

THE INTERBEHAVIORIST

A Newsletter of Interbehavioral Psychology

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THE INTERBEHAVIORIST

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THE INTERBEHAVIORIST publishes 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 also 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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1991 Subscriptions

1991 subscription fees are now due. If you have not already done so, be sure to send them in right away.

THE PRINCIPIA PRESS

Principia Press's currently available titles in interbehavioral psychology, all by J.R. Kantor, are listed below. Check your bookshelves, and those of your library and bookstore, for possible oversights. In addition, the books make excellent gifts for colleagues and students, especially for the latter in honor of their completed degree requirements. The books may be purchased directly from Principia Press, 5743 Kimbark Avenue, Chicago, IL 60637. Handling charges are \$.75 per title; prepaid orders are postpaid. Any queries should also be directed to the address above.

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Call for News

THE INTERBEHAVIORIST publishes news about subscribers' activities and information about others' activities that may be of interest to readers. If you have published an article, chapter, or book with an interbehavioral orientation, or have read one published by someone else, particularly if the source is obscure, please let us know about it. Likewise, if you have read a paper at a meeting of potential interest to our readers, let us know. Do you know of a conference that might be of interest? Have you had a grant to do interbehavioral research funded? Do you know of a training program for students interested in interbehavioral psychology? Keep us informed.

The Agora

Editor's Note

With this combined issue of **THE INTERBEHAVIORIST**, Volume 18 is complete. The 20 Year Retrospective on **THE INTERBEHAVIORIST** makes up the bulk of the issue. Included in it is a history of the newsletter, some reflections on the past and plans for the future, some materials of particular interest reprinted from past volumes, plus author and subject indexes for volumes 1-18 and abstracts of all articles published in **THE INTERBEHAVIORIST** since its inception. The contribution of the Assistant Editors in assembling these materials is gratefully acknowledged.

Interbehaviorists in ABA

The Interbehaviorists in ABA Special Interest Group has submitted two symposia for presentation at the upcoming convention in response to ABA's invitation. The two invited symposia are as follows:

Title: Boundaries of Behavior Analysis
Chair: Bryan D. Midgley, *University of Kansas*
Discussant: Hayne W. Reese,
West Virginia University

Presenters:

Molar Behavior Analysis. William M. Baum,
University of New Hampshire
 The Boundaries of Behavioral Technology. H. S.
 Pennypacker, *University of Florida*
 From MacDougall through Skinner and Kantor
 and Beyond. William S. Verplanck, *University of Tennessee*
 The Domain of Behavior Analysis: Psychology as
 the Science of Behavior. Dennis J. Delprato,
Eastern Michigan University

Title: Understanding Interbehaviorism
Chair: Linda J. Hayes, *University of Nevada*
Discussant: Hayne W. Reese,
West Virginia University

Presenters:

Allies of Interbehaviorism. Noel W. Smith,
SUNY-Plattsburgh
 TBA. Emilio Ribes, *National Autonomous University of Mexico*
 Implications of Specificity Logic for Science.
 Linda J. Hayes, *University of Nevada*

Several other presentations with an interbehavioral orientation have been submitted independently. If you have submitted a paper of this sort and the orientation is not obvious by the title or your reputation, let us know so that we can get the word -- and audience -- out.

Tribute to B. F. Skinner Planned

In addition, ABA has planned a special tribute to the late B. F. Skinner at this year's convention. As part of that tribute, the special interest groups were invited to address Skinner's contribution to their interest areas in particular. Linda Hayes accepted this challenge on behalf of The Interbehaviorists in ABA and will give an address entitled *Cross purposes: A perspective on the conflict between Skinner and Kantor*.

Special Interest Group Meeting at ABA

As usual, The Interbehaviorists in ABA SIG will meet at the convention. We have requested additional time for the meeting this year to accommodate a long discussed but not yet implemented idea. The idea is to arrange an opportunity for interbehaviorists to consult with one another on problems they have encountered in interbehavioral analysis, method, practice or whatever. Time would also be available for a more extended discussion of the life and future of interbehavioral psychology than has been available in the past. Further structure for this meeting will be proposed in the next issue of **THE INTERBEHAVIORIST**. Any suggestions as to content or means are most welcome and should be sent to the editor.

Biography of Kantor in Progress

Drs. Donna M. Cone and Paul T. Mountjoy are undertaking a biography of Jacob Robert Kantor. We request that anyone who has information relevant to this project contact us at the following addresses.

Dr. Donna M. Cone, Department of Mental Health, Rehabilitation & Hospitals, 600 New London Ave, Cranston, R.I. 02920, Day Phone (401) 464-2334, Evening Phone (401) 821-8796

Dr. Paul T. Mountjoy, Department of Psychology, Western Michigan University, Kalamazoo, M.I. 49008-5052, Day Phone (616) 387-4498, Evening Phone (616) 344-0814

Featured Article

Field Systems Data: An Exploration of Alternative Visual Representations

Tom Sharpe

University of Nebraska, Lincoln

Educational measurement and statistical analysis of results have tended to follow a pattern where variables are measured separately and then a mathematical model is chosen to portray the relationship among those variables. This linear models approach can be characterized as follows: Measure variables separately, then relate them mathematically (Frick, 1983). Some temporally and contextually oriented alternatives have gained attention in the educational research community in the past decade (refer to Guba & Lincoln, 1981; Maccia & Maccia, 1976), though full blown interbehavioral systems methodologies are still scarce (refer to Ray & Delprato, 1989; Sharpe & Hawkins, 1990).

A time and context perspective may be characterized as follows: Measure relations among observable behaviors directly by counting their temporal patterns within a certain setting. If we are to subscribe to this epistemological avenue, however, a subtle but significant shift in one's world view, compared to that often taught in educational measurement and statistics courses, is required. To illustrate this perspective, the example of a baseball coach who observes how often each player has hit safely against left-handed pitchers when runners are in a scoring position, comes to mind. In this case, temporal patterns are observed and enumerated rather than estimating beta weights for regression analysis or means for ANOVA, as is typically done within the constraints of a linear models approach.

In essence a linear models strategy historically has tended to dominate educational research methodology, although naturalistic descriptive methods have recently gained status. Again, the traditional world view attempts to measure variables separately and then attempts to characterize their relationship with a mathematical model, where variable Y is some function of variable X. Though this principle may be extended to multiple variables, the relation is ultimately modeled by a line surface, whether straight or curved, in n-dimensional space. When such a relationship does indeed exist, then a mathematical model is an elegant means of relationship expression.

However, this oftentimes is not the case for the complex relationships among observable behaviors in an instructional setting. Utilizing a more temporal and contextual perspective in regard to the applied pedagogical environ may yield a more connectionist picture, relating previously undetected relationships among the complex array of ongoing behaviors and setting elements. If relationships among variables are viewed as a set of temporal patterns, and not as a line surface, mathematical models become ill suited to their identification and characterization. Rather, relationships are measured by counting the occurrences of relevant temporal patterns and aggregating the frequencies and durations of those patterns. Additionally, temporal and contextual characteristics -- such as rhythm, complexity, coherence, velocity, and fluency (Sharpe, Hawkins, & Landin, 1989) -- may be used in describing the extant behavioral patterns which typify a particular experimental situation.

For those accustomed to a linear models approach to their work, a focus on patterns in time may appear rather simplistic. However, Kendall (1973) notes that:

Before proceeding to the more advanced methods, however, we may recall that in some cases forecasting can be successfully carried out merely by watching the phenomena of interest approach ... Nor should we despise these simple-minded methods in the behavioral sciences ... (p. 116).

Rationale

Though patterns in time do not necessarily indicate causal relationships, the ability to recognize these patterns helps in the forecasting process regarding future occurrences. The gleaning of relative probabilities in this manner may, at least, provide direction for further experimental study and, at most, provide probable relations of "effect in context" among observable behaviors.

When analyzing patterns in time with regard to observable behavior, a variable is usually the temporal pattern. While contemporary technology has allowed for the efficacy of multiple variable, overlap-

ping time series, data collection (refer to S & K Computer Products, Ltd, 1985); the literature remains in infancy regarding applicable visual representations of this type of data, once collected. While observation and mapping of occurring behavior has taken root in the social sciences within the last ten years, visual representation of the data has remained purely sequential and largely linear in orientation (refer to Bakeman & Gottman, 1986); Powell & Dickie, 1990). Needed still are clear depictions of interbehavioral time series data which accurately convey behaviors within the greater temporal and contextual stream in which they reside. Further, succinct representations of these complex patterns and relationships as they occur in time must be couched in a manner easily understood by the scientific and lay community.

Therefore, the recommended task is to find new means of representing the overlapping complexities and multiple occurrences of systemic field data. However, a recommended perspective should preface the exegesis of the four figure prototypes. They are meant to stimulate discussion within a relatively uncharted portion of interbehavioral methodology, and should not be construed as a set of rigid delineated blueprints inflexibly mandated as the means of systemic representation. My hope is to further their evolution, via scholarly reaction and interaction, toward even more clearly defined visual alternatives. Obviously, any methodology, or even subpart of a particular paradigm, may be artificially elevated to dogma status. However, my aim is to show a few examples of possible visual representations in the hope of inspiring the behavioral research community toward a broader array of conceivable tools with which to work. Choosing a specific research tactic to fit the unique needs and requisites of a particular experimental question is advocated over the: "Have method, will travel" mentality, oftentimes articulated by various advocacy groups within the social science community. Success may only be possible when predicated upon a flexible, tentative, and open perspective.

Visual Alternatives

Grounded in a malleable perspective, four alternative visual representation examples of a field systems data base are illustrated. The data pertain to systemic behavior collected on one expert movement education instructor for one class period. For discussion purposes, we must assume that well defined

behavioral and contextual categories have evolved from initial setting description and have been tracked accordingly (refer to Sharpe & Hawkins, 1990 for systemic data collection strategies). Further, it must be made clear that each data representation stems from a construed conditional probability matrix, in which all preceding and succeeding behaviors within the data set are listed according to frequency and relative probability of occurrence in temporal relation to one another.

Figure 1 portrays a listing example of dual behavior chains with their accompanying frequency and relative probability characteristics. Clusters of behaviors are listed after each trigger event (i. e., the event around which preceding and/or succeeding behaviors and context elements are grouped). In the examples, numerals indicate specific behaviors and the values in parentheses relate frequency and relative probability of the succeeding numeric behavior. To illustrate, trigger event #18: content unrelated encouragement's onset is followed by #18, itself (11 times with a relative probability of .20), #26: positive instructional feedback, #28: positive non-task verbal, and/or #31: positive non-verbal communication. It should be underscored, again, that all patterns in time represented are built upon behavioral start times to allow for overlapping event scrutiny (e.g., behaviors #18, 26, 28, and 31 evidence themselves post start-

Expert Dual Chains	Frequency/Probability
12 —————▶ 17	(16/.16)
19	(25/.26)
26	(18/.19)
31	(14/.14)
	<u> .75</u>
18 —————▶ 18	(11/.20)
26	(6/.11)
28	(9/.16)
31	(21/.38)
	<u> .85</u>
28 —————▶ 17	(8/.10)
18	(19/.24)
19	(10/.13)
26	(17/.21)
31	(7/.08)
	<u> .76</u>

Figure 1. Behavioral dual chain examples

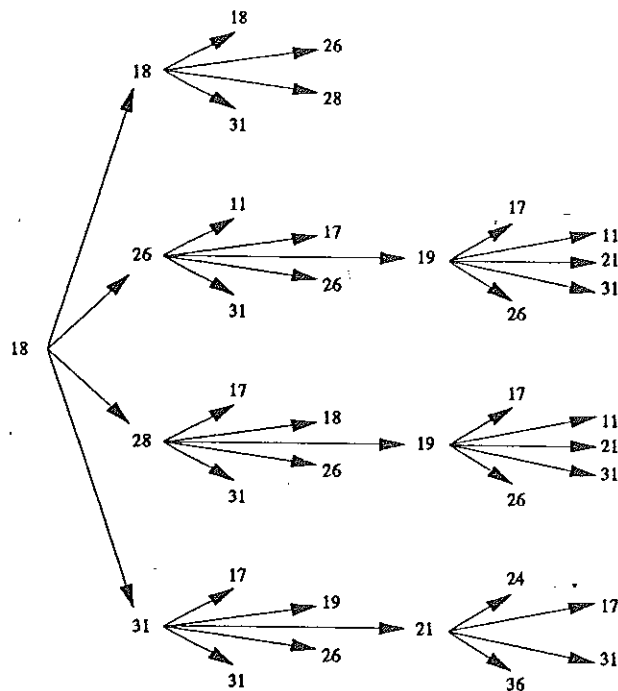


Figure 2. Behavioral sequential field example

time of trigger event #18, though the trigger event may still be ongoing).

Figure 2's configuration allows insight to the greater field of behaviors in action and interaction within time and context, and is therefore recommended after an initial sense of simple dual behavior patterns are gleaned from a data set (i.e., Figure 1). In this illustration, the trigger event of interest (i.e., #18: content unrelated encouragement) is shown to be followed by teacher behaviors #18, 26, 28, and 31 as in the Figure 1 example. These four succeeding behaviors of high frequency/probability are, in turn, secondary trigger events as the succeeding behaviors for each are then represented, and so forth. From this

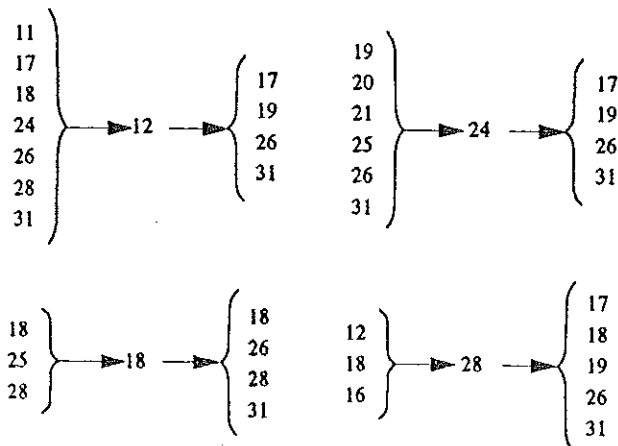


Figure 3. Macro-micro behavioral nesting example
(the immediately preceding and immediately following columns pre- and post trigger event meet a cumulative 50% minimum probability level)

type of representation a glimpse of simultaneously occurring and overlapping behavior patterns which frequent the investigative system may be shown. Additionally, this type of depiction is more representative of the multiple behavioral interactions within the complete field system. Though not shown for the sake of brevity and initial clarity, relative line thickness may be used to indicate strength of relationship, arrows may be used to show direction in time, and numerical frequency/relative probability indicators may be included in parentheses in representing as much interactive information within a particular field system as possible.

Once a greater understanding of the interaction among many of the elements within the field is achieved via Figure 2, a return to the study of microscopic patterns may be warranted. Similar to whole-part-whole strategies found within the hermeneutic tradition (Ormiston & Schrifft, 1990), the Figure 3 data representation allows an interpretive reversion to high frequency/probability nests of behaviors which immediately precede and succeed a particular trigger. This form of data depiction may be helpful in assimilating the complex data network oftentimes represented within Figure 2.

To illustrate, trigger event #18: content unrelated encouragement is shown to be preceded by #18, itself, #25: physical guidance, and #28: positive non-task verbal. Numerical frequencies and relative probabilities may also be added in parentheses to aid in description of the extant relationships in time.

The final visual representation revolves around an attempt to augment interbehavioral data within a graphic vehicle (See Figure 4). It seems a logical extension that if field systems and interbehavioral theory focus upon the importance of evolving beyond the linear model, then visual representations of this type of data should move toward a time pattern focus.

As can be readily discerned from Figure 4, streaming alternate behaviors and context elements within the field system horizontally across time (i.e., specific behaviors are configured on the ordinal axis and strung across the abscissa in terms of elapsed time) allows the investigator a visual sense of the rapidly recurring, overlapping multiple behavior field in action and interaction. Akin to a musical score, complex relationships in time and intricate chains of behaviors may be simultaneously viewed within the context in which they actually occurred. Frequencies and durations of multiple behaviors are easily read in terms of the number and length of the boxed portions of each behavior contained on the Y axis. A sense of

Keystroke

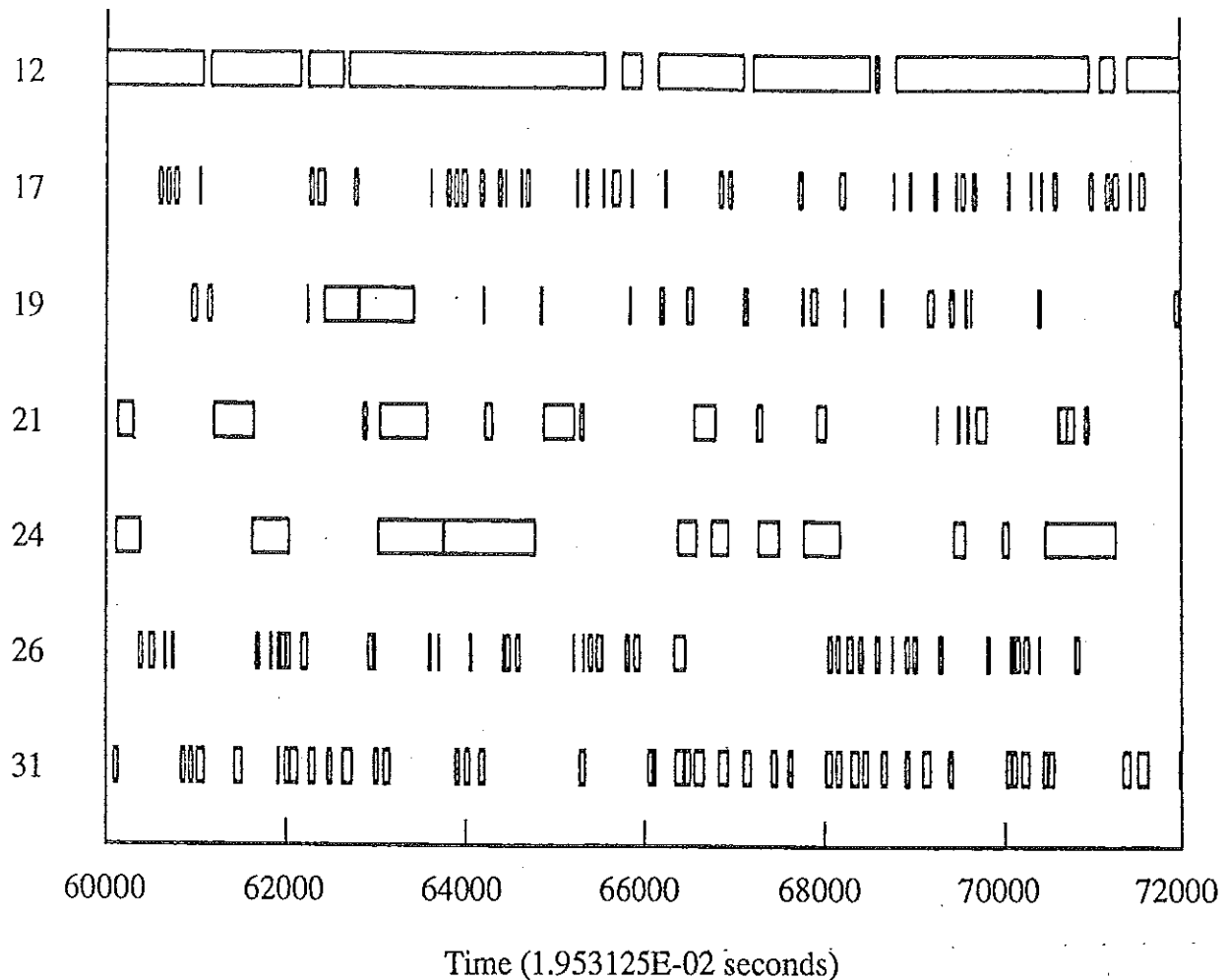


Figure 4. Four minute graphic representation across teacher behaviors #12: Specific observation, #17: Context specific encouragement, #19: Verbal instructional prompts, #21: Skill statements, #24: Individual modeling, #26: Positive instructional feedback, and #31: Non-verbal positive communication.

the rhythm and continuity of a particular system may be articulated via this visual format. The X axis may also be collapsed in terms of length of time to display a microscopic slice of the field system under investigation (as in the Figure 4 example) or expanded to include the complete experimental system from beginning to conclusion.

Closing Remarks

Only a few of the myriad of alternative visual representations regarding systemic or interbehavioral data have been piloted above. Though data results and conclusions thereof have been neglected, the means of visual field systems representation has hopefully been expanded. If impetus has been given to provide those with an interbehavioral or systemic behavioral focus, instruments to more accurately and clearly visually portray their data in light of its deviation from traditional linear modeling techniques, then this essay

has served its purpose. For only if our visual data representations evolve in concert with the theoretical and methodological constructs of a field systems focus may both the scientific and lay community truly understand and benefit from the temporal and contextual information that this particular research avenue has to offer.

A detailed account of the strategies and tactics involved in data collection, visual presentation, and interpretation is available from the author, Dept. of HPER, 232 Mabel Lee Hall, University of Nebraska-Lincoln, Lincoln, NE 68588-0229.

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Comments

Preventing AIDS Among College Students: A Challenge to Behaviorally Oriented Psychologists

Harry C. Mahan

A recently released report of a survey by Student Health Services on 19 university campuses indicates that .20% of students, reporting to such services for any reason, test positive for the AIDS-related virus. Extrapolated to the entire student population of the United States, this means that there are 25,000 students carrying the AIDS virus at the present time. (Editorial note: These figures, calculated more than a year ago, are lower than those currently estimated for this population.)

As pointed out by the director of the survey, who was interviewed on the McNeil-Lehrer News Hour on May 22, 1989, college students now have, and have had for some time, all the information that is possible to give them regarding AIDS prevention measures. "The thing which is necessary now," he said, "is to conduct a program of habit modification which will convert their knowledge into habits."

Such a program will certainly require peer leadership and pressure, for it cannot be successfully conducted by health services and faculty alone. Channels of communication must be established to "sell" the idea that, for those engaging in sexual activity, the use of condoms is a "must", the availability of other methods of contraception notwithstanding, no matter who the partner. These channels of communication

must inevitably include juniors and seniors, and graduate students, who are sexually more sophisticated and who can, therefore, be convincing. Rap sessions between such communicators and the more junior students should be between individuals who are well acquainted with each other, and held at a convenient time and place so that the sessions will have an air of spontaneity and informality about them.

The function of behavioral and interbehavioral psychologists in such AIDS preventive projects should be as consultants to health service directors and as facilitators in establishing a student network of communications. This is an opportunity for such psychologists to demonstrate that they can deal with "habit" problems on a broad scale, whereas their cognitive and clinical colleagues are concerned with problems of cognition and personality that are centered in the individual.

In the present instance, the problem is neither one of learning nor of personality, but rather one that involves the habitual interactions of a person in a context. Where AIDS preventive measures involving condoms is not already a part of established sexual habits, such habits should be modified and, since they are behavior, it is appropriate that behaviorally-oriented psychologists should be at the forefront.

Sharpe (continued)

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THE INTERBEHAVIORIST

A 20 Year Retrospective

The Interbehavioral Newsletter: In the Beginning and in the Future

Noel W. Smith

State University of New York at Plattsburgh

The newsletter had its inception at what may have been the only independent interbehavioral conference ever held. This took place at Miner Institute at Chazy, New York, June 16-21, 1969. We called the conference "The Emerging Role of Interbehavioral Psychology". The major participants were Sam Campbell, Paul Fuller, Louise Kent, Neil Kent, Wayne Lazar, Paul Mountjoy, and myself. Toward the end of the conference Neil declared that interbehaviorism should have a newsletter. Everyone agreed with this but no one came forward with any further plans. Because I thought we needed such a publication, I finally agreed to launch and edit it in lieu of any other volunteers. (I don't recall the actual details of this discussion, and the conference proceedings no longer exist: the transcription of the tape recording of the conference was just beginning when someone stole the recorder with the tape.)

I gathered all the addresses of interbehaviorists that I could obtain and on November 19, 1969 mailed out a prospectus that was in the form that the newsletter would take. The third page was a form for subscribing that had a place for names and addresses of anyone whom the subscriber thought might be interested. It also had a space for desired features and another for statements for the newsletter. From the initial mailing and from the leads the recipients provided, over seventy subscriptions came in at two dollars each (one dollar for students).

Volume 1, Number 1 of "The Interbehavioral Psychology Newsletter" was mailed out in January 1970. The first issue provided an account of the conference that spawned the newsletter. From the first I had at the top of the front page a representation of an investigator's interaction with the interbehavioral field of another person adapted from one by Kantor in his paper of 1942 on motivation. Below it

was a quotation from Kantor about the investigative field it represented. Below the quotation in a double column was "News & Notes" that I changed to "The Agora" in the second issue and continued by that name thereafter. The diagram had several flaws in it for all of volume 1, but that was corrected and the whole diagram redrawn for volume 2. The color changed with each new volume. I maintained the front page format during the eight years I edited the newsletter: Masthead and color diagram across the full page with a quotation under it and below that the double columned agora. The diagram at the top often brought questions about its meaning from those unfamiliar with interbehaviorism. The newsletter was a quarterly for two years but then lapsed into a quarterly which it has remained up to the present.

Getting material for it was always a struggle, and sometimes the amount of material I had available to publish was rather slim. But from time to time we published some substantial works including translations of two French accounts of interbehaviorism that had been available only in that language. Kantor wrote two articles under the pseudonym "A. Mitsorg", and others also wrote for it from time to time. I gathered whatever news I could find and wrote a few pieces myself. It was mostly a one-man operation. Often I had to do my own typing (manual typewriter, no computer), but sometimes received assistance. I usually did all the folding, envelope labeling, stuffing, and sealing myself but occasionally had a student assistant.

The name "Interbehavioral Psychology Newsletter" always seemed rather long and awkward to me, and for volume 7 I changed the name to "Interbehavioral Quarterly". After seeing that name in print it seemed rather pretentious to me, suggesting a full-fledged journal. When I turned the newsletter

over to Ron Heyduk in 1978 I suggested calling it "The Interbehaviorist" which name he used. I don't know why it took me eight years to think of that name.

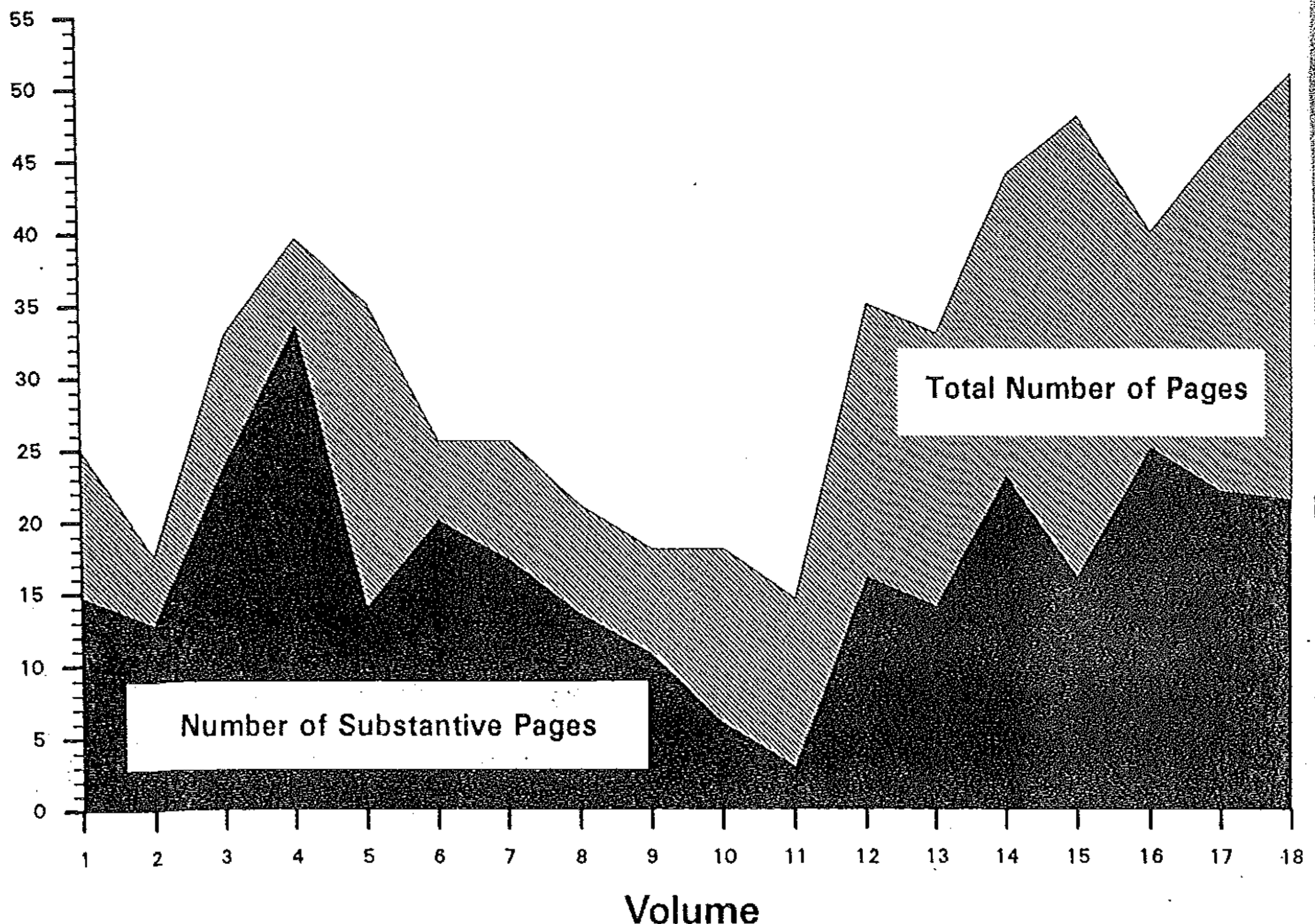
whether the publication would have enough support to continue over the years was very uncertain from its outset. But it is now in its twentieth year and its fourth editor and shows no signs of waning. In fact it continues to grow in quality under the able stewardship of these successive editors. Its future appears to be reasonably secure. I suspect that we could greatly expand its readership if we could make it better known to the natural allies of interbehaviorism.

The major goal of the publication stated in the prospectus was "to provide a ready means of communication among those interested in interbehavioral

psychology and to offer a means of consolidating efforts toward the promotion of it...". Similarly, the first issue stated the goal to be "to promote an interest in the development and dissemination of objective approaches to psychology and (to) facilitate efforts toward that end". These are still worthy goals. Perhaps an equally important function of the newsletter is to enable interbehaviorists to share viewpoints and information and to maintain contact with each other as a means of maintaining a community of identification toward common pursuits. These goals make the THE INTERBEHAVIORIST an essential medium. We owe it to ourselves to keep it alive and well. I look forward to a long future of reading THE INTERBEHAVIORIST.

THE INTERBEHAVIORIST

Total Number of Pages and Number of Substantive Pages*
Volumes 1 - 18



*Odd-sized pages converted to 8.5 x 11 equivalents. "Substantive pages" include articles, comments, and substantive book reviews.

Getting There

Linda J. Hayes
University of Nevada

The career of a newsletter often depends in large part on the determination and creativity of its succession of editors. Noel Smith's account of the early days of *THE INTERBEHAVIORIST* illustrates this point. There was not then, nor has there ever been an abundance of materials from which to select a few gems for publication. Each of the former editors has pleaded for submissions at one point or another. And on only one occasion in a 20-year history was it ever reported that "submissions were up" (V.12.) But as Noel notes, and as is evident from the quality and longevity of *The Newsletter*, there was always enough for another issue, another volume. And, as Noel has also noted, from time to time substantial works not elsewhere available have filled its pages. In retrospect, we may agree that *The Newsletter* has had a very respectable career.

What can we glean from its pages about the career of interbehaviorism -- about the intellectual movement *The Newsletter* reflects? To begin, we know that the group for whom the newsletter was originated was rather small. The first group of subscribers numbered 74 in all, 24 of whom were students. An early list of "Interbehaviorists and Allies", compiled by Noel Smith on the basis of "personal knowledge and/or consistent subscribing to the *Interbehavioral Newsletter*", numbers 86. Many of these are graduates of Indiana University -- first generation Kantorians -- and a second generation of their students.

Numbers of subscribers were not reported consistently over the years however some figures are available. By the end of Volume 1, subscriptions had risen to 145, and by the end of Volume 2 reaches an all-time high of 176, including some from a number of foreign countries. By the end of Volume 5, the list had settled at 100. Heyduk reported significantly more subscribers by the end of Volume 9, reversing a trend, although the actual number was not included. The next available figure, 65, is published in Volume 12. By the end of Volume 13, subscriptions had risen to 140. The trend from this point on is downward. There are 110 subscribers at the outset of Volume 15, 75 by Volume 16, and an all-time low of 50 paid subscribers for the current volume. Of these 50, 17 were among those included in Smith list of "Interbehaviorists and Allies". The point we are making with

these names and numbers is that *THE INTERBEHAVIORIST* serves a smaller and smaller number of scholars. What does this mean for the movement -- for Interbehaviorism?

We look again to *The Newsletter* for answers, Intellectual movements are spearheaded by academicians through whose students movements grow and multiply, a point acknowledged by repeated notices of opportunities for interbehavioral training and placement of graduates in *The Newsletter*. The first such notice appears in Smith's memo announcing the inauguration of the *Interbehavioral Newsletter*. He writes:

We might include notices of graduate programs for which we are seeking satisfactory students as well as descriptions of our faculty openings when appropriate. Those who are seeking to place graduating students into faculty positions could provide information about the student's field of specialization and invite inquiries (V. 10.)

And notices do appear over the years: In Volume 1 it is announced that Michigan State University has an interbehaviorally-oriented comparative psychology program and SUNY-Plattsburgh has an interbehaviorally-oriented school psychology program. In a related vein, Heduk (V. 6) urges subscribers to communicate with one another about the teaching of interbehavioral psychology or teaching psychology from an interbehavioral perspective. There are no immediate responses to his call, although from time to time subscribers submitted news of their courses or materials relevant to them, among whom were Pronko, Mountjoy, Delprato, and Gardner.

By Volume 14 concern is raised that few opportunities for graduate study in interbehavioral psychology are available. Eastern Michigan University and the University of Kansas are mentioned as possibilities, each with its own limitations, however. The same issue is raised again in Volume 15, with Jacksonville State University and Peabody College of Vanderbilt University added to the list. In each of these cases, however, while an interbehaviorist is on faculty, the program is not interbehaviorally oriented. In Volume 18, the development of a new Ph.D. program with an interbehavioral orientation at the University of Nevada is announced. While there may

yet be opportunities for graduate training in interbehaviorally psychology, the long and short of it is that few interbehaviorists can boast of placing their students in influential academic positions, and it seems unlikely that the movement will survive -- in its present form at least -- in the absence of so critical a means of its survival.

The question here of "form" raises another issue. Different views of the future of the movement have made themselves evident in the pages of *The Newsletter* over the years. For example, in stepping down as Editor, Smith reiterated the purpose of the *Interbehavioral Newsletter* as follows:

THE INTERBEHAVIORIST will continue to provide a forum for the exchange of information and ideas concerning the development of objective psychology. As before, this endeavor will be to scrutinize modern empirical and theoretical psychology, separating events from what is cultural imposition, and offering alternatives when necessary in an effort to encourage a naturalistic psychology -- that of a field of interbehaviors (V. 7.)

A better description of Kantor's life work is hard to come by; and it might be implied by this that to continue his work is or ought to be the aim of those communicating by way of the *Newsletter*: This may or may not have been Smith's view, however, no more specific aim of another sort is put forward.

By contrast, Heyduk (V. 10) argues not for the continuation of Kantor's work so much as the alignment of interbehaviorists with other like-minded thinkers, even to the point of losing identity as interbehaviorists in the process. He argues that interbehaviorists have a greater impact on the science of psychology if they adopted a positive as opposed to the critical tone so characteristic of Kantor's writing. In his own words:

I am not recommending that our aim ought to be to 'convert' those with similar ideas to interbehaviorism. I suggest that such a goal would be naive and counterproductive. Perhaps it is obvious to readers, but if the psychology we desire is to come about, it will almost certainly not come about under the banner of "interbehaviorism", or any other provincial banner for that manner. It is highly unlikely that the size and structure of modern psychology will allow our small group of interbehaviorists to lead a revolution analogous to the behavioral revolution spearheaded

by John B. Watson. It is more realistic to expect a gradual evolution (perhaps already in progress) toward a less self-actional, reductionistic, elementalistic psychology....As interbehaviorists, our goal ought to be to make sure we are an integral part of the evolution by being productive psychologists who can interact with and give support to others with different labels but similar convictions (V. 10.)

To these remarks Heyduk invited replies, and one was received from Michael MacRoberts. Referring to Heyduk's editorial of the previous issue, MacRoberts (V. 10) writes:

There now exists a second generation of interbehaviorists. This handful of scholars obviously considers Kantor's work revolutionary and important, but they seem to be neither prolific nor especially concerned with spearheading a revolution.... Instead of proselytizing, interbehaviorists appear willing to let psychology slowly and falteringly evolve toward its own position.... It is as if interbehaviorism had its Darwin but lacked its Huxley.

He went on to say:

Passivity is abnormal or contrary to normal science where, in all ages, men with novel ideas have fought to get these ideas before their colleagues. If interbehaviorists feel that they have a contribution to make then they have the obligation as scientists to challenge psychology and to change it either by deflecting its course or by speeding it up.

Some agreement was reached between Heyduk and MacRoberts after two or three more volleys, but the question remains: As interbehaviorists, what are we trying to accomplish, and by what means are we likely to accomplish it? And further, what role has and can this newsletter play toward that end?

Furthering the development of psychology as a natural science is what we are trying to accomplish. To do so, it is necessary to find and to work with our allies, while retaining our identity so as not to lose the richness of our heritage. Perhaps it is time for the newsletter to evolve into an archival forum published by distinct but allied collectivities--of which the interbehaviorists would be one--for substantive works pertaining to the science of psychology from a contextualistic, integrated-field perspective.

I invite responses.

News of JRK

As reported in "The Agora" 1969-1989

June, 1969

A telegram sent to Kantor from the summer conference on interbehavioral psychology group, read as follows:

From June 16 through June 22 near the village of Chazy, New York, at Miner Institute under the joint auspices of the Miner Foundation and the Faculty of Social Sciences of State University College of Arts and Science at Plattsburgh, N. Y., we are discussing the current status of interbehaviorism, its contributions to the science of behavior, and its future.

In addition to stimulating discussions centered on interbehavioral psychology, historical incidents have been recalled which point up the interpersonal contributions to the development of interbehavioral psychologists. These emphasize the warm personal affections we all feel toward you, Dr. Kantor. Please accept our kindest regards.

Signed, Sam Campbell, Paul Fuller, Louise Kent, Neil Kent, Wayne Lazer, Paul Mountjoy, and Noel Smith.

A letter sent to Kantor from Noel Smith:

The conference on interbehavioral psychology seems to have been quite successful. It was a great pleasure to be able to discuss topics on the basis of a common orientation and a common understanding of principles. It was the interbehavioral principles themselves that dominated much of the discussion, but the utilization of the principles in such fields as linguistics, physiological psychology, and operant conditioning received much attention.

As for fruitfulness of the meetings, it was agreed that we should meet again next year and make provisions for graduate students to attend, we should start a newsletter, and we should begin some joint efforts at book publishing. I will be editing the newsletter and hope to get it underway by fall.

July, 1969

Kantor's reply to Smith:

Your indicated future plans of the group in all its phases, inclusion of graduate students, starting a newsletter, and developing of a publication program, all sound appealing and I hope they will all work out

to your satisfaction and to that of the group. I will surely follow the development of the Conference with great interest, and if conditions allow I would very much like to participate in and help further the good work of the group. Please keep me informed of any new developments.

You probably know about the appreciative telegram I received from the members of the conference. It was a beautiful gesture and I was very much touched by it. Should you be in communication with any of them I would like to convey my deep thanks.

January, 1970

University of Akron announces that it will present an honorary Doctor of Letters degree to Kantor on May 9, 1970 at second annual meeting of Cheiron Society: The International Society for the History of the Behavioral and Social Sciences.

May, 1970

The granting of an Honorary Doctorate to Kantor by the University of Akron was postponed due to closing of the university subsequent to the nearby Kent State tragedy.

June, 1970

The Honorary Doctor of Letters degree is awarded by the University of Akron with the following statement:

*The author of numerous books, and the founder of the widely respected journal, **The Psychological Record**, JACOB ROBERT KANTOR, Professor Emeritus of Indiana University, has been active for five decades.*

Structuralist psychologists, in ascendance when he began his work, saw the advent of Watsonian Behaviorism and soon thereafter the emergence of Gestalt Psychology. Both without and within the academy questions were repeatedly asked, "What is psychology about?" "What is its major concern?" and -- in all candor -- "How can psychology become a science?"

Winds of doctrine blew heavily in all directions. Professor Kantor withstood these gales and main-

tained a victorious immunity to the mandates of tradition, ever seeking to match the label "scientific" to the fact of scientific psychology. His endeavors have promoted man's directorship of man.

Hence it is fitting to honor this Nestor among psychologists, JACOB ROBERT KANTOR, a personage of impressive academic accomplishments whose seminal ideas may well yield the richest harvests in the years ahead.

June, 1970

The Cheiron Society (International Society for the History of the Behavioral Sciences) presented Kantor with a certificate. Attending the honor guard were: Sam Campbell, Arthur Kahn, Parker Lichtenstein, Marion McPherson, Paul Mountjoy, Stanley Ratner, Noel Smith, Robert Topper, and Irv Wolf.

January, 1971

Kantor's *Logic of Modern Science* and *The Scientific Evolution of Psychology* have been reprinted due to demand.

April, 1971

Kantor's new book *The Aim and Progress of Psychology and Other Sciences* is finished and will be available by September.

December 1971

Kantor gave a colloquium at Queen's College in New York.

January, 1972

The Principia Press moved from Granville, Ohio to 5743 South Kimbark Avenue, Chicago, IL 60637.

February, 1972

Kantor gave a colloquium at the University of Chicago.

June, 1972

Kantor presented a paper entitled: *Segregation in science: A historico-cultural analysis* at the Cheiron Society meeting in Plattsburgh. He was introduced by Henry Pronko.

September, 1973

Kantor is to be Distinguished Visiting Scholar at Lynchburg College in Lynchburg, Virginia for 6-7

weeks. He will make two presentations and consult with students and staff. A weekly discussion group is also part of the program. Donna Cone made the arrangements and will study with him this year on her sabbatical.

April, 1974

Kantor was the Honorary Chairman of the first Mexican Congress on Behavior Analysis, held at Xalapa, Veracruz, Mexico. His address was entitled: *How is Interbehavioral Psychology Related to the Experimental Analysis of Behavior?*

September, 1974

Kantor's 1933 textbook *Survey of Scientific Psychology* has been revised and will be available in 1975 under with title *The Science of Psychology: An Interbehavioral Survey* with co-author Noel W. Smith.

April, 1975

Editorial Trillas, a publishing firm in Mexico City, and the Principia Press have contracted for a Spanish translation of Kantor's *Interbehavioral Psychology*.

April, 1976

Kantor was the honored guest at dinner party given by the Department of Psychology at Western Michigan University. Among those in attendance were the following graduates of Indiana University: Paul Mountjoy, Marjorie Mountjoy, Fred Gault, Dave Lyon, Dick Malott, and Louise Kent. A small number of graduate students were also invited among whom was Linda Parrott. After dinner, Dr. Kantor presided at a conversation hour. Over 75 students and faculty made up the standing room only audience. Because of his hearing loss, Dr. Kantor requested that questions be put in writing. He responded to them with his customary analytic acumen and lively wit. For those in attendance, it was the high point of the academic year.

May, 1976

Kantor gave two lectures to large audiences at the University of Mexico and several additional lectures to other centers of the University around the city.

January, 1977

Kantor's *Psychological Linguistics* is published.

May, 1977

Kantor gave an address and conversation hour at the Association for Behavior Analysis in Chicago [Note: see Comment by Mahan in this issue -- Ed.].

A transcript of the conversation was prepared, and a synopsis appears below:

Paul Mountjoy: We are here for a conversation hour with Dr. Kantor. I would just like to remind those of you who do not know him that, in the very early 20s, he began to develop a system of objective psychology which stood as a potent antagonist to the mechanistic systems of behaviorism at that time. Since then, both he and his competitors have evolved in many different ways. And, of course, time has produced changes. Dr. Kantor is now in his eighty-ninth year. He is still very active. His latest book on psycholinguistics is now in the hands of the printer and should be available very soon. However, unfortunately, his hearing has deteriorated over the years and he will be unable to take questions from the audience unless they are produced in written form. (Questions are collected in written form from the audience.)

Q: Do you think that a cause-effect, goal oriented philosophy like Behaviorism is more conducive to research than a philosophy like interbehaviorism, and is this justification for cause-effect dualism in science?

JRK: My engagement was to be present at a discussion hour, and you can imagine how little discussion can go on in a crystal room like this, and with a man so hard of hearing. I could not tell anything that my friend Professor Mountjoy was saying. Now, the first thing I have to say about this question is that it is not very clear to me. In the first place there is a comparison of behaviorism with interbehaviorism, but interbehaviorism is behaviorism too. Now the point is, and this is a very crucial point, behaviorism and interbehaviorism both are views or theories in psychology that stand for the elimination of all kinds of spookology, so you do not contrast one with the other. The holder of each view is prepared to do research in much the same way, that is to say, by elimination of supernaturals.

Now I will say a word or two, which really isn't part of the answer to this question, as to the difference

between behaviorism and interbehaviorism. Remember both views are antimentalism -- both stand for the elimination of mentals. There's a difference between the origin of the two views. One stems, as you probably know, from Pavlovian conditioning. But the other view, interbehaviorism, stems from an older type of science, which merely objected from the very beginning to limiting psychology to any particular type of research or theory.

(JRK jokes with the audience: Can you hear me? I can hardly hear myself, but then if you can hear me, I am alright.)

If we make a distinction between behaviorism and interbehaviorism, it would be something like this: Remember both are antimentalism; that is common. Now behaviorism tends to two kinds of view. One is that the organism initiates the behavior, the stimulus object is, in a sense a cue or some condition not too prominent in the situation. Now, there's a second aspect of this behaviorism, and it works like this: Great emphasis is put upon the stimulus, and the organism is conditioned, and it is modified according to some kind of stimulus. Now, this sort of thing fits quite well in our psychological traditions in the sense that you speak of an independent and a dependent variable. The control is this way (from stimulus to behavior) or that way (from behavior to stimulus) when you emit behavior.

Now this is the difference between these behaviorisms and interbehaviorism. According to interbehaviorism, psychological events are fields, so you have to consider that you do not have any independence or dependence. You have reciprocity, which is a different type of thing. The event consists of these two actions: They are reciprocal. And then you have other things that are happening. You always have a setting factor which is as much a part of the field. We must think always in terms of a unit of events. So you have a reciprocal interaction -- interbehavior -- that is performed under setting conditions. Now there is something else, and that is what we call a medium of contact. A good example of this is that an individual organism cannot interact with a stimulus object, say in visual interbehavior, unless you have a light as the medium of contact. In the case of hearing the airwaves serve as the medium. So you see the difference between behaviorism and interbehaviorism is the technical difference of how much and how skillfully you analyze the events which we call either a behavior or an interbehavior.

Q: Would you please clarify the scope of the concept of "setting factor" and how does this differ from "discriminative stimulus."

JRK: Well, I want to give an illustration of a setting factor in psychological interbehavior. This is a simple and maybe a trivial illustration. If you are interested in language behavior, you know that in this setting, in this room, and upon this occasion, my speech is different from other occasions and from other settings. In other words a setting factor is always present in a psychological action. Another simple example would be that if an organism is satiated, it would not interact with food in the same way as when it is hungry. And that is why in experimental situations you force the animal or the organism not to be satiated, that is to be hungry. So the question is: How does this differ from discriminative stimuli. Well, a stimulus is a different thing. The setting is the surroundings of an interaction. A stimulus -- a discriminative stimulus or any other kind of stimulus -- is the thing the organism always interacts with.

Q: Would you review for us what you feel to be the important reasons for continuing to study the history of psychology as a science?

JRK: This question has a fairly obvious answer. I'll put the matter in a special way. As a psychologist, it is obvious that whenever you want to do anything of any serious consequence, you want to have as much information about the situation, that is, about the behavior you are entering into. And so, the history of scientific psychology is very important. I have said a number of times that the history of science, if it is a valid history, is really an instrument for psychological investigation.

I am going to give you an example of what I mean in the way that indicates I'm trying to be informal with you and on a friendly, very friendly basis. I suppose that all of you are acquainted with the fact that Boring's history of psychology is called, very often, a classical book. And I suppose that you all know that the content of the book is based on purely mentalistic ideas. So that kind of history would not be very much worth to you in any kind of psychological work. On the other hand, if you have a history of psychological work from a scientific standpoint, it will be very helpful. I will elaborate this a little bit further.

In Boring's book, you would read about visual experiments, and I hope most of you know that the model that is used for vision is to have some kind of energy impinge on the eye. And then that would be followed by some kind of physiological process in the optic pathway, and not until the process reaches the occipital lobe of the brain would you have any color. Color, for example, is manufactured somehow in the brain, and is ejected or emitted out towards some object. The object doesn't exist either until this process happens. Well now, you don't have there a scientific description of a psychological activity. So that kind of history won't do any good. Here, of course, you could say that I am prejudiced. If you have an interbehavioral type of description in which the organism interacts with a colored object, and the color is in the object, based on various kinds of chemical substances, that is going to help you.

Q: What would you like to see happen in psychology? That is, what type of future directionality?

JRK: May I guess that you know the answer, really -- all of you. My answer, if I have to give it, would be of course, the more psychology became interbehavioral and scientific the better the future of the science would be. And there's another angle to this. Actually, you all know that if there is a genuine experiment in psychology, it is always an interbehavioral or behavioral one. You always have a stimulus and a response to deal with. And what you are trying to find out in an experiment -- what the science of psychology is about -- is to discover the kinds of interbehavior you will have depending upon the kind of organism you are working with, the kind of stimulus object you present, the setting factors, and so on. Now one thing that has recently, fairly recently, become a generally recognized feature of experimentation in psychology, is that, if you are working with infrahuman organisms or human organisms, you want to know about the development of the organism. You want to be acquainted with it. But always, psychologists and biologists have wanted to know the strains of the organism; they wanted to know its background. Well, that's one thing.

And, of course, you want to know about your stimulus object. I want to give an illustration about that. A colleague of mine once wanted to know what kind of disturbance a subject would show if you

presented the subject with a very striking kind of stimulus, and especially if the individual was presented with a stimulus without previous knowledge of what he was going to be interacting with. So one of the things that this researcher did was to have a test of stability and then he put a 5-foot snake on the lap of the subject. It did disturb some of the subjects but not all of them. And, as it happens, most of them came out of rural environments and a 5-foot black snake didn't make much difference to them. They didn't show much disturbance. That indicates that you have to know your stimulus object. Would it be a stimulus for this particular organism under these setting conditions?

Q: Interbehaviorism seems to be directed toward how we talk about our research. What are its implications for how we conduct research? That is, what are its methodological implications in contrast to those of behaviorism and mentalism?

JRK: Well, to begin with, nobody can do any research with a mentalistic outlook. Mentalism is "spookism" -- something supernatural. It has nothing to do with science. That's out of the question.

Now the next question is: How elaborate do you want your researchers to be? How much leeway do you want in the selection of problems? My answer to that would be that the interbehavioral view has larger scope. I mentioned, for example, that a book on verbal behavior (Skinner, 1957) which is supposed to be on language, isn't on language, because language isn't verbal behavior. Language is bigger than verbal behavior. But if you hold to the view that language is verbal behavior, then you are limited in your operations, you are limited in your research.

As I tried to indicate, I would offer as a final statement the advise that you should, if you are interested, study the two views carefully and come to your own conclusions. It's no good in any science to be told what is better and what is worse. That doesn't mean anything. I speak now as any scientist would. You must become as well acquainted with the kind of material you are interested in and then you will develop your theory about what has been going on -- what kind of events you have been dealing with -- and that's the end of the story. It's not going to be anything absolute. You know, or should know, that science is a job of work. If you are interested in human behavior,

or animal behavior, you must hold to your job with as few prejudices as you can. Study hard your subject, your behavior, or your interbehavior, and then you are on the right track of science. But you don't have any absolutes. No absolutes in any science.

Q: Could you summarize your views on instinctive behavior in humans?

JRK: Well, in my view, instinctive behavior isn't based -- that kind of construction isn't based -- on observation. It is based on some kind of theory -- mentalistic theory. It's no good at all in any science.

Now there's one thing we have to do that is helpful and that is to see that perhaps someone who uses the word "instinctive" doesn't mean it at all; he doesn't mean any spooky thing. He really means behavior. Maybe its a habitual behavior or its a reflex behavior, and so you clarify yourself about that. My main point here is that terms in psychology, many of them, have been built up under different conditions than is true for scientific psychology. They were based on all kinds of spurious philosophy and that is something we have to watch out for and we have to avoid as much as we can.

Q: Now that you have completed the book on language, are you working on anything new? Perhaps an autobiography?

JRK: What autobiography? I think you know I am a very old man. But I am still working and I am going to work on something else after this book is printed. But it is not an autobiography. And, it's too early to announce the content or the name of the book, and so on. But if you are interested, maybe if I can keep going you will be able to see the contents of it, if I can finish it.

(Professor Kantor was to publish 3 more books and 2 collections of articles.)

August 1978

Birthday message to Kantor from Irvin S. Wolf is reprinted from *The Psychological Record*:

To reach the age of 90 is itself notable. To be professionally productive from more than 60 of the 99 years since the bench mark founding of Wundt's

laboratory is especially remarkable. Two facets of Kantor's contributions characterize his work. First, with historical perspective he has been inveighed against the pervasive and continuing spiritistic influence upon the sciences, particularly psychology. He has been insistent that in all scientific behavior the scientist needs to differentiate between construct and event and, rejecting prevailing animistic thinking, to derive the former from the observation of the later. In his long list of papers and books he also originated and elaborated the interbehavioral viewpoint, a naturalistic approach offering a framework for studying and understanding the whole spectrum of psychological events. He avoided both dualism and the newer neurologizing while emphasizing the role of cultural conditions in the development of human behavior. He went beyond other critics among the behaviorists who seemed to concentrate on what he labeled "learnology" and who thus, with something like benign neglect, left certain areas minimally treated. Claiming to fill this void, many current writers seem openly to embrace mentalism or not to comprehend that their efforts mirror the persisting and perhaps burgeoning mysticism. In addition to his writing, Kantor also had an impact in the scientific world through The Principia Press which he still heads, founding of the journal, The Psychological Record, and teaching his many students. Dr. Kantor, we mark your day this August 8th, congratulate you and thank you, and wish you many happy returns.

January, 1983

Kantor's book *Cultural Psychology* is published, and in the same year, *Tragedy and the Event Continuum*.

April, 1983

Publication of a *Festschrift* for Kantor edited by Noel Smith, Paul Mountjoy, and Doug Rubin, entitled *Reassessment in Psychology: The Interbehavioral Alternative*. Other contributors were: Parker Lichtenstein, Edward Morris (with Steven Higgins and Warren Bickel), Donna Cone, N. H. Pronko, Dennis Delprato, Sid Bijou, Emilio Ribes, Linda Parrott, J. Herrick, M. MacRoberts (with B. MacRoberts), Larry Shafer, Roger Ray, and Edward Blewitt.

Inscribed on the dedication page of *Reassessment* are the following words:

To J. R. Kantor in his ninety-fifth year: Whose stalwart insistence on a psychology whose constructs are continuous with observation, Whose untiring devotion to the explication of fundamental assumptions to science in general and psychology in particular, Whose interbehavioral field psychology provides a revolutionary program for moving from recurring problems to scientific advancement, We dedicate this book with gratitude and affection.

Paul Mountjoy described the dedication of the volume in the following way:

On April 22, 1983, we drove to Chicago with Dennis Delprato to present a copy of *Reassessment* to Professor Kantor. Professor Kantor, filled with vitality as usual, was in remarkable health and showed the intellectual rigor for which he is well known. His greetings were never more hospitable, and he was eager to discuss the works of colleagues. This, of course, led to talk of philosophy and science. He made us promise to maintain a steady correspondence with him.

Just before lunch was served, prepared by Professor Kantor and his daughter, we handed him a signed, cloth copy of the book, explaining that it was symbolic of his years of contributions to the science of psychology. He straightened his bow tie and pince-nez, both somewhat loose from his animated discussion with us. Stammering a bit, he turned to Paul with a glowing grin of enthusiasm. He realized that this book and the contributions in it were for him. Professor Kantor repeated several times how grateful he was that interbehaviorism meant so much to so many, especially to his friends.

February, 1984

Jacob Robert Kantor died on February 2, 1984

The following editorial comment, by Ed Morris, appeared in **THE INTERBEHAVIORIST**:

Professor Kantor's death is felt acutely and deeply. But, what have we lost, what more might we lose, and what can we do about that? In one sense, we lost Professor Kantor, the man. He was real and material: He occupied space and time in our world. It seems somehow incomprehensible that this vital and physical person can simply have disappeared -- never,

never to return. Lamenting over this biological event, however, is too materialistic of us, as Professor Kantor would have chastised.

What we lost is more than Professor Kantor, the man. We have lost a long-lived and established pattern in our lives and an interbehavioral event of extraordinary potential. Our interbehavioral fields have been disrupted. We lost the man who educated us, who corresponded with us, and who wrote for us and for many others. We can, of course, try to attach ourselves to substitutes for these patterns, or to our libraries of Professor Kantor's books. But material substitutes cannot reestablish the patterns in our interbehavioral fields.

Professor Kantor's interbehavioral potential, though, need not be lost. That potential remains with all of us, in the lives he touched. We interact with our worlds more wisely for having known Professor Kantor. In that sense, his potential remains with us. But for how long? A greater and worse tragedy than Professor Kantor's death would be to lose the potential that was his and that he has bestowed upon us. Professor Kantor's potential, however, can be maintained through us in our continued dedication to a natural science of psychology. In that way, he remains with us.

We have chosen not to write an obituary in the newsletter because that would have focused on the biological event and our material loss. Moreover, in looking back through a formal review of his career, we might overlook Professor Kantor's continued potential as an interbehavioral event, and hence truly lose the man. In looking forward to establishing a natural science of psychology, however, we can find Professor Kantor in our lives forever.

Volume 12, Number 3 of **THE INTERBEHAVIORIST** is a memorial issue with commentaries by Richard Amado, Don Baer, Ramon Bayes, Sid Bijou, Edward Blewitt, Donald Bloomquist, Edward Bordin, Joe Brady, Donna Cone, David Cornwell, Dennis Delprato, Robert Epstein, William Gardener, Albert Haas, Rollo Handy, Jay Hansor, Sandy Hobbs, Billy Hopkins, Arthur Kahn, Craig Knapp, Jan LeFrancois, Parker Lichtenstein, Robert Lundin, Michael and Barbara MacRoberts, Harry Mahan, Marion White McPherson, Jay Moore, Paul Mountjoy, Robert O'Neill, Linda Parrott, N. H. Pronko, Emilio Ribes, Doug Ruben, Theodore Sarbin, Noel Smith,

William Stephenson, Louise Kent Udolf, Bill Verplanck, Robert Wahler, and Edward Walker.

A Kantor Memorial Fund was established at the suggestion and initial support of Harry Mahan for the purpose of maintaining **THE INTERBEHAVIORIST**.

July, 1984

Principia Press announces the publication of *Psychological Comments and Queries* by Observer.

August, 1984

Memorial paper sessions for Kantor were held at the Mexican Association for Behavior Analysis (papers were given by Emilio Ribes, Linda Parrott, and Ely Rayek), and at the XXIII International Congress of Psychology in Acapulco, Mexico, in which Sid Bijou, Linda Parrott, and Emilio Ribes participated.

October, 1984

The Indiana University-Bloomington Faculty Council commemorated Kantor in a memorial resolution. The resolution was signed by Douglas Ellson, James Capshew, Richard Berry, Eliot Hearst, and Harry Yamaguchi.

The Psychological Record published a commemorative issue (1984, 34, #4) Contributors included: Marion White McPherson (with John Poplestone), Irvin Wolf, Parker Lichtenstein, Noel Smith, James Upson (with Roger Ray), Sid Bijou, Theodore Sarbin, Paul Mountjoy (with Doug Rubin), Emilio Ribes, William Stephenson, and Doug Rubin.

The Behavior Analyst (1984, 7, #2) published a memorial section. Contributors included Linda Parrott, Jay Moore, Jackson Marr, and Ed Morris.

Announcements also appeared in *Operant Subjectivity: The Q Methodology Newsletter* and *Iztacala Bulletin*.

Paul Mountjoy has been invited to prepare an obituary for *The American Psychologist*.

December 1988

A special issue of *Behavior Analysis* in honor of the 100th anniversary of Kantor's birth, edited by Linda Hayes and Emilio Ribes, is published.

Comments

J. R. Kantor's 1976 Address to Behavior Analysts

Harry C. Mahan
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Few behavior analysts are probably aware of or remember J. R. Kantor's address to the Midwestern Association of Behavior Analysts in Chicago in May, 1976 (Kantor, 1976, 1984). His remarks emphasized the basic contribution that interbehavioral principles had to offer the behavioral movement in general and to behavior analysis in particular, and hence still bear careful study. His comments are, fortunately, in print and readily available, so only a brief condensation of them will be presented in the paragraphs below.

Kantor began by pointing out that the rise of behaviorism in psychology constituted a great scientific revolution. Its importance was based upon its insistence that psychology is a science, that it be based upon the actual confrontations of organisms with things and events, and that the science had to eschew unquestioned tradition. By confrontation, Kantor made clear that he meant direct observation, experimentation, analysis, and interpretation of events. The things and events confronted comprise stimulating factors resulting in the confrontations becoming interactions.

In the early development of behaviorism, John B. Watson was influenced by the work of Jacques Loeb and other biologists before he discovered the work of Pavlov and his co-workers and this, together with Darwin's evolution theory and the limitations of Watson's own work on animal behavior, led to behaviorism's postulates being almost entirely biological in nature. These limitations persisted among Watson's followers.

What characterizes the revolutionary nature of behaviorism as a perspective in psychology is its elimination of transcendental or nonspatiotemporal entities such as soul, self, mind, consciousness, raw feels, sensations, percepts, and so on that exist only in the form of words, assertions, and beliefs. Behaviorism, properly understood, reflects mentalism and animism as ancient but still widely accepted autistic inventions.

Behaviorism is not synonymous with conditioning, but conditioning has been a common representation of behaviorism. What Pavlov discovered was that a stimulating function could be transferred from one object (e.g., meat powder) to other objects (e.g.,

a bell or buzzer). This involves an interbehavioral field, the concept of which can be applied to all sorts of psychological events, including thinking, reasoning, affective feeling, and all other behavior without introducing the age-old constructs that go beyond the realm of actual events in nature.

At this point in his presentation, Kantor turned his attention to attacks on behaviorism, stating that these were based on serious misunderstandings rooted in an unwitting adherence to tradition. These objections to behaviorism fall under the four headings of materialism, reductionism, learnological limitations, and limited research projects. He deals with all of these summarily by saying that none of them constituted a devaluation of behaviorism and that even classical experimenters like Wundt, Fechner, and Kulpe were actually observing organisms in action.

In the second part of his paper, Kantor addressed himself directly to behavior analysis, pointing out three models of behaviorism: organocentric behaviorism, environmentalistic behaviorism, and the interbehavioral field approach to behavior. These were illustrated by diagrams, with the interbehavioral diagram being the interbehavioral field that is now usually reprinted on the inside cover of issues of this newsletter.

Kantor pointed out that among the virtues of the interbehavioral model was its comprehensive coverage of all psychological actions. The model not only includes all species of organisms, but all of the events in the psychological domain, no matter how complex--and it treats these as entirely naturalistic and completely free from the imposition of traditional mentalistic qualities or traits.

In the third section, Kantor briefly described some of the advantages of the interbehavioral approach, the first being that it emphasized both field and laboratory observations, without limiting its data to analogies borrowed from mathematics, physiology, engineering, or chemistry. Interbehavioral psychology insists that the brain is purely a biological organ which participates in every action, but which is not the locus of the action nor the seat of its control. The second and third advantages are that it harmonizes postulation and operation. The fourth advantage

is that interbehavioral psychology is an interdisciplinary perspective related to, but not reducible to, other disciplines.

Kantor's brief presentation laid the groundwork for closer cooperation between behavior analysis and interbehavioral psychology with the hope that behavior analysts might find interbehavioral principles of value in their work, in their thinking, and in their written contributions to the science of behavior.

References

- Kantor, J. R. (1976). Behaviorism, behavior analysis, and the career of psychology. *The Psychological Record*, 26, 305-312.
- Kantor, J. R. (1984). Behaviorism, behavior analysis, and the career of psychology. In J. R. Kantor, *Selected writing in philosophy, psychology and other sciences, 1929-1983* (pp. 276-282). Chicago: Principia Press.

Nevertheless, the earth is flat:

A review of a review

A. Mitsorg

[Editor's Note: It is little known that J. R. Kantor published in the newsletter under the pseudonym "A. Mitsorg." We have been unable as yet to determine why this pseudonym was used, nor what it means, if anything. This particular comment appeared in Volume 3 in 1972. The review of which this was a review was not referenced in the original publication of this article.]

Fundamentalists who persistently maintain that the earth is flat bear witness to the great power of infallible intuition to outweigh the claims of meticulous observation. That unflinching power is the essence of fundamentalism, a trait which is manifested on every intellectual level. Psychologists no more than other professionals escape the contagion of fundamentalism. The burden of their faith is the existence of mind. Overtly and covertly they paraphrase the New York editor; "Yes, Virginia, there is a mind", though in the succession of generations the same entity is dominated by different nouns.

Clear as day are the mechanisms that fortify faith. At bottom is ignorance concerning the nature of things believed, and next is the vigor of established cultural institutions when encapsulated in an amber of words. Names support the conviction in the existence of nothings.

All the above is effectively illustrated in a recent book review by Professor Neisser who comments upon three books on Mental Imagery. He waxes approvingly of the change of fashion in psychology which makes possible a renewed commerce with mental processes despite the demise of introspective psychology. He says, "In the last ten years...the behavioristic taboos have been broken and the mind seems worth studying after all" (p. 628).

As is only to be expected Professor Neisser follows closely in the footsteps of the early detractors of behaviorism and reiterates that "what contemporary...psychologists mean by "the mind", however, is very different from what their predecessors meant. The definition is no longer in terms of conscious, introspectively given phenomena. Instead it is in terms of a flow of information in the organism. Theoretical terms like 'storage', 'retrieval', 'recording', and 'selection'...refer to hypothetical stages of activity or processing" (p. 628).

Note the glaring contradictions. If behavioristic taboos have been broken, what are the referents of the terms 'storage', 'retrieval', 'recordings', and 'selection'? Can they be other than the conscious, introspectively given Noumena? So where is the shift in the meaning of mind? Can the juggling with synonyms transform the transcendental into something else? Can nonbehavioral imagery be anything else than supernatural processes disguised by other names? The camouflage fails to conceal. The reviewer states that one of the three books is organized entirely in the classical mode, another includes papers from both sides of the [mental-behavioral] watershed, while the third is written from the perspective of associationism. The reviewer even points out that in one of the three books, images 'have become the psychological correlate of linguistic deep structure' (p. 630).

What else can one conclude but that the stream of psychological thinking is heavily polluted by transcendental fallout? Though the labors of a Hercules may not suffice to clear it, one is tempted to point out (1) that opposition to behaviorism is really a sign of being influenced by supernaturalism, (2) that though behaviorism is simply antimentalism in every form, it need not be Pavlovian reflexology, and (3) that antibehaviorism, despite verbal camouflage, holds to "mind" as the age-old mystical conscious known only through introspective intuitions. It is only the prevalence of scientific work and achievements of the other disciplines that influences psychologists to presume that mind can be nonbehavioral and at the same time nonsupernatural.

A striking feature of the clinging to the flat-earth type of fundamentalism in psychology is the misinterpretation of the behavioral movement. Instead of regarding it as admirable attempt to comply with scientific demands to deal only with the actual behavior of organisms it is looked upon as a fad in psychology to avoid the recognition of mentalistic imagery, thinking, and other noumena. Those who unwittingly accept the dogmas of the Church Fathers concerning the existence of two worlds, two essences--minds and bodies, as well as other mentalistic dualisms, decry behaviorism despite the fact that their observations and experiments never concern anything but the cognitive and affective interactions of organisms with concrete objects through the mediation of direct or substitute stimulation. By disregarding this fact they find it easy to delude themselves that by a curtain of words they can conceal their adherence to the fundamentalistic belief in the existence of the supernatural.

Interaction: Transaction: Which?

A. Mitsorg

[Originally published in Volume 1, 1970]

In the excerpt from the new book of Professor Rollo Handy appearing in Volume 1, number 4 of *The Newsletter*, the author avers that while Dewey and Bentley¹ differentiate sharply between transactional and interactional interpretations of events there is a strong family resemblance between Kantor's interaction and their transaction. Thus Professor Handy joins other writers who have denied claims of transactionists to have invented a different and superior principle of explicating events.

Are these claims only rhetorical autism? That appears to be the case. Still where there is so much clamor a look-in may be appropriate. Accordingly, we inquire briefly why there is such bombastic and strident emphasis upon the term "transaction" instead of "interaction." If there is a problem here it certainly must be examined upon two levels -- a superficial semantic one and a deeper philosophic one. We suspect that this modern homo-homoi issue masks a great divergence between scientific interactions and metaphysical transactions.

Semantics first. As Professor Handy and other writers suggest, when concrete situations are described there is no compulsion to prefer one term to

another. Words are seldom used descriptively, mainly they are metaphorical. Those who are attuned to the commercial aspects of our culture -- merchants, brokers, fathers and sons of bankers -- alert to loans, borrowers, and lenders favor the term "transaction". But those interested in analyzing and describing events and not merely applying names cannot accept favored terms as identical with confronted things and events. Transaction or Interaction? *De gustibus ...*

Turning next to the deeper philosophical considerations we discover that extremely different postulates underlie the different usages. The transactionists draw their intellectual sustenance from the bottomless well of Hegelian objective idealism, in which actor and thing acted upon, the knower and the known, are interfused in one gigantic spiritual cosmochaos. For them nature is only knowledge of nature, and in all situations naming is identical with the named.

To cozen themselves and their readers the metaphysical transactionists loudly proclaim that the names or the events, hunter, hunted, and the hunting do not exist in isolation but in a system. What need to blast the man of straw who disagrees? Though Johnny may not know how to read, he does know that "borrower cannot borrow without a lender to lend, nor lender lend without a borrow to borrow." He knows too, that no transaction creates the interactors who by their actions engender the transaction. Moreover, he is quite aware that the borrower is not the lender but usually the victim of an exaction interaction. If ever the roles are reversed it is not because the actors were identical to begin with but rather because two separate and distinct people enter into an economic game in its various phases. No great acumen is required to see that there is no connection between any concrete transaction and any metaphysical transactionism, and no acumen is needed to conclude that the writings aimed at making such connections are gossamer spun to support the vast concrete universal.

Since it appears probable that of the Dewey-Bentley couple it is the latter who is mainly responsible for the great emphasis upon the power of words and their identity with knowledge and with things, it is instructive to exemplify his mentalistic dialectic that is the basis of transactionism.

"We return to a status of the world in the mind, yet mind in the world. We solve it by symbiotaxis. The world is in the mind socially taken as action (symbiotaxis). The symbiotaxium constructs the world-knowledge -- i.e., it "is" that world. The world (knowledge) includes mind (mind as psychological technique)."²

Featured Article

A Propos Watson's Hyperbola

J.R. Kantor

[Originally appeared in Volume 3, 1973]

In the continuing dialogue between nativistic and empiristic psychologists concerning the genetics of behavior, the classical statement of Watson turns up occasionally. Even empirically inclined psychologists appear to regard Watson's claim to produce desirable or undesirable types of personality, given his conditions of operation, as an unmitigated hyperbola. But what is the alternative? It is alleged that to reject the extreme developmental hypothesis is to entertain an ungrounded belief in occult determiners. Surely Watson's declaration and its validity deserves careful examination. Despite its familiarity it may be

(Continuation of "Interaction: Transaction")

In complete contrast to such transactionism the interactional viewpoint stands firmly on a scientific philosophy. That is to say, all premises are exclusively derived from descriptive and analytic confrontations with actual events. Specifically in psychology the term "interaction" is employed as a synonym for the interbehavior of organisms with other organisms, or things and conditions with which they come into contact. The interbehavioral scientist is completely justified in investigating the components of interacting fields since they also interact with many other different things in other behavioral fields. Moreover, he may study how he himself fits into the different behavior fields and how he influences the various entire fields. The only "metaphysics" of the interbehavioral scientist consists of the demand that he rid himself of all assumptions derived from autistic constructions, instead of from interbehavioral observations.

References

1. Bentley, Arthur F. (1949) *Knowing and the known*. Boston: Beacon Press.
2. Bentley, Arthur F. (1954) *Inquiry into inquiries*. Boston: Beacon Press.

worth quoting here for purposes of ready reference

I should like to go one step further now and say, "Give me a dozen healthy infants, well-formed and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select--doctor, lawyer, artist, merchant-chief, and yes, even beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors." I am going beyond my facts and I admit it, but so have the advocates of the contrary and they have been doing it for many thousands of years. Please note that when this experiment is made, I am to be allowed to specify the way the children are to be brought up and the type of world they have to live in.

It is not surprising in view of the circumstances under which Watson formulated his argument that it comprises some opacities and even some paradoxes. For example, fellow behaviorists have pointed out that Watson himself admitted that he was going beyond his facts, and that he affirmed that some behavior is inherited. It may be contended, however, that Watson's basic hypothesis is thoroughly sound and that an analysis of the issues involved can illuminate the problem of behavioral genetics as well as genetics in general and the process of biological reproduction.

In what way did Watson go beyond the facts? Surely, he as an individual had not performed the experiment, but is there any doubt that such an experiment would succeed? How else but by means of the variables of personal and social development are personalities with all their traits evolved? Is it not through the conditions of parental and familial circumstances, economic and ethnic conditions, and cultural institutions that doctors, lawyers, merchants, artists, beggars, thieves, murderers, and governors are produced? No events available to scientists are more revealing than the modes of cultivating the many occupational, professional, and political personalities of complex societies. As we have intimated above, the objection to the evolutionary theory concerning the

origin of various traits and capacities may be prompted by lingering notions that occult powers determine the characteristics of persons and their later performances.

As to the paradoxes in Watson's statement, it cannot be denied that he slipped in asserting his disregard of talents, penchants, tendencies, and abilities. For there is no evidence that such traits are not evolved in the interbehavior of growing organisms in their encounters with things and events. It is not special pleading in defense of Watson's hypothesis to suggest that what counts are the observed events and not the rhetoric used to argue for them. We turn now to some relevant issues.

The Problem of Behavioral Inheritance

Geneticists in unending recurrence insist that no anatomical character is transmitted to offspring. What passes from parents to offspring are patterns of genes which in interaction with environing factors result in certain structure-function traits. Gene patterning in interaction with environing conditions constitute the mechanisms whereby offspring conserve the species similarities of successive generations of organisms.

Such being the case with anatomical structures and physiological functions, how much less are behaviors transmitted? Surely we need here some critical analysis of what is happening. And this is easily done by observing an organism as it begins its life as a zygote and later as a neonate and as a developing personality.

The entire process clearly goes on upon several stages. In each we find definite interactions with copresent things and events. For the foetus these conditions of development are located in the narrow confines of the uterus where the total situation does not allow for more than anatomical and physiological development. On the whole it is proper to say that whatever psychological action is performed consists primarily of the operation of cellular systems.

The development of the neonate is facilitated by the enlarged range of confrontable things and conditions. At the point of birth the foundation is laid for a tremendous repertoire of action and action traits. The individual becomes the speaker of a particular ethnic and dialectic language, a sectarian believer, a unique type of craftsman or vocationist, a cultural male or female, a conformer or unorthodox performer, a conventional moralist or transgressor.

In every case, whether the development is straight or oblique, smooth or rough, difficult or relatively easy, rapid or slow, there is always development in

complex interbehavior with objects, persons, conditions, circumstances, aids and hinderances, all within the range of biological normality or abnormality of organisms and their surroundings.

Does any unbiased observation of the actual development of organisms allow for any alternative interpretation? The answer is, of course, no. Yet an alternate one is proposed based not on observation, but on cultural indoctrination. It is derived from the acceptance of historical transcendentalism, from the traditional belief in occult powers and forces that are the creations of verbalistic imagination. In substance, such non-developmental constructions are blood brothers to Orenda, Wakanda, and Mana of primitive peoples.

The Tabula Rasa Argument

Writers who unwittingly deny or are skeptical about the universal and inevitably complete development of behavior and personality drag into the discussion the red herring of the tabula rasa. They hark back to the seventeenth century debate between those who affirmed that the soul was loaded with faculties and those who held that the souls of individuals were only raw materials that had to be completely developed. However sympathetic we may be with those who believe they are espousing the principle of nihil ex nihilo, we cannot but criticize them for dragging a metaphysical problem into biological and psychological situations. In both biological and psychological situations we perform meet with tradition conditions in which few things and actions are evolved. Surely at one stage in their development organisms start at a psychological zero point. But this is not to say anything about a metaphysical nothing. We are concerned with a growing organism, which, if it interacts effectively with its surrounds, will develop psychological behavior and psychological traits.

By the same token the organism has passed through a biological zero point when it was only a prezygotic ovum and sperm. The evolutionary process involves a before and after, and the observer can see how it is that scientific potentialities are actualities on a preexistent level. The evolutionary process in biology and psychology comprises discontinuities as well as continuities.

Psychological and Biological Relations

To stress observations rather than conjectural dialogue with little or no connection with events is to be able to solve many of the problems concerning the intimate relations of psychological and biological events. We consider the proximal and divergent con-

nections under the conditions of emergence and participation.

Emergence

Psychological and biological events are continuous in the sense that it is organisms and their behavior that are the locus of both. For most of the prenatal life of even complex organisms behavior is purely biological, they are only physiological functions of cellular structures. A definite, though partial, differentiation begins in late gestation and in greater and greater amplitude in post-natal development. The neonate enters a new world, so to speak, and develops adjustments to the great variety and constantly changing things and events with which it becomes surrounded.

Psychological events may truly be said to emerge from biological matrices, but this fact in no way obliterates the differences between psychological and biological behavior. Evolutionally both may be variant performances of the same organisms. The variation in development of the two types of events may be regarded as stemming from either forward or backward reference points. Biological interactions are influenced by the continuity of individuals with the members of the species from which they spring through the agency of their cellular organization. Psychological interactions are cumulative adjustments developed under current conditions with potential competence for acting in future similar exigencies.

Undoubtedly, an appreciation of the similarities and dissimilarities in the two types of situations is important for the analysis of heredity problems.

Participation

Heredity problems, too, are illuminated by the inevitable participation of biological factors in all psychological activities. Since all psychological events are at the same time biological events, it is overlooked that the two types can differ markedly. The greatest similarity is found in simple reflex behavior. But even here we must distinguish between biological reflexes of tissue preparations and the conditioned reflexes of intact organisms.

The most striking difference between the participation of organisms in psychological interactions are to be observed while comparing a conditioned reflex with the complexities of a thinking or reasoning performance. In the later it is obviously an organism that interacts, but the interaction has been derived in a cultural development and is not just the functioning of tissues or organs. Given a particular anatomical part, say, a hand or foot, it can perform in enormously

different ways; the hand can hold something, clap, play an instrument, transcribe records, and so on. Similarly, the foot can support, kick something, walk, and in rare cases draw and paint. Participation in all sorts of interbehavior is possible. Comparable or variant anatomical traits--size, race, sex--can participate equally well in crude or precise actions. Coexistence and participation when properly interpreted are exact indications of how biology and psychology are interrelated.

Participatory Graduation

When we compare the participation of biological components in comparatively simple reflexes and in the formulation of a mathematical law, we must be struck with ranges of participation. Always a biological organism is the performer, but the degree of cellular functioning must be considered in the ratio of anatomico-physiological contribution to the processes and adjustmental results as compared with the cultural factors. Minus the cells and tissues and organism there is no psychological behavior, but the evolution of a biologically competent organism--upright walking and elaborately neuralized--must be followed by the invention of a cultural environment and the accumulation of its products or it will remain a metabolizing, maturizing, and reproducing animal.

Behavior and Behavior

Problems of innateness in biology and psychology are invariably beclouded by the use of common names for the description of different types of events. Certainly this is the case when the term "behavior" is used to mask the differences in biological and psychological events. Here is the source of considerable misinterpretation. It may be helpful, therefore, to clarify some prominent terms in their discussion of nativism and empiricism.

Biological Behavior

Essentially biological behavior consists of the operation or functioning of cells as living entities or factors in various structures or organizations as tissues, organs, and organisms, in ecological interaction with energizing conditions as in reflex action, or with objects as evolved animals or plants. Basically, biological behavior is localized in the phylogenetic, structural, reproductive, and mutational conditions of a line of cellular organizations.

Psychological Behavior

The identifying mark of psychological performances is that they constitute adjustmental interactions with immediately occurring events, or adjustments

based upon a number of encounters with other organisms or environing objects and conditions ordinarily grouped as a class called stimuli. The emphasis is upon individual developmental or historical contacts of organisms rather than upon their evolution as members of species or cellular organizations. The cellular structures, that is, the organic or species traits of the interacting organism, may be central or peripheral in the behavior.

Psychological Innateness

This term is predominately linguistic and has no correspondence with confrontable events. It is illicitly employed to refer to some non-existent, non-developed power or force to act in a certain way. Nativists assume that organisms are endowed with inherent characteristics such as intelligence, morality, genius, creativity, affectivity, artistry, and so on.

Behavioral Development

Of the many kinds of behavior development we have only to distinguish two types, the biological and the psychological. On the biological level development begins with conception, the fertilization of an ovum, then the differentiation and growth of a zygote, and the gradual succession of foetus, embryo, and a neonate organism. At each stage the developmental process involves contacts with things and conditions which may directly affect organisms in their future responses to similar situations.

The development of psychological behavior begins in the late prenatal stages of biological development. Psychological acts and traits arise from single or serial contacts with stimulus objects under specific circumstances. After stimulus and response fields are developed they may recur periodically when the original situation or some phases of them reappear. Psychological development by contrast with biological development differs in the rapidity of the process and the increasingly enlarged scope available for confrontations with organisms and other objects and conditions.

Learning

Properly employed, this term refers to a specialization and modification of behavioral development mediated by contrivances of various sorts. Among the many different kinds of contrivance that can be arranged are included rewarding, punishing, encouraging, cajoling, isolating, grouping, and general control of the learning situation. The various contrivances may be singly employed or in concert.

Summary and Conclusion

Upon close examination Watson's hyperbola turns out to be no such thing. On the contrary, what seems to Watson himself and others as overstepping the bounds of observable data actually fall short of this process. Watson does not go far enough when he asserts that his training procedures operate in disregard of talents, penchants, tendencies, and abilities. These terms all refer to traits that are developed in their entirety during the individual's psychological development and are subject to control during the development of the social traits and behavior of persons as doctors, lawyers, merchants, and so on.

It must be admitted that Watson reveals here his transition from a belief in innate traits and tendencies toward the new emphasis upon biological evolution and psychological development each from a zero point emergence from an earlier embryological stage, but this is no impeachment of his new anti-innateness attitude.

It is sometimes implied that Watson could not give up a belief in the inheritance of behavior because he shared the layman's belief that respiration, digestion, elimination, growth, and random activity are inherited. This allegation merely stimulated the study of the differences between the concrete reproduction processes in species continuity and the putative similarity of such processes to the transfer of property. When Watson says he is going beyond his facts, he is merely paying tribute to the great complexity of developmental circumstances and the paucity of economic, legal, and social control over the complex operations.

Abstracts of Articles, Volumes 1-18

Volume 1

Smith, N. W. *The emerging role of interbehavioral psychology.*

The interbehavioral postulate concerning the datum of psychology and the implications of this assumption are discussed.

Fuller, P. *Some thoughts on the Summer Community of Scholars.*

Comments on the suitability of the interbehavioral framework for every conceivable type of behavior field, as evidenced by the diversity of issues being addressed at the conference.

Lichtenstein, P. E. *The significance of the stimulus function*

Kantor's concept of stimulus function is discussed as an alternative to stimulus concepts prevalent in reductionistic behaviorism and phenomenology. Kantor's reply to the experimental psychologists' notion of the stimulus as independent variable is addressed. The predictive value of the stimulus function concept is explained in terms of interbehavioral history.

Farrington, Jacqueline: *A student's view of the Interbehavioral Conference*

Comments on the sense that interbehaviorism is applicable to all areas of human endeavor.

Heduk, Ronald G. *Cracks in the "billiard ball" organism*

Discusses the development of experimental methodologies suitable for the study of interbehavioral fields. R. G. Barker's conception of "behavior units" as inherent segments of the behavior stream are argued to require new methods for their study and the interbehavioral model for their interpretation. Likewise, J. W. Atkinson and J. D. Birch's theory of action, in which the determinants of the flow of activity are of interest, is mentioned as an example of this development. He further encourages interbehaviorists to take up Kantor's struggle against mentalistic interpretations of the nervous system.

Handy, Rollo. *The measurement of value: Transactionism*

The distinction proposed by Dewey and Bentley between self-action, interaction and transaction. The latter, taken to designate the "full ongoing process in a field in which the inquirer may be in reciprocal relation with many aspects and phases of that field", is taken to be the preferred unit of analysis in psychology.

Mitsorg, A. *Interaction: Transaction: Which?*

Argues that the transactionism supported by Handy draws its "intellectual sustenance from the bottomless well of Hegelian idealism." In contrast, the interactionism of Kantor is based on a scientific philosophy, wherein all premises are derived from descriptive and analytical confrontations with actual events.

Volume 2

Carter, Jerry. *A case of reactional dissociation (hysterical paralysis.)*

Excerpts from a 1937 publication (*American Journal of Orthopsychiatry*, 7, 219-224) including a case history by Jacqueline Farrington.

Heyduk, R. G. *Alleged relations between the nervous system and psychology.*

Discusses the prevalence of dualism in physiological psychology with quotations from 1769 to the present.

McPherson, Marion White. *Deficiency in patients and professionals.*

Implications of ignoring the reactional biography in patients diagnosed as mentally defective. Discusses the theory involved in assessing pathology by means of I.Q. tests and quotes studies which dispute many common perceptions of the mentally deficient held by practitioners.

Farrington, Jacqueline. *"Im lo achshav, matai" ... If not now, then when? In defense of the Interbehavioral position.*

While acknowledging the difficulties in applying an interbehavioral perspective, particularly in clinical situations, asserts that not doing so is a regression to oversimplification.

Volume 3

Sullivan, John. *"Skinner's Razor"*

Skinner's book *Beyond freedom and dignity* is addressed as a series of arguments, presented in such a way as to heighten their dialectical quality. The following dialectics are discussed: technology, values, autonomous man, dignity, freedom, reinforcement, and empiricism. Sullivan agrees with Skinner's view that psychology is the propaedeutic social science; and disagrees that the reduction of humanistic terms to technical constructs of behavioristic psychology will be useful in coming to an understanding of humanistic concepts.

Pronko, N. H. *Notes for a freshman: On the free will vs determinism controversy.*

Pronko asserts that the "free will" vs "determin-

ism" controversy is one product of common-sense truisms which have confounded progress. An interbehavioral orientation views psychological occurrences as events in which all participating variables are neutrally perceived, predominance of one over another never assumed within a field perspective.

Herrick, James W. *The collective mind construct and its influence upon culture-personality research: An application of the interbehavioral model*

Herrick claims that classes of conditioning stimuli during the basic stage differ from those of the societal stage only in their availability to the responding person. As societies become more complex so do the opportunities for cultural behavior, with the result that there is less uniformity among members of complex cultures than is found among members of less complex cultures. A knowledge of the conditions upon which various institutions arose and the subsequent evolution of those institutions is crucial to the understanding of why things and events are the way they are today.

Mitsorg, A. *Nevertheless, the earth is flat: A review of a review*

The author comments on Professor Neisser's reviews of three books on mental imagery in which Neisser claims that the mind is worth studying again, though it is a new mind modern thinkers are dealing with. The author disagrees, maintaining that it is the same old mind, with all of its supernatural character, called by a different name.

Jacqueline Farrington. *Rite words -- but are they right?*

Presentation of a pilot study which attempts to explore the concept that constructs carry an assumed and implicit meaning which is seldom defined or agreed upon by group participants. Study involved 25 subjects involved in a drug awareness workshop. Results suggest that repertoires of verbal responses alter under varying conditions, appear to be descriptive of reactions and have different effects upon others.

Smith, N. H. *An interbehaviorist looks at Santa Claus.*

Examines why the perpetuation of a Santa Claus myth is thought to benefit children and how an approach devoid of lies may be facilitated.

Martin, Robert F. *Toward conceptualization of the learning process in the college classroom: Operant psychology and Rotter's Social Learning Theory as a basis for research*

In this paper the basic processes of learning are conceptualized according to two approaches, operant psychology and Rotter's Social Learning Theory. These orientations are viewed as complementary in characterizing college learning. The theory and relevant research of the operant orientation are reviewed and criticized. Specifically, it is suggested that operant theory is limited in two ways: a) It is difficult to determine the relevant contingencies for individual learners, and b) it is difficult to determine what is a reinforcer for a given student. It is suggested that Rotter's approach may solve these problems. A program of research on this issue is suggested.

Fowler, C. M. *A comparison of the field-system approaches of D. L. Clarke and J. R. Kantor*

Many similarities are found between the field-system approach of D. L. Clarke and J. R. Kantor and attempts are made to show how a field-systems approach may be appropriate across disciplines.

Kantor, J. R. *A Propos Watson's Hyperbola*

Explores some common criticisms of Watson's classical statement "Give me a dozen healthy infants....". Concludes that in actuality Watson falls short of his assertion that he overstepped the bounds of observable data.

Mountjoy, P. T. *A rose by any other name*

The author responds to Martin's article concerning the limitations of operant theory applied to college education by describing the innovative teaching methods at Western Michigan University, where the supposed limitations are overcome.

Martin, Robert F. *But there are roses and there are roses.*

Martin responds to Mountjoy's reply to his initial article. He suggests that if the reinforcers for all students were known, all students would have achieved As in the course. The fact that they did not argues for a non-historic approach like Rot-

ter's. He maintains further that the college classroom is too complex a circumstance for the application of reinforcement theory in a simple and direct fashion.

Volume 5

LaShier, Cynthia. *B. F. Skinner on motivation: A critique.*

LaShier reviews Skinner's discussion of the concepts of drive and emotion in his 1938 and 1953 publications. She argues that Skinner's system in 1938 was based on observation and measurements, and his discussions of drive were reports of observations. Drive was operationally defined as a function of deprivation. By 1953, Skinner appears to be attempting to define drive and other motivational concepts from a conceptual standpoint. This attempt results in descriptions of these concepts in non-behavioristic terms.

Johnson, Steven. *The springs of action: A fountain of youth?*

The hedonistic theories of P. T. Young and David McClelland are criticized from the standpoint of a science of behavior. The author argues that while both individuals have contributed to the body of fact in psychology their reliance on hedonism as a source of action is disserviceable to the development of a science of psychology.

Miller, David. *Can social scientists be humane?*

The author argues that social scientists must come to terms with the concept of mind and its significance in human affairs. Specifically, he argues that mind is an emergent process, emerging out of a social process. Mind as such is in nature, but nature is not in mind. This view, he argues allows one to deal more adequately with such concepts as freedom of choice and personal responsibility.

Volume 6

Goodson, L. *Emotions vs. emotional behavior.*

Watson's definition of emotion, approach to its study, and his conclusions are described. Kantor's definition of emotional behavior as a momentary condition of "no response" is explored, including his description of four emotional behavior segments, distinction between emotion vs. feeling behavior, passion and sentiments. Good-

son concludes with an examination of positive and negative attributes of both Watson's and Kantor's approaches.

Martin, R. *Bouquets of roses: A final reply to Mountjoy.*

Martin discusses implications of the interbehavior between students and environmental variables, including instructors upon effective classroom teaching.

Sanders, S. & Cone, D. A. *Critique of Kohlberg's theory of moral development from the viewpoint of interbehavioral psychology.*

The central concepts of Interbehavioral psychology are first described as clarification of the viewpoint upon which Kohlberg's theory is critiqued. Kohlberg's orientation to the study of morality, developmental theory of moral judgement, methodology, moral judgement categorizations, and Kohlberg's views on the development of guilt are examined. Sanders concludes that Kohlberg's work is predominantly influenced by dualistic assumptions.

Cone, D. *Operationism vs. operational definitions.*

Cone describes the proper use of operationism in experimental psychology. By defining terms at proper times in the sequence of events during experimentation Cone asserts that common pitfalls can be avoided. Most importantly one must avoid using operational definitions to authenticate a measure of mentalism.

Heyduk, R. *Interbehavioral Psychology: A proposal for a clear direction.*

Heyduk maintains that clearer goals adopted by Interbehavioral psychologists is required in order to influence the "psychological Zeitgeist" which has, in recent years given way to mentalism, in other words, brain reductionism. As a result of his experience Heyduk proposes a more systematic commitment to the teaching of interbehaviorism in the classroom.

Farrington, J. *Some advantages of interbehaviorism.*

Interbehavioral psychology's comprehensiveness applied to the study of nonhuman as well as human organisms is explored. Interbehavioral naturalistic assumptions and the benefits of practical application are examined.

Thompson, V. *Revisitations of J.R. Kantor's Principles of Psychology.*

Thompson asserts that although written in 1924 Kantor's *Principles of Psychology* can be a source of "continuing inspiration". Two chapters from *Principles*, which deal with issues commonly seen as "mental" or internal are reviewed, "Implicit Action as Responses to Stimuli Objects" and "Wishing, Desiring, and Kindred Forms of Responses".

Volume 7

Tilquin, A. *Behaviorism and biology: The organic psychology of Kantor* (Excerpt from: The origin of behaviorism and development of psychology of reaction in America. Translated from French by Nanette Weissinger and Lucien Leduc in consultation with Noel Smith.)

"The Organic Point of View" and "Characteristics of Psychological Activities" are the subheadings of Tilquin's critical and account of Interbehavioral Psychology. He concludes "Kantor has succeeded in distinguishing his psychology from physiological behaviorism, but he fails to separate it from biology."

Cone, D. *Notes from a comparative animal behaviorist in exile or what observations of retarded human adult behaviors can teach the student of general animal behavior.*

Cone examines the significance of human biological interbehaviors, particularly when working with multi-handicapped adults who are classified as severely or profoundly retarded. The important role of precursory psychological interbehaviors, setting factors and the difficulty in conditioning rudimentary behaviors is explored.

Cone, D. *Potentiality as basic to prediction and control in science.*

Cone asserts the use of the term "potentiality" has acquired excess meaning due to our dualistic heritage. However, by maintaining a naturalistic view the term can be basic to both "pure" and applied science. In addition, can allow for prediction and control without use of spiritualistic terminology.

Volume 8

Zeiser, S. and Heyduk, R. *Interbehaviorism, behaviorism and humanism: A comparative analysis of three psychological systems.*

Compares behaviorism with interbehaviorism in regards to the approach of each to ridding psychology of the "mind" concept. Similarities and differences between interbehaviorism and humanism are also explored.

Foulquie, P. & Deledalle, Gerald. *Le Behaviorisme Organismique de Kantor.* (Translation from the French by Lucien Leduc.)

Examination of Kantor's organismic behaviorism with references to Kantor's *Principles of Psychology*, primarily. He concludes with a description of organismic psychology as an "indirect constitution of a subjective world".

Tilquin, A. *Behaviorism and Operationalism.* (from The origin of behaviorism and development of psychology of reaction in America)

Tilquin discusses the concepts of epistemological dualism, immediate experience, intuitive experience, and logical positivism in relation to psychology as a science.

Heyduk, R. *Aristotle's conception of the soul: A grammatical solution to a metaphysical problem.*

A quote from Aristotle's *de Anima* is critiqued with attention given to Aristotle's conceptualization and misinterpretation of the "soul." Aristotelean and interbehavioral conceptions of mind and body are compared and reconciled.

Farrington, J. *The interbehavioral approach and motivation.*

Farrington's premise is that motivation, as defined by J. R. Kantor, has been largely ignored by social scientists even though an understanding of interbehavioral analysis of events would lead to a greater understanding of not only activities of the human animal but the "whys" of their choices. An overview of the interbehavioral system is presented followed by a critique of the psychology of motivation including a discussion of possible reasons why motivation psychologists have failed to adopt an interbehavioral approach.

Delprato, D. *An interbehaviorally oriented undergraduate course in the psychology of learning.*

Delprato shares an outline of his undergraduate course in learning, having evolved an interbehaviorally oriented approach.

Morris, E. *Some relationships between the psychologies of Kantor and Skinner.*

Morris stated that some relationships between the two approaches are discussed in an attempt to promote a useful interchange. First, the interbehavioral field and the three-term contingency are described according to their points of correspondence with special attention given to the concepts of stimulus and response function. Second, points of disagreement on the issue of complexity in human interactions and on the concept of causality are outlined, and resolutions suggested. It is concluded that the two psychologies can be related constructively.

Volume 9

Barfield, D. *James and Kantor on hypnosis: Two early naturalistic perspectives.*

Compares William James (1890) and J. R. Kantor's (1926) attempts to "de-spook" the phenomenon of hypnosis.

Larson, C. *An Interview with J. R. Kantor about John B. Watson.*

Kantor elaborates upon the growth of behaviorism, Watson's contributions and contrasts Watson's behaviorism with interbehaviorism.

Cohen, D. *Analysis vs. wholism revisited.*

Examined whether consciousness and behavior are more fruitfully viewed analytically or wholistically. Concludes that a knowledge of complex psychological events is better understood using both methods.

MacRoberts M. H. and MacRoberts B. R. *Interbehaviorism and animal communication theory.*

Attempts to show how an interbehavioral approach is applicable to the study of animal behavior. Semiotics and zoosemiotics are defined and contrasted. Concludes ethologists have found the study of animal behavior from an interbehavioral perspective valuable.

Volume 10

Mountjoy, P. T. *A review of Daniel N. Robinson's Intellectual history of psychology.*

Mountjoy provides a critical review of this book claiming that Robinson misunderstands science, and lacks scholarship.

Michael H. MacRoberts. *A challenge to the interbehaviorists.*

MacRoberts argues that if interbehaviorists feel that they have a contribution to make then they have an obligation as scientists to challenge psychology and to change it either by deflecting its course or by speeding it up. He offers some suggestions as to how this might be done.

Heyduk, Ronald G. *A reply to MacRobert's challenge to the interbehaviorists.*

Heyduk agrees with MacRoberts on the issue of obligation but argues that an aggressive style is less desirable than emphasizing points of agreement among potential allies. He suggests that we become part of an evolution in psychology, even if we lose our identity as interbehaviorists in the process.

Delprato, D. *Some notes on Roy Schafer's revolutionary alternative to Freudian metapsychology.*

Delprato praises Schafer's injection of "action language" into psychoanalysis, and his rejection of the metapsychology of psychoanalysis. He argues that Schafer's viewpoint is compatible with interbehaviorism, radical behaviorism, radical phenomenology, behavioral epigenesis, and dialectical psychology.

Smith, N. *Corrections on use of "psyche".*

Smith corrects some historical inaccuracies regarding the term psyche, as used in a recent article in *American Psychologist* (Denmark, 1980). He argues that we should be questioning the assumption that mind and body are separate, rather than trying to integrate them--as suggested by Denmark.

Volume 11

Commentator. *Priority and Interbehaviorism.*

Commentator suggests that Kantor has not been recognized outside of the field of psychology because he has not been embraced within the field of psychology. He notes that psychology is headed toward a field perspective, which Kantor already articulated. In short, Kantor has been neglected, it is argued, because he is ahead of his time.

Gordon, Alice J. *Toward an interbehavioral science of "memory"*.

Gordon proposes that memory can be analyzed from an interrelational perspective. Memory is not regarded as a mentalistic construct, rather it can be viewed as a set of interactions between an individual and the environment of the individual. Remembering activities involve stimuli no longer present, and also involves the interaction of persons with current things and events.

Volume 12

Pronko, N. H. *A vote toward the obsolescence of the term "covert"*.

Pronko argues that a naturalistic psychology must not rely on the familiar, mainstream dual classification imposed upon data by the terms overt and covert. The interbehavioral approach to events that are not apparent is to regard these "events as occurring in a locus "beyond" the organism, within a field in which the organism must share the spotlight with the stimulus object."

Stevenson, D. & Hemingway, M. *A brief commentary on autistic abstraction vs. confrontation with things and events: Reinforcing power and generalization.*

The authors argue that verbal abstraction of observed events used as explanations is no substitute for careful scientific inquiry. The notions of reinforcing power and generalization are examined, and the argument is made that these terms are often used as explanations. This is an error, in that the interaction of things and events is not specified.

Smith, N. W. *Do we need the concept of mind in psychology?*

The evolution of terms related to psychophysical dualism is described. Psychophysical dualism began in the School of Alexandria about 200 B. C., and was not questioned until the 17th century

when Descartes and Spinoza began grappling with the issue. Aristotle, however, did not need psychophysical dualism for his psychology, and nor do contemporary psychologists. It is suggested that only confrontable events be studied, not metaphysical constructs.

Moore, J. *On reciprocal behavioristic concerns.*

The question of what factors are inhibiting the interaction between interbehaviorists and radical behaviorists in pursuit of the common goal of a truly effective science of behavior is considered. Radical behaviorists often criticize interbehaviorists for not having a research program. This is problematic because interbehaviorists often do interpretive work, which radical behaviorists embrace in other contexts (e. g. verbal behavior). Interbehaviorists often reject Skinner, in part due to the rather mechanistic view of causation held by many radical behaviorists. Many radical behaviorists fail to recognize the integrated-field perspective of Skinner, so it is not surprising that they would find it foreign when presented by Kantor.

Volume 13

Pronko, N. H. *The matter of setting factors: As I see it.*

Pronko argues that the term setting factor must retain the notion of immediacy. Some interbehavioral psychologists regard setting factors as encompassing the stimulus-response interactions that influence subsequent stimulus response interactions. This extension muddies the clarity of the term.

Cone, D. *The usefulness of certain mentalistic concepts.*

Arguments are made regarding why mentalistic terms are useful. Primarily, the events that occasion the use of the terms are of interest. It is not necessary to wrestle with the term on its own terms.

Smith, N. W. *A double or a single world?*

The traditionally held doctrine of the double world is described. In this view, two worlds are in existence—one an outside world which is independent of the organism, and the other that is created inside of the organism. This view is

contrasted with the views held by Aristotle, some recent phenomenologists, Skinner, and the inter-behaviorists. These views emphasize that a psychological event is constituted by an entire field of events. An individual can never know the "reality" of anything,

Hilt, J. *The information processing metaphor in cognitive psychology.*

Hilt argues that cognitive science relies heavily on metaphorical models, the premises of which have not been carefully analyzed. The emphasis on the computer metaphor in cognitive science is critiqued. A Kantorian position is taken regarding the use of the computer analogy which essentially is that psychologists need to do more observing of events and less analysis of mythical metaphors.

Volume 14

Gardner, W. M. *Advanced general psychology: A course on interbehavioral principles*

Gardner shares his method in teaching Advanced General Psychology. He selected Kantor and Smith's (1975) text. He describes the text assignments, format of lecture, the evaluation, and the problems of this course.

Starbuck, S. M. M., Carruthers, K. J., Mason, M., Fitzgerald, M. D., and Thompson, S. *Toward more effective instruction in interbehavioral psychology.*

The frequently encountered problems students face in a course in Interbehavioral Psychology are described. In addition, some methods and analogies students have found helpful in facilitating their understanding of the material are provided.

Parrott, L. J. *Ethical situations in interbehavioral perspective.*

Parrott attempts to isolate those aspects of ethical situations that are distinctly psychological in nature, and subsequently identify their unique character as psychological events. Ethical situations are characterized by the potential operation of conflicting stimulus functions. The conflict among those functions is a conflict of value. An action is regarded as right from the standpoint of one collectivity and wrong from the standpoint of another collectivity. Choice is then conceptualized as an instance of interbehavior, in which one of the value functions becomes actualized with respect to a particular pattern of action.

Volume 15

Moore, J. *He's always been there first.*

Moore provides a set of statements of Kantor and Skinner in the area of scientific epistemology, particularly with regard to critical assessments of the influence of operationism and logical positivism. The writings of Kantor and Skinner are examined to show that Kantor anticipated much of Skinner's position on this topic.

Volume 16

Morris, E. K. *Not so worlds apart: Contextualism, radical behaviorism, and developmental psychology.*

The main thesis is that radical behaviorism, especially when seen from a field-theoretic view such as J. R. Kantor's interbehavioral psychology, adheres to a contextualistic world view. He illustrates this by discussing some consequences of mechanism and contextualism: elementarism versus holism, causal analysis versus functional analysis, development as behavioral versus structural change, the passive versus the active organism, and the role of context. He concludes that with a convergence of behavior analysis and developmental psychology towards contextualism, they become commensurable.

Hayes, L. J. *Philosophical implications of the interbehavioral field.*

Hayes examines the concept of the integrated field conceptualized as a simultaneous interaction of all participating factors. She considers three implications of this conceptualization: the uniqueness of psychological events, their ever-present character, and their indetermination.

Morris, E. K. *The interbehavioral field: An introduction.*

Morris describes interbehavioral psychology's basic unit of analysis, the interbehavioral field. The interbehavioral field is composed of five conceptually separable, but in actuality, inseparable factors: (a) the organism and (b) the stimulus environment and the context for the interactions between organism and environment, those being (c) their medium of sensory contact, (d) their setting factors, and (e) their interbehavioral history. In part because of its inclusion of contextual factors within its unit of analysis, interbehavioral psychology is decidedly contextualistic.

Volume 17

Mountjoy, P. T., & Hansor, J. D. *Jacob Robert Kantor (1888-1984)*.

This is a reprint of the obituary of Professor Kantor published in the *American Psychologist* in 1986 (Vol. 41, pp. 1296-1297).

Bijou, S. W. *Analysis of the response function in a unit of interbehavior.*

This is an analysis of the response functions in complex segments which consist of permutations and combinations of precurrent and completing reactions. Bijou describes the nature and different categories of precurrent reactions (i.e. attending, perceiving, meaning, imagining, cognitive, feeling, and manipulative reactions) and of completing reactions (i.e. effective, cognitive, linguistic, and affective reactions).

Sharpe, T. L. Jr., Hawkins, A. H., & Landin, D. *An interbehavioral view of sport pedagogy expertise.*

The interbehavioral approach is shown first, to provide a more effective means for categorizing instructional systems in that it avoids imposing a value-laden conceptual scheme on the data inherent in deductive methodologies and second, to provide an excellent model for describing the components of expert instruction.

Volume 18

Ribes-Inesta, Emilio. *Pseudotechnical language and conceptual confusion in psychology: The cases of learning and memory.*

The author argues that learning and memory refer to psychological events in ordinary not technical language terms, and that failure to appreciate this distinction has led to conceptual confusion in psychology. This argument is elaborated through a discussion of the origin and use of these terms. A technical analysis of the events represented by these terms is provided.

Sharpe, Tom. *Field Systems Data: An Exploration of Alternative Visual Representations.*

The author illustrates four means of depicting interbehavioral time series data which convey behaviors within the greater temporal and contextual streams in which they reside. These means are offered as alternatives to a linear models approach.

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