brief articles pertaining to interbehavioral psychology -- a contextualistic, integrated-field approach to the natural science of behavior.

The newsletter publishes professional communications that fall between informal correspondence and colloquia, and formal archival publication. As such, the newsletter supplements contemporary journals dedicated to basic and applied research, to the history and philosophy of the behavioral sciences, and to professional issues in the field. The newsletter strongly encourages submission of notes about current professional activities of its subscribers, news and observations about interbehavioral psychology and related perspectives, comments on journal articles and books of interest, more extended book reviews, and brief articles. All submissions should be sent in triplicate to the editor and should conform to the style described in the Publication Manual of the American Psychological Association (3rd edition).

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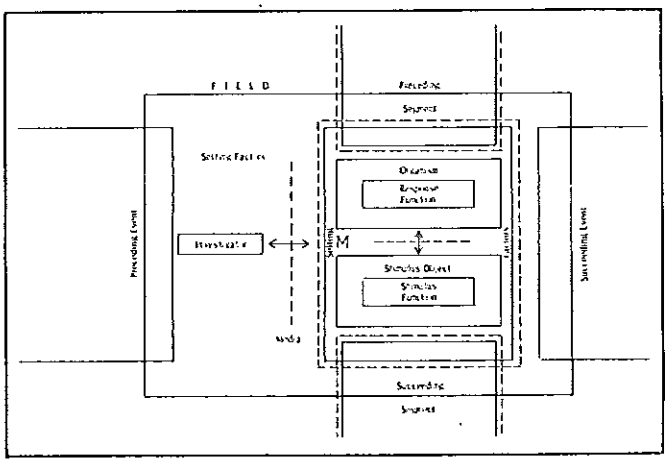
NOTES FROM THE FIELD

SIDNEY W. BIJOU and John Unbreit (University of Arizina) have received approval of a three-year research grant from the U. S. Department of Education for a project on "Improving the Sociolinguistic Behavior of Retarded Children in Relation to Nonhandicapped Peers." PATRICK M GHEZZI will serve as Research Assistant Professor and CHAI-CHEN CHAO as Research Associate.

LINDA J. PARROTT (St. Mary's University) delivered a tutorial on the interbehavioral treatment of pain and "private events" at the invitation of Dr. Josep Roca of the Institut Nacional d'Educacio Fisica in Barcelona, Spain. She also gave a one-day workshop on interbehavioral psychology and philosophy at Verhaltensacademie in Frankfurt. The Academy is under the direction of Claus Thierman, and has been training applied behavior analysts for the past ten years.

GERALD R. PATTERSON and Thomas J. Dishion (Oregon Social Learning Center) published a paper in Criminology (1985, 23, 63-79) entitled "Contributions of Families and Peers to Delinquency."

The October, 1985 issue of Soviet Life reports that ROGER RAY (Rollins College) participated in the Moscow meeting of the Pavlovian Society. He said of his work in relation to current Soviet research, "I am working on the development of the general systems theory and its application to understanding behavioral and psychosomatic pathologies. Both Sudakov and Khananashvili [Soviet physiologists] are internationally recognized for their contributions in these fields" (p. 17).



THE AGORA

We are beginning our seventeenth year of publication -- clearly a testimony to Noel Smith's original vision, and to Ron Heyduk's hard work after him. We look forward to being with you for the years to come, and vice-versa.

This issue filled quickly, and the next one is well under way, with contributions from Sandy Hobbs (a review of Markova's, Paradigms, Thought, and Language) and from William M. Gardner (teaching interbehavioral psychology). We would be delighted to hear from more of our readers on any manner of topics.

This issue also marks the first of what we hope will be a series of major contributions from invited editors. In-house editors become as stale as toll-house cookies over time; moreover, their views may not fairly represent the broader tastes of their readership. Thus, in the interests of expanding the material we publishe (i.e., of spreading the dough), we offer an issue whose main ingredients are under the editorship of the first of our invited editors -- Dennis J. Delprato (Eastern Michigan University), who speaks to future directions in the field. Dennis's contribution, though, was battered by tight page constraints -- not all of his original contribution would fit into this issue, hence he will offer an additional brief comment in the next issue as a follow-up. That's the way the cookie crumbles.

We hope that this new feature will invigorate the newsletter's content and style, as well as set the occasion for contributions from the broad range of interbehavioral perspectives and expertese among our readership. With this brief editorial (and more low-brow humor than kneaded), we now turn to the business of the current issue.

The Principia Press

Professor Helene Kantor writes of both good news and bad. On the positive side, she and a Mexican publisher have made an arrangement for the translation of The Scientific Evolution of Psychology into Spanish. In addition, she has received a large order from China for five of Professor Robert Kantor's books -- as many as fifty copies of one title.

On the distaff side, she reports otherwise slow sales. The newsletters' subscribers could assist here by checking to see that their institutional (and personal) libraries carry all of Professor Kantor's books, and that their college and university bookstores carry titles that seem most likely of interest. We will include a list of available books and prices in the next issue. If you have other suggestions for how to promote The Principia Press, please write directly to Professor Helene J. Kantor, 5743 Kimbark Avenue, Chicago, IL 60637.

The Association for Behavior Analysis

Sid Bijou reminds us that the Association for Behavior Analysis (ABA) will once again hold its annual meeting at the end of May, this time in Milwaukee. Numerous interbehavioral presentations (e.g., workshops, symposia, papers, and meetings) have been planned. Enough of the newsletter's subscribers regularly attend the convention to constitute a critical mass that would thereby make the convention stimulating to other interbehaviorists. Sid (and I) ask that you consider the possibility of attending. If interested, registration and housing information may be obtained from Shery Chamberlain, Society for the Advancement of Behavior Analysis, Department of Psychology, Western Michigan University, Kalamazoo, MI 49008 (616-383-0452)

New Subscriptions

We appreciate any efforts that can be made to promote the newsletter, especially in university, college, and institutional libraries. Subscription information is listed inside the front cover.

The new subscribers since the last report are:

Carme Basil (Spain)
Steve Boggs (University of Florida)
Jeffrey Hilt (SUNY-Albany)
Ted E. Melson (Plymouth, MI)
Paisley College of Technology
Francisca Serrate (St. Mary's Univ.)
John F. Shannon (SUNY-Plattsburg)
Robert L. Woolfolk (Kingston, NJ)

The quotation on the front cover was provided by Dennis Delprato. It is from K. U. Smith and M. F. Smith's Cybernetic Principles of Learning and Educational Design (New York: Rinehart and Winston, 1966, p. 349).

Invited Editor's Commentary: Where To From Here?

Dennis J. Delprato

Eastern Michigan University

I am pleased to kick of this "Invited Editor" issue of the newsletter and, to do so, have selected a theme that to me epitomizes Professor Kantor's work. Specifically, I would like to offer some answers to the question, "Where to from here?," by which I mean the future of behavioral acience and technology. Although I could go on at length regarding where not to go, time has come to stop attempting intellectual reconciliation of integrated-field thinking with constructs based on mechanism, a remnant of 19th century science.

I consider Kantor's major contribution to be having moved behavioral science and technology to the latest stage of thinking about the world. In my view, Kantor has gone further and in more detail and scope than has any other thinker. It is important to note, however, that Kantor was not alone in promoting an integrated-field or systems perspective -- concordant views have been put forth by others. These and other points are addressed in what follows.

To Participating Biological Factors

One of the directions of the future is the systematic study of biological factors. The following comments on this topic were prepared by Bryan Midgley, an undergraduate at Eastern Michigan University, who recently suffered through a course in physiological psychology.

Since Aristotle, an understanding of biology has been recognized as crucial to an understanding of behavior. If one agrees that this is true, and that bio-behavioral relationships have traditionally been handled in an unsatisfactory manner (i.e., organocentrism and reductionism), then just what is implied by considering biological factors as participative components in the field? Perhaps the answer here has not been as clear as it could be.

Individual scientific disciplines do not exist in a vacuum. Rather, systems analysis reveals that relationships among the sciences are best described as interdependencies. One implication of this view is that advancement in any one discipline will be felt in other areas of specialization. Thus, an adequate description (explanation) of the subject matter of any science must not only be in terms of principles unique to that science, but must also take into account the influences from other sciences. To take sociology as an example, we can describe its subject matter in terms of unique sociological principles, along with principles contributed by other sciences. To discuss sociology solely with respect to biology, psychology, chemistry, or some other science, however, would constitute reductionism. Furthermore, to describe sociology purely in terms of sociological principles without consideration of biology and other sciences would be a grave error. The point here is that scientific disciplines are abstractions that facilitate study of natural objects and events. The world is not composed of separate and distinct psychological, sociological, and biological "corners."

If we are to avoid the error of rejecting systematic inclusion of biological factors in our event fields, as well as avoid the error of biological reductionism, how should we view biological factors? That is, what factors do biological components refer to? The answer: These components can only serve as stimulus objects (with respective stimulus functions), response occurrences (with respective response functions), and setting factors. To those more than superficially familiar with Kantor's work, there is nothing new here. What would be new is systematic inclusion of the notion in basic research and clinical analyses.

To Eclectic Practice

Not too long ago, few suggestions raised my ire more than the one that we must "be eclectic." To me, the speaker or writer waved the banner of eclecticism as a combined political weapon and fenestrated cloak of ignorance to maintain the feeblest type of thinking. Such a sorry use of eclecticism to perpetuate cultural tradition is, of course, still common.

Thorne (1973), however, has convinced me that some alternative referents to eclecticism are completely naturalistic. The essence of the argument follows.

Thorne (1973) pointed out that, in the middle of the nineteenth century, medicine found itself in a situation similar to that of present-day psychology, particularly clinical psychology. More than 400 proprietary medical schools flourished in the U.S. at that time in which were taught a potpourri of approaches such as homeopathy, naturopathy, osteopathy, and chiopractrics. In other words, medicine was fraught with schools, systems, and cults. Since that time, however, a major development in medical science was the substitution of eclectic training and practice for cultism. The key to this change was the medical establishment's decision to base standards of training and practice upon basic scientific research. Thus, eclectic medical practice (a) evaluates clinical services against standards provided by basic science knowledge, (b) has a relatively standardized curriculum, and (c) does not foster schools, cults, or essentially proprietary systems.

The message here is that we refer to clinical medicine as eclectic, not because it "accepts the potential value of any theory (or postulate system)," but because it accepts the potential value of any procedure that is supported by basic (naturalistic) science. No time- or space-transcending contructs are included.

The implications of this view for behavioral science reflect one of Professor Kantor's (1969) basic points: The field is organized into systems, "[i]n the plural since, unfortunately, a transcendental subject matter allows indefinite variation" (p. 333). Because the integrated-field perspective rules out all transcendental constructs, clinical psychology now can move to eclectic training and practice.

To a Cybernetics (Systems) Approach

Although Kantor undertook no research, this was not unfortunate, for it was enough that he pointed the way for others to deloricate events that have remained obscured for centures. Nonetheless, behavioral science will unequivocally progress to the most advanced stage of world thinking on a large scale when research procedures comport with integrated-field postulates. Only then will investigators routinely formulate questions and plans of investigation that address the interdependencies among the multiple factors that comprise interbehavioral fields. Although research literature seems to be bereft of work in accord with Kantor's guidelines, this is actually not so, as demonstrated in a recent review of experiments making use of multiple-response methodology (Delprato, in press). Multiple-response methodology, however, is but one component of the full range of procedural implications of the integrated-field perspective, and multiple-response research represents only a fraction of the behavioral research being conducted today.

One body of research that embodies a wide range of methodological implications of the integrated-field perspective is that on behavioral cybernetics or behavioral systems, as exemplified especially by the work in K. U. Smith's Behavioral Cybernetics Laboratory at the University of Wisconsin.

By about the mid-1960s, the generic "systems" approach to training, education, and organizations had peaked. I say peaked because a prominent version of this movement largely died (Hunt, 1984). It died, however, only because it attempted a marriage between mechanistic behaviorism and systems theory. In Smith's approach, however, we note a very different application of the systems approach to training, education, and organizations (e.g., Smith & Smith, 1966). For example, they distinguish between two approaches to worker training and management: One that promises wage and efficiency rewards, and another that emphasizes principles of self-regulation and feedback control. Smith and his collaborators have conducted definitive behavioral science research within the framework of integrated-field (or systems) thinking (e.g., Smith, 1967, 1972; Smith & Henry, 1967; Smith & Smith, 1966). Although I cannot begin to offer a fair sampling of this research, I can describe a few of its highlights.

Smith did not shy away from general and inferential statements (i.e., theory), nor from polemics befitting an innovative thinker. For example, he argued that training and engineering psychology beginning with WWII, not with orthodox experimental psychology, provide the most

significant contributions to learning science and education.

Smith's (1972) definition of behavioral cybernetics is that it experimentally investigates motions of the body -- including specific movement patterns, posture, social behavior, tool-using, and behavior-physiologic interactions -- as dynamic feedback processes. Further, behavioral cybernetics "is concerned with systems theory, and analysis of living activity in which response is conceived of as the dynamic reaction sector of closed-loop control mechanisms that govern and integrate the stimulus environment, sensory input, perception, neural activity, and physiologic function by feedback control" (Smith, 1972, p. 285). The systems approach was a replacement for attempts to "deal with motor activity as an end product determined by the linear, one-way influences of environmental stimuli and internal physiologic states" (Smith, 1972, p. 285).

Behavioral cybernetics brought to the forefront a revolutionary alternative to traditional approaches to the question of control or governance. Previous accounts of behavioral control were open-loop or linear. Staunch adherence to open-loop control is exhibited by mechanists who maintain that "initiating causes...lie in the environment and...remain there" (Skinner, 1984, p. 508). As is well known, other linear mechanists hold that behavioral control lies inside the organism's mind. Behavioral cybernetics introduces interactive or transactional control, according to which cause or control has no locus independent of a set of relationships; self-regulation without autonomy is the basic model. We previously had a choice between determinism (i.e., linear, one-way control) and free will (i.e., no, at least naturalistic, control). The new approach to control shows how both determinism and free will can be rejected, for both missed the point.

In contrast with the conventional open-loop analysis of the relationship between extrinsic events (antecedents and consequences) and observed responses, Smith emphasized closed-loop analysis in which the organism is viewed as a feedback or control system that generates its own activities to detect and control specific stimulus characteristics of the environment. Thus, to Smith, a functioning organism is always behaving, that is, always responding and stimulating itself by means of feedback (even during sleep). Further emphasis on the continuity of organismic activity is evident in the suggestion that specific external changes in the stimulation pattern do not initiate responses, but rather simply modify organizational features of the continuous behavior-in-progress.

Considerations such as these led Smith to use state-of-the-art computer methods in his basic and applied research. Further influences in this regard were his emphasis on (a) the multidimensionality of organismic actions, (b) multiple classes of feedback, (c) dynamic vs. static after-effects of responding, and (d) articulated movements as guided by postural and bilateral transport components of motion that serve as coordinate references. In brief, the research called for multidimensional on-line feedback capabilities that could only be adequately met with what appear to be the first real-time bio-behavioral computer facilities in the world. Among the more important research problems Smith has addressed are performance variations as a function of feedback perturbations. Among the response systems studied have been posture, gait, hand motion, visual perceiving, visual-manual tracking, machine and tool manipulation, breathing, speaking, and eye movement. In addition, Smith and his colleagues have conducted cybernetic analyses of young children's development of social tracking, of infant control of environing objects, and of clinical research in rehabilitation medicine (e.g., epilepsy and emphysema).

To Human Performance Technology (HPT)

HPT is an interdisciplinary, integrative discipline that incorporates principles of biobehavioral, cognitive (after Kantor), and systems sciences to address the full range of human performances. The postulates are those of an integrated-field behavioral-systems science. Left behind are the postulates of the proto-HPT period and those procedures that do not comport with naturalistic postulates. Technological contributions are made by engineering psychology, human factors/ergonomics, performance technology, instructional technology, training science, biomechanics,

kinesiology, sports medicine, physical medicine, physical therapy, artificial intelligence and expert systems, computer-based training, and organizational development. Smith (1967) proposed an early version of HPT in the form of "physical behavioral science," a field based upon cybernetic notions of organization and control and the insight that physical education pointed the way into "new domains of behavioral science."

HPT applies to all levels of systems involving human performance, ranging from the individual, to dyads, to small groups, and to organizations. Kantor's revolutionary notion of the behavioral segment within a multifactored field is actualized, in part, through the notion of control systems that have negative and positive feedback and feedforward, which is descriptive of the way in which open organismic systems function.

Interestingly, an examination of technological revolutions throughout history reveals no revolution in human performance technology (HPT). Although HPT has been neglected, it is the newest and most fundamental technology. Because readers of this newsletter require neither a detailed description of the reasons for the neglect of a technology of human performance, nor an elaboration of how HPT is fundamental, I will briefly comment on its newness.

It seems that movement to the integrated-field stage of scientific thinking is required for a complete technology of human performance. Up to now, we have been living (a) in the pre-HPT period of folk tech, the textbook, apprenticeship, and guilds, and (b) in the proto-HPT period of Taylor's scientific management, Gilbreth's motion study, programmed instruction, clinical psychology and psychiatry, and behavior modification. I submit that we are currently in the early stages of an authentic HPT as the implications of a spatio-temporal approach to all human matters continue to expand.

In its narrowest sense, HPT addresses human performance needs in the private and public sector (e.g., training, management, productivity improvement, performance appraisal, and rehabilitation). In its broadest sense, HPT simply refers to the practice of integrated-field behavioral-systems science. The latter is a replacement for psychological science (i.e., psychology). This means that eventually most of what today passes for psychological technology will be relegated to the status of astrology. There will be no shortage of psychological practitioners -- their views will be promoted, widely known, and lucrative for votaries with the right marketing system. Psychology, however, will clearly have joined the ranks of astrology and alchemy, while behavioral science (short for integrated-field behavioral-systems science) will have joined the natural sciences.

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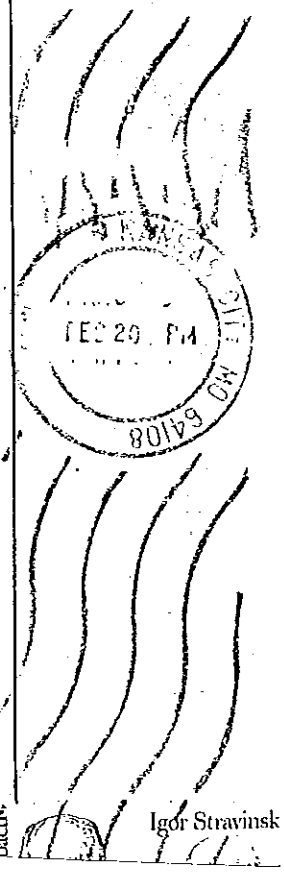

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