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THE INTERBEHAVIORIST

A Newsletter of Interbehavioral Psychology

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Interbehavioral Psychology
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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 duplicate hard copy and a single computer disk copy (any major word processor; any Mac or IBM disk format) 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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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.

The Agora

Editorial

THE INTERBEHAVIORIST has been through some changes these past years, and we have yet another to announce: The interbehaviorist will be published twice a year, once in the spring and once in the fall. Volume 20 reflects this change as does the current volume. There are a number of reasons for eliminating an issue. The first of these is a very low rate of submissions, with the result that the same few people are contributing most of the manuscripts. (We do appreciate their contributions!) Secondly, the subscriptions rates are very low. And third, the cost of production exceeds the revenue from subscriptions. (We thank CONTEXT PRESS for underwriting the difference.) Producing two issues per volume instead of three seemed a workable plan until we are able to solve these problems.

Linda J. Hayes, Editor

Publications

Noel Smith has two new publications which may be of interest to our readers.

The first is a recent book review of James E. Faulconer & Richard N. Williams (Eds.). ***Reconsidering Psychology: Perspectives from Continental Psychology.*** Pittsburgh: Duquesne University Press. The review was published in 1992 by ***The Psychological Record, 42.*** Noel has some copies of this review that he can provide to interested parties.

Noel's second publication, titled "The Distant Past and Its Relation to Current Psychology: A Tour of Psychophysical Dualism" can be found in ***Mankind Quarterly***, 1992, ***32***, 261-273.

Sidney W. Bijou's classic child development text has been completely revised, and is now available through CONTEXT PRESS. An order form is on the back cover of this issue of **THE INTERBEHAVIORIST**.

The International Journal of Conflict Management

This journal is soliciting original empirical and conceptual articles, case studies, simulations, and teaching notes in the following areas:

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This journal is published in January, April, July, and October. Manuscripts must be prepared according to the latest edition of the Publication Manual of the American Psychological Association and are reviewed by a double-blind review process. Four copies of the manuscripts and requests for other details may be addressed to:

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Research Notes

Technologically Driven Research Methodology: Behavioral and Interbehavioral Perspeectives

Andrew Hawkins
West Virginia University
Tom Sharpe
University of Nebraska - Lincoln

It is remarkable, we think, that Skinner and Kantor did not see eye to eye on behavioral theory, even though they were contemporaries and on the same faculty for a time. In our judgment, the distinctions between their two theories are relatively minor. (see, for example, Morris, 1988.) The differences really amount to a matter of emphasis. The chief distinction between the behaviorism of Skinner and the interbehaviorism of Kantor is that in Skinner, context is implicit and taken for granted. In Kantor, context is explicit, and of central importance in any kind of scientific analysis. In Skinner, behavior is the unit of analysis. In Kantor, the unit of analysis is interbehavior, i.e., the interaction of an individual with objects, events, other individuals, groups, and even one's own behavior.

Why, then, has Skinner dominated behavioral psychology in the last half-century? We don't know. We have not conducted the necessary behavioral analysis (or even interbehavioral analysis) to be sure. But there are a couple of salient possibilities. First, Kantor's work was thoroughly conceptual and philosophical, making his writing less appealing to experimental types and pragmatic psychologists, and, let's face it, less accessible due to shear difficulty. (See, for instance, Kantor, 1959; Kantor, 1969; Skinner, on the other hand, while he wrote conceptually, was never far from his roots in the experimental laboratory (e.g., Skinner, 1950). That tended to make his writing less abstract, more concrete and descriptive, and hence more accessible. In addition, since Skinner's roots were in the laboratory, his theory was closely tied to technology. particularly as the technology related to a research methodology. That, in itself, could explain the lack of acceptance of Kantor. His was a theory always seemingly in search of a methodology. Kantor's own philosophical work was most likely partially responsible for the lack of empirical interbehavioral research. Also a factor, however, was that his theory was simply too complex for, and too far ahead of, the available technology. That is no longer the case. The computer revolution has made a remarkable technology available - a technology that is particularly well suited tn interbehavioral theory. That, we believe, explains the current interest in developing research methods carrying such labels as interbehavioral (Ray, 1983), ecobehavioral (Greenwood, Carta, & Atwater, 1991), and field systems analysis (Hawkins & Sharpe, 1992).

The purpose of this paper is to describe how forms of behavioral research are technology-driven and technology dependent. Our thesis is that In order for theories to spawn viable research methodologies there must be a close conceptual relationship between the theory and the available technology. We will illustrate this thesis with a brief technological history of applied behavior analytic research methods , and will conclude with one of our applications of interbehavioral research based on currently available technology.

A Brief History of the Technology of Behavior Analysis

Much of our own research has been classic behavior analysis (e.g., Sharpe, Hawkins, & Wiegand, 1989). A substantial portion of what little we know about teaching is probably the result of one form or another of behavior analy-

sis. And the fundamentals of behavior analysis, i.e., the determination of measurable dimensions of behavior, the definition of specific response classes, and the technical means to measure and analyze those response classes, provide an important, even prerequisite, foundation for interbehavioral research applications. Perhaps a brief history of the technology of data management in behavior analysis will illustrate.

The content of courses that we negotiated as part of our professional training in applied behavior analysis included the basic types of data collection systems. There was event recording for counting behavior and duration recording for timing behavior. The idea was to select a problem behavior, determine which dimension (i.e., its repeatability or its duration) was most relevant to the problem, and then either count it or time it accordingly. Usually, that would be done in a session, and the total number of counts or the total time would be divided by the total session time to produce a rate or a percentage for that behavior for that session.

Occasionally, if the behavior was difficult to count or time for some reason (e.g., if it repeated itself too rapidly to count accurately, or if it was unclear in its starting and stopping points making duration recording difficult) we would try to estimate the rate of the behavior using some type of interval recording system. In that system, a recording sheet would be divided into a number of intervals determined to last for a brief number of seconds, say six seconds. The observer would watch the subject for six seconds, then record whether or not the target behavior occurred within that six second period. Then the observer would watch again for six seconds, then record again, and so forth. At the end of the session the number of intervals scored for the target behavior would be divided by the number of total intervals, producing a percentage of intervals score for the session.

Ordinarily, data like this would be collected over a number of sessions, say, five. They would be graphed with the sessions plotted on the abscissa and the rate or percent of intervals on the ordinate. That portion of the graph would be called the "baseline." If the baseline were judged to be "stable" then it was appropriate to use an intervention of some sort, like a teaching strategy or a disciplinary procedure, to try and change the rate or percent or percent of intervals in subsequent sessions. If the behavior changed over the next several sessions, then to determine if the change was due to the intervention, rather than to some natural fluctuation or an uncontrolled variable, the procedure was to remove the intervention, return to baseline conditions and see if the rate, percent or percent of intervals also returned to a baseline level. If it did, the intervention was reinstituted, and if the level resembled the previous intervention it would be declared that the intervention was responsible for the change. A clear, parsimonious demonstration of the relationship between a behavior and an intervention could be demonstrated in this way.

There are a couple of interesting observations that must be made about this procedure, however. First, such a procedure was technologically very simple, even primitive. Paper and pencil were all that were necessary. A watch with a second hand was helpful as well. Those things had been around for dozens of years, and, in the case of paper and pencil, for centuries in one form or another. Eventually, some of us became more sophisticated and used a tape recorder to pace our use of interval recording, but that was about the limit of our technical finesse.

The other observation is that, in spite of the clean parsimonious demonstration of control possible in this procedure, in order to achieve it we had to remove the behavior from its context. We didn't simultaneously count or time any other behaviors or events. We just looked for the one target behavior. And then we further removed it from its context by summing it with all the other instances of its occurrence. Even the graphs, known as time series graphs, hid the context of the behaviors. Even though the data points were connected with a line which traversed a temporal dimension (i.e., sessions) there was really no temporal connection in the data themselves. What were connected were simply the session summations of the individual events - events which were lost in the

analysis.

Eventually, of course, some more sophisticated innovations were developed on this foundation. Data collection was applied to, not one, but multiple behaviors. The use of interval recording systems became more prevalent since the plurality of behaviors could be developed into a category system, the behaviors given codes, and any one of several response classes could be assigned to a given interval. Most of the time, however, the category systems were, by definition, mutually exclusive (i.e., any one behavior could not be recorded as occurring simultaneously with any other behavior). And when an interval included more than one behavior in the category system the one response class which predominated was recorded and the others were ignored.

Some of these systems were quite complex, involving several different forms of data collection In the same setting. One system we recall utilized interval recording for certain behaviors, event recording for others, along with an occasional use of a momentary time sampling technique. In addition to the increased complexity of the data collection systems, there appreared other, more complex graphic designs with which to evaluate data. To the standard reversal design were added multiple baseline, changing criterion and multi-element designs, as well as some hybrid designs. Multiple behaviors would be displayed on the same graph, so there was clearly a sense of increased complexity and sophistication in the analysis.

Nevertheless, some of the same observations made ealier applied even to these more complex procedures. Paper and pencil were still the primary data collection instruments, and even though multiple behaviors were collected, they were all still removed from their temporal context, summed, and graphed in the same way so as to imply a temporal connection when, in fact, there was none.

There were some nascent attempts during this period to collect contextual data. The 1982 Academic Learning Time - Physical Education system (ALT-PE) was an example with which we were familiar. That system involved a two level decision for each interval. The observer

TABLE 1
CATEGORY SYSTEM

Cues for Student Responding
- 11 Attention Signal
- 12 Go Statement
- 29 Prompt

Instructional Elements
- 14 Verbal Instruction
- 18 Group Directed Modeling
- 27 Question
- 28 Repeat

Encouraging and Feedback Elements
- 15 Encouragement
- 16 Specific Positive Feedback
- 26 General Positive Feedback
- 33 Positive Contact
- 36 Corrective Feedback

Interpersonal Elements
- 13 Courtesy Comment
- 17 Non-Task Verbal

Class Context
- 19 Activity: Aerobic Obstacle Course
- 31 Transition
- 35 Activity: Sideline Basketball

Teacher Movement Patterns
- 20 Jog/Run
- 21 Walking
- 22 Sit/Kneel
- 25 Stand

Teacher Management Elements
- 23 Management Direction
- 24 Equipment Management

would make a context decision, then a student behavior decision. In addition, there were some other systems designed to collect data on teachers and students which employed two level decisions for each interval - what the teacher was doing and what the student was doing. Unfortunately, however, these data were often treated in the same way as previous systems. The data were removed from their temporal contexts, summed, and graphed separately as described.

It could be argued that during the 1960's and 1970's the technology did not exist to collect behavioral data on multiple, simultaneously occurring, contextual and behavioral events, and certainly the technology did not exist to analyze them either. However, during the 80's the revolution in microelectronics changed the landscape of data collection and analysis possibilities. A number of computer based data collection and analysis systems were developed, and some of the paper and pencil systems were reworked so that data could be analyzed on PC's, and even collected on lap-top computers. We were among the first in applied behavior analysis to experiment with microprocessors as data collection instruments (Hawkins & Wiegand, 1987), beginning with the Datamyte 800 series (which are now as extinct as the brontosaurus) and later moving to NEC 8300 lap-tops and PC's for analysis.

Unfortunately, however, for the most part the computer revolution did not affect behavior analysis in any substantive way. Behaviors were still removed from their contexts, summed, and graphed in the same way as before. we just did it all more quickly and easily, but the fundamental nature of the analysis remained the same. Nevertheless, through the computer revolution, a foundation was laid for a fundamental change in the nature of behavior analysis. Through enhanced technology it became possible to collect data on multiple, simultaneously occurring, contextual and behavioral events, to leave those events in their temporal contexts, and to analyze them in context, observing the nature of their interrelationships with each other. However, though such an analysis was possible technologically, like other forms of scientific advancement, a theory was required to provide that technology with a purpose and a direction. At last, technology had caught up with Kantor. Interbehaviorism had found its marriageable partner.

An Interbehavioral Example Using Current Technology

We have been particularly interested in studying teaching expertise from an interbehavioral perspective (Hawkins & Sharpe, 1992). There has always been a sense of mystery about someone who was truly an expert, especially when an expert is someone who is distinguished from one who is merely experienced (Siedentop & Eldar, 1989). There are teachers who just dazzle us, who seem to be in a class by themselves, whose expertise seems to be inexplicable. In our judgment, one reason true experts seem so mysterious is that in our analysis of them, contextual factors have remained implicit.

One teacher with whom we have been particularly impressed is a male elementary physical education teacher in his mid to late 30's, well known in his state and region, who was selected as a model demonstration teacher for a nationally known elementary physical education curriculum. we analyzed one of his demonstration lessons which included the use of an aerobic obstacle course and a sideline basketball lead up game (Hawkins, Sharpe & Jewell, 1992).

Our investigation began with the development of a rich verbal description of the setting, including both contextual and behavioral elements. That description was reduced to a 23 element category system for the teacher's behavioral elements and for the major contextual changes which occurred during the class. (Table 1)

A NEC PC-8300 lap computer, modified by S & K Computer products, LTD, as an event recorder, was used to collect real time data for all elements of the category system. Three or four discrete elements were collected at any one viewing and the data were merged into one data set after all elements were collected. Finally, the categorization, order and the location of each element in the data set was verified by a frame by frame viewing by two researchers.

The data were first analyzed by generating a data summary, including the frequency, duration, mean

TABLE 2 - Data Summary

Element		Frequency	Duration	Mean Duration	Percent Duration	Rate
Context						
19	Obst Crs	9	6.54	.73	22.84	0.31
31	Transition	18	6.06	.34	21.15	0.63
35	Basketball	7	14.66	2.09	51.18	0.24
Movement Patterns						
20	Jog/Run	24	3.17	.13	11.07	0.84
21	Walking	38	18.05	.48	63.00	1.33
22	Sit/Kneel	5	.87	.17	3.04	0.17
25	Stand	31	5.41	.18	18.89	1.08
Cues						
11	Att. Signal	38	.28	.01	1.00	1.33
12	Go Statement	25	.64	.03	2.23	0.87
29	Prompt	113	3.40	.03	11.87	3.94
Instruction						
14	Verbal Inst	33	2.15	.07	7.52	1.15
18	Grp. Dir. Model	1	.65	.65	2.28	0.03
27	Question	36	.65	.02	2.27	1.26
28	Repeat	16	.37	.02	1.28	0.56
Encouragement/Feedback						
15	Encouragement		50	1.49	.03	5.21
1.75						
16	Spec. Pos. Feed.	51	1.08	.02	3.76	1.78
26	Gen. Pos. Feed.		24	.55	.02	1.90
0.84						
33	Pos. Contact	50	1.48	.03	5.17	1.75
36	Corrective Feed.	26	.79	.03	2.76	0.91
Interpersonal						
13	Courtesy Comment	6	.08	.01	0.26	0.21
17	Non-Task Verbal	7	.17	.02	0.58	0.24
Management						
23	Man. Direction		51	2.26	.04	7.89
1.78						
24	Equipment Man.	7	.40	.06	1.40	0.24
Total		666	28.646	100.00		

TABLE 3 - Study 1 Conditional Probability Matrix
Succeeding Elements

	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	31	33	35	36	Fr
11	3 08	2 05				1 03	1 03					1 03	10 26	1 03	8 21				1 03	8 21			2 05	38 06
12	1 04	1 04			1 04	2 08			2 08	2 08	4 16		1 04		1 04	2 08	1 04		7 28					25 04
13	1 17				1 17	2 33				1 17			1 17											6 01
14	2 06	1 03		3 09		3 09					6 18		3 09		2 06	1 03	3 09		7 21		1 03	1 03		33 05
15	3 06				9 18	3 06	1 02			4 08	5 10	1 02	1 02	1 02	1 02		1 02	1 02	9 18		10 20			50 08
16	4 08	1 02		2 04	4 08	2 04	2 04		1 02	02	1 02	1 02	4 08			2 04			16 31	1 02	3 06	1 02	6 12	51 08
17					1 14	1 14											1 14		1 14		2 29			7 01
18		1 1																						1 00
19		3 33		1 11	1 11					2 22							1 11				1 11			9 01
20		6 25		1 04	2 08	1 04	1 04	1 04	1 04				2 08			1 04	1 04		5 21		1 04		1 04	24 04
21	1 03	3 08	2 05	1 03	4 11	4 11							3 08			1 03	2 05	1 03	11 29	1 03	2 05		5 02	38 06
22		1 20								1 20									1 20	4 20				5 01
23		3 06	3 06	1 02		4 08			1 02	3 06	3 06		7 14	2 04	5 10	1 02	2 04		5 10	1 02	3 06	2 04	2 04	51 08
24	1 14				3 43								1 14	1 14	1 14									7 01
25	4 13			9 29	1 03	1 03			1 03		2 06		2 06	1 03			3 10	1 03	2 06	2 06	1 03		1 03	31 05
26	4 27			1 04		1 04				3 13	2 08		1 04		2 08	1 04			5 21		4 17			24 04
27			1 03			3 08			1 03	2 06			3 08		2 06	1 03	7 19	10 28			4 11	1 03	1 03	36 05
28									1 06		2 13						7 44	1 06		1 06	2 13	1 06	1 06	16 02
29	7 06	1 01		7 06	8 07	15 13	1 01			2 02	8 07	2 02			5 04	8 07	3 03		30 27	2 02	10 09		4 04	13 17
31	1 06			1 06		1 06					2 12		6 35		2 12	2 12	2 12							17 03
33	1 02	1 02		2 04	13 26	5 10				2 04	2 04		2 04			2 04	1 02	1 02	9 18		3 06	1 02	5 10	50 08
35											1 14		3 43		2 29			1 14						7 01
36	1 04	1 04		4 15	2 08	2 08	1 04			2 08			1 04	1 04		2 08	1 04		4 15		3 12		1 04	26 04
T																								665

duration, percent duration and rate per minute of each element (Table 2). Next, a conditional probability matrix was produced showing the probability with which each element immediately succeeded the others. The matrix was generated on the basis of element start times (see Table 3).

The probability matrix was the basis for two types of kinematic analysis. The first type involved a depiction of dual chains of events based on the most frequently occurring elements. The second type involved a depiction of "nesting characteristics," or preceding and succeeding elements which tend to cluster around the most frequently occurring elements (See Hawkins, Sharpe, & Jewell, 1992, for more detail concerning the kinematic analysis).

Finally, graphs of elements by time were produced, first for all the element combinations which appeared in the dual chains and nests, and then for any other element combination of interest as the analysis progressed. These graphs seem to us to represent the field, or systemic, character of the observed setting. There are clear advantages in analyzing these graphs, where events are allowed to remain in context throughout the analysis.

It might be useful to examine one graph as an example. This figure displays the flow through the entire lesson of three contextual elements (19 obstacle Course, 35 Sideline Basketball, and 31 Transition) along with the four teacher movement patterns (22 Sit/Kneel, 20 Jog/Run, 21 walk, and 25 Stand). (Figure 1)

Clearly the class was comprised of two segments, the first devoted to the aerobic activity and the second to the lead up game of basketball. There are a few noteworthy characteristics relating to the contextual patterns apart from their relations with behavioral elements. First, there is a markedly regular rhythmic pattern in the sideline basketball activity. Each episode appears similar in duration, separated by brief transitions during which team members on the court were alternated with those on the sideline. Such a regular rhythmic pattern does not appear with the obstacle course, although the variability in duration does not appear to be extreme.

The transitions in the midst of the obstacle course activity also are more frequent and usually somewhat longer than those during basketball. This may imply that the basketball activity was more efficiently managed than was the obstacle course. We think not. 19 Obstacle course was coded only when the students were actually engaged in the activity. Transitions were used to change equipment at certain stations, but also seemed to carry another function as rest periods. Since the obstacle course was aerobic in nature these interruptions were not altogether inappropriate.

This figure also includes the movement patterns as they occurred throughout the entire lesson. Only one pattern, 25 stand, retains a relatively stable rhythmic pattern through the period. All the other movement patterns are correlated with the lesson context.

All five episodes of 22 Sit/Kneel were brief and occurred during the portion of the class allotted to the obstacle course. These periods either involved kneeling to fix some equipment that Had moved during the obstacle course, or occurred as a model for students when the teacher wanted them to assume a sitting or kneeling position during rest periods. Most of the running episodes occurred during the obstacle course as well. It appeared that these served encouragement and modeling functions as well, in the sense that students would be more likely to aerobically extend themselves if the teacher was energetically involved in the lesson.

21 walking episodes show a fairly regular rhythmic pattern in each context respectively, though the durations are longer in basketball. One may surmise that our teacher tired after his own aerobic involvement in the obstacle course. Perhaps. However, it appears to us that his functions in the two contexts were different, and that his movement pattern changed to reflect them. The instructional demands during an aerobic obstacle course are usually minimal. Normally, the primary demands are motivational. The teacher appeared to function in the role of an encourager in this portion, and his frequent bursts served to motivate students to keep moving. By contrast, the instructional demands increase during a skill based activity like basketball, as do the management (officiating) demands. walking serves this purpose more effectively.

Finally, it occurs to us that in addition to these movement patterns serving motivational and instructional functions respectively, this teacher exhibited them in a way which reflected the relative

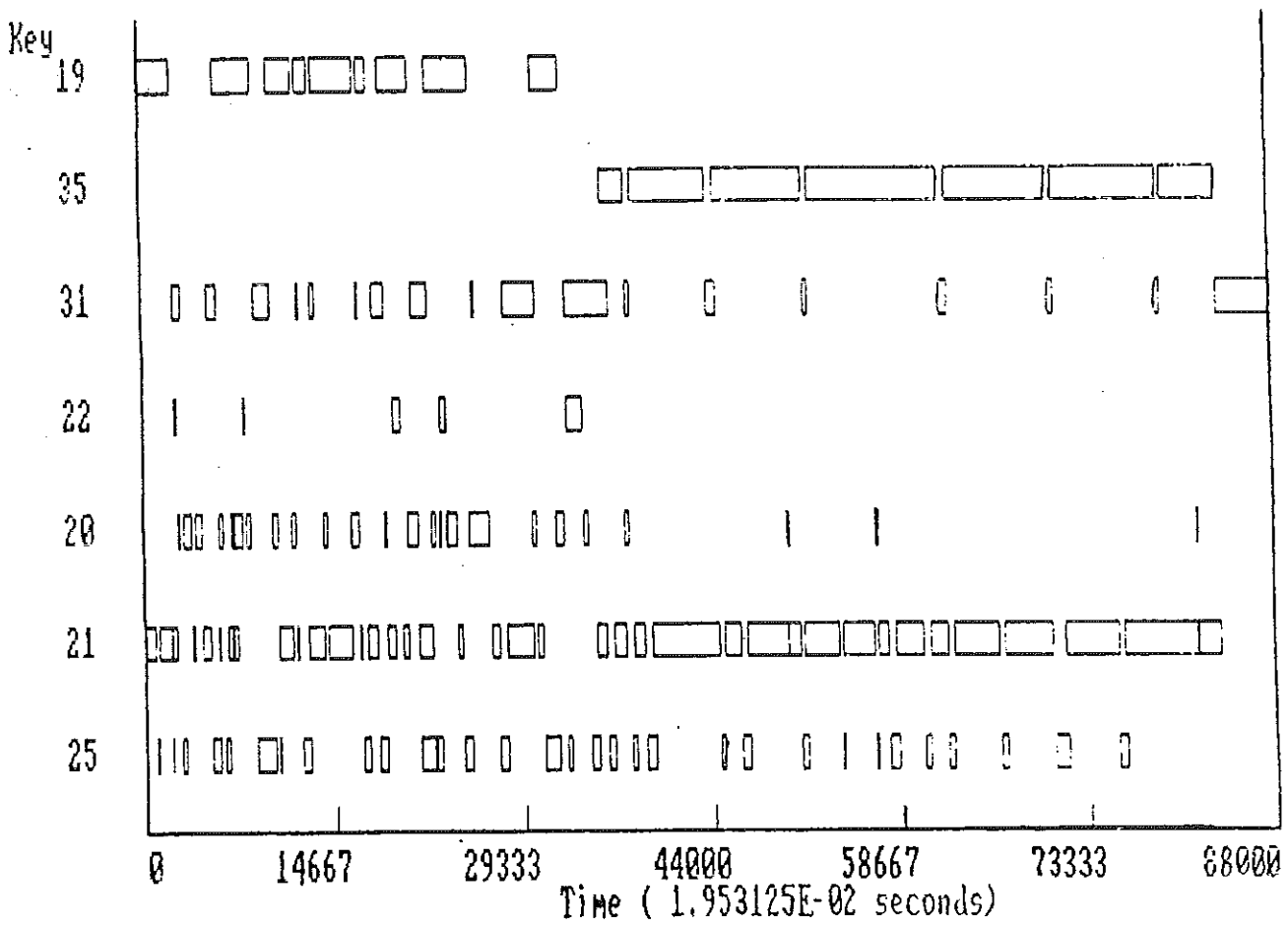

Figure 1

intensity of the activity of the students. Perhaps there is a subtle modeling influence at work here, or possibly our instructor communicates "enthusiasm" in his movement. It is interesting to note that while 25 stand occurred fairly frequently, each episode was short in duration. This teacher did not stand still for very long. (A more detailed interpretation of this and other graphs is available from Hawkins, Sharpe, & Jewell, 1992.)

Conclusion

The marriage of interbehaviorism and technology is evident in this example. under earlier forms of behavior analysis we might only note that 74% of the lesson time was spent either walking or running. As a summary datum, 740 walking or running is perhaps important. But it does not really do justice to the way in which each of those behavioral elements are related to the lesson contexts and to each other. That is the value of an interbehavioral, or field systems, analysis vis a vis more traditional behavior analysis where events are analyzed apart from their contexts. And that is an analysis made possible by the unique marriage of theory and technology, in which interbehaviorism finds a conceptual ally in contemporary microelectronics.

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Comment

The Psi Chi Ceremony and Mind-Body Dualism

Noel W. Smith
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According to a statement in the Psi Chi ceremony, Greek "psyche" means "mind" and suggests "enrichment of the mind". This mind-body assumption is in good company. In 1980 Florence Denmark, the president of the American Psychological Association, declared in her presidential address, "*Psyche* is derived from the Greek, in which it originally signified the soul, the spirit, and the source of all vitality".

Let's take a look at the actual Greek use of the word "psyche". The earliest written source for the use of "psyche" is by Homer around 800 BCE. He used it to refer to the last gasp of breath (e.g., *Odyssey*, Chp. 5, 1. 468) much as we use "expire", meaning to breathe out and to die; in the course of succeeding centuries "psyche" came to have an affective meaning and was finally used in a systematic way by Aristotle (*De Anima*, 418a,6 - 426a,26; Smith, 1974). For Aristotle, "psyche" is to the body as cutting is to an ax (412b, 14-17): it is what the organism does. In another analogy he tells us that if "the eye were an animal--sight would have been its [psyche]" (412b, 18-19). Psyche is the life-function of the organism and is similar to what we should call "behavior" but more encompassing, for it includes nutritive and locomotive acts. It also involves such covert behaviors as perceiving, thinking, dreaming, imagining, knowing, and others. These are all life-functions of the organism.

This is decidedly not a mind-body dualism or a putting together of mind and body, for there is no such distinction to start with. Aristotle's analysis of psychological events is one of a thorough going organism-environment relationship. It is the potential of the organism to see, think, or recollect together with the potential of the object to be seen, thought about, or recollected. The joint actualization of these potentials constitutes the acts of seeing, thinking, or recollecting (Kantor, 1963; Randall, 1960; Shute, 1941/1964; Smith, 1971, 1974, 1990). The psychological event then is not inside the organism, or in a mind acting upon or directing the body, but in the interaction of the organism and its environment.

We can clearly see that the imposition of such agents and powers as "mind" and "soul" upon the Greeks is entirely lacking in accuracy. The Greeks naturalistic approach to all subjects including psychology was with a view to observable events. Psychological events consisted of organism-environment interactions, not hypothetical powers and agents residing in the organism which cause it to act.

If the mentalistic meaning of "psyche" did not arise in the classical Greek period, when and how did it arise? We find the answer to this question by examining events in the second century B.C. The period from 146-30 B.C., was one of decline. Rome gained total power at that time. For four hundred years Rome's administration was so bad that it nearly destroyed Greece and Rome too. Piracy flourished; the ruling class was corrupt from new wealth; working classes were submissive. Civil war, international war, and class conflict were rampant. The danger of enslavement or death was great. In this climate rose despair, pessimism, and asceticism (Murray, 1955; Rostovtseff, 1957). Cults flourished. The response to these conditions in the intellectual community was to create the supernatural as a domain to which the debased world did not apply (Kantor, 1963). Philo and others at the School of Alexandria constructed a deity that was completely outside of time and space. Others endowed Greek "psyche" with similar supernatural attributes. One's psyche was akin to the supernatural deity and carried with it the powers of willing and reasoning. As a supernatural power its

relationship to the body was that of an insuperable mystery. The psychophysical dualism that has descended to us in modern day psychology was created by an intellectual leadership in the Greco-Roman world under the debilitating conditions of long-standing insecurity.

Beginning in the 18th century "psyche" was converted to brain, and many people have labored strenuously to reduce complex interactions of organisms and surroundings to neural impulses, often with analogies to the computer. Our mind or brains are said to process information and interpret the world for us. The inside world is said to be merely a representation of the outside world. Thus we live in a double world, a real external world and an internal world that merely represents it. This assumption leads to either of two logical consequences. If the brain or mind processes and interprets the world it must be self-acting or self-caused. Yet we know of nothing in the world that causes itself. If the brain or mind is not self-caused it must itself have a cause and that cause must have a cause and so on infinitely. Because such an infinite regress has no beginning point, human activity could never occur. If proponents of brain/mind constructs would ever face the consequences of their assumptions--self causation or infinite regress--they might be inspired to look for an alternative.

If psychology is not about an inner agent running the body in the form of a computer brain or mind, what is it about? If nature has not divided us into two parts, what is the alternative. The alternative is as old as Aristotle. Psychology is about a history of interactions that develop as human and nonhuman organisms interact with their surroundings within a context. We can call this a field of interactions. The brain and other biological factors are participants in this interaction just as are cultural factors and individual histories, but no single factor is converted into a determiner of the entire complex events. We need not assume that we are robots with computer brains or minds in bodies or that we are walking around in a double world. And just as we need not assume minds in bodies neither do we need assume mindless bodies. A psychology that moves its focus from the organism or the inside of the organism to the field of relationships of which the organism is one component avoids both mechanism and mentalism and can deal with the full range and richness of human activity that the Psi Chi ceremony refers to. It is a context or field psychology.

One can, of course, make the kinds of assumptions that the ceremonial statement does, assumptions that are widespread in psychology. But if "psyche" suggests scholarship, as the statement also maintains, we need to at least be aware that such assumptions are just that--assumptions--and that these assumptions have logical consequences such as requiring a double world with its self-causation or infinite regress. Good scholarship should also allow us to see alternative to these assumptions such as that of a field or context psychology (Kantor 1959; Smith, 1984). And, finally, scholarship should lead us to an accurate understanding of such historical terms as Greek "psyche" rather than to distortions drawn from cultural assumptions about the nature of psychology. With good scholarship we can achieve a better understanding of psychology's history and the kinds of psychologies we have available to choose from.

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Comment

Interbehavioral Psychology and Behavior Analysis: An Opinion

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What is the connection between interbehavioral psychology and behavior analysis? What is the future of the relationship between these two literatures? Is there an alternative to continuing with attempts to link interbehavioral thinking to behavior analysis?

As far as the first question, the connection seems to be strained. Despite the claims, both formal and informal, of those advocating a fundamental compatibility of the psychology of Kantor and the psychology especially inspired by Skinner, no one has yet been able to convincingly integrate the two realms. But the latest example of possibly fruitless attempts to bring together interbehavioral psychology and behavior analysis is Sharpe and Hawkins's (1992) argument of how interbehavioral methodology could be profitably incorporated into behavior analysis. Apparently, Sharpe and Hawkins were replying to a recent rebuff by a votary of mainstream behavior analysis. Certainly, we find no better example of downright ugly relations between our two areas of interest than Skinner's (1988) hostile repudiation of interbehavioral psychology for "His" Association for Behavior Analysis and division of the American Psychological Association. Doing little to encourage one as regards the possibility of harmonious relations between interbehavioral thinking and behavior analysis is behavior analyst Marr's (1992) (a) fallacious association of Kantor's field theory with the contextualism of the mentalist and logico-analytic philosopher, Pepper, and (b) disdain of psychological field theory based on his ignorance of the great difference between physical and psychological field constructions.

What about the future of the relationship between the two areas? I see it as very bleak. Mainstream behavior analysts seem as resistant to field and system theory as were the neobehaviorists. Furthermore, taken in toto, the fundamental postulates of Skinnerian behavior analysis may be incompatible with those of field psychology (compare Delprato & Midgley, 1992 with Kantor & Smith, 1975, pp. 415- 417). On the other hand, the two postulate systems may be compatible. Given the latter possibility, unfortunately, many behavior analysts appear to consider contemporary behavior analysis as not quite identical with Skinner's specifications to where the situation today seems to be that the only way of reconciling behavior analysis with interbehavioral psychology is for one or the other to "bend," and I do not foresee this happening. A crucial problem in bringing together behavior analysis and interbehavioral science is that the former is simply closer to the venerable psychological tradition (Kantor, 1963, 1969). For behavior analysts to enthusiastically incorporate interbehavioral postulates they would have to move forward in the direction of naturalism in the second cycle in the evolution of psychology (Kantor, 1963, 1969). The basic way for them to so move is for them to shed the last vestiges of traditional thinking, adopt field postulates, and so on. I do not deny the possibility of those who identify themselves as behavior analysts doing this, but doubt if we will find this sort of behavior change among many of those living today.

Is there an alternative to continued attempts at linking interbehavioral thinking to behavior analysis? Yes, there are at least two. Interbehavioral theorists can go the route of Kantor, i.e., "go it alone." The literature contains a fair amount of grist for interbehavioral work, and with sufficient effort and skill it is possible for interbehavioral science to continue growing. However, what I offer for consideration as an alternative to going it alone and to continued attempts at reconciliation with behavior analysis is for those impressed with the value of interbehavioral views to examine a little-known development that is entirely consistent with Kantor's (1963, 1969) historico-critical analysis of the scientific evolution of psychology.

Briefly put, Kantor's analysis suggests that as our

culture continues becoming more secularized, the postulates of psychological science should gradually reflect this by more and more taking into account the field/system nature of psychological events. To Kantor, his work alone adequately recognizes the field nature of psychological events; thus, he places only "interbehaviorism" at the end of the second cycle in the evolution of psychology. Notwithstanding Kantor's evaluation of the status of his particular work and with his historical analysis in view, I find several literatures converging on a radically naturalistic, field psychology (Delprato, 1989, 1992). With very little cross citation, various ostensibly unrelated literatures are converging on a psychology as naturalistic as any of the "more advanced" sciences that once and for all will be unified on the most fundamental issues. In addition to the interbehavioral literature, including Q methodology that Stephenson (1953) views as a subarea of interbehavioral psychology, we find radical phenomenology (Merleau-Ponty, 1942/1963), general system theory (Bertalanffy, 1968), behavioral cybernetics/perceptual control theory (Powers, 1989; Smith, 1972), behavioral epigenetics (Kuo, 1967), action psychoanalysis (Schafer, 1976), dialectical psychology (Riegel, 1976), and ecological psychology (Mace, 1986).

These converging movements, with very little indication of cross-fertilization, show a great deal of agreement on such basic issues as:

1. Rejection of the cause--->effect framework (lineal causality, mechanism) in favor of the field/system and circular causality.
2. Rejection of dualism and all occult states and processes.
3. Rejection of reductionism.
4. Stimuli are not causes; response and stimulus are interdependent; action-in-the world is fundamental.
5. Organisms are in direct contact with world; there are no mental mediators; there is no pure consciousness.
6. Private experiences are not counterparts of public events and are not equated with inner experiences.
7. Dynamic: centrality of action as opposed to static constructs.
8. The organism acts as an integrated whole.
9. Broadly evolutional: psychological change is not imposed on the organism; change is inherent.

Those knowledgeable in interbehavioral science might accomplish more for themselves and others by working within areas that have already largely come around to their way of thinking than if they persist with efforts to somehow update mainstream behavior analysis by trying to get its adherents to "see the light" (or the field).

To follow my proposal it is not necessary to abandon behavior analysis altogether. Although behavior analysis is not sufficiently advanced philosophically to be a member of the converging movements at the end of the second cycle in the scientific evolution of psychology, it does have much of value to offer, especially to those with applied concerns. In its present form it simply is not the wave of the future, despite the fervent commitment to this belief by so many of the leaders of this rather minor member of today's psychological sciences.

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Comment

The Relation Between Epistemology, Ontology, and System Building in Kantor's *Psychology and Logic*

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Kantor argues against the opinion that logic is not ontological in nature. He instead takes the position that logical practices are indeed ontological. His views on the relationship between the logical and the ontological are inextricably linked to, and lend support to, his views on the epistemological nature of logic.

Kantor's primary reason for disagreeing with those who deny that logic is ontological is that arguments made against the ontological nature of logic are made from a non-interbehavioral perspective. Those who claim that the logical is distinct from the ontological claim that this is so because logical systems can be built on abstractions. As such, abstracted relations do not have any physical existence, they are merely conceptual constructions, and therefore are not ontological in nature. Kantor's argument in favor of an ontological view of logic is contingent on the assumption that interbehavioral events are always ontological. Kantor counters the non-ontological view of logic by pointing out that abstract ideas are conceived of through interbehavioral contact, direct or indirect, with real things and events. Logical operations are interbehavioral, and are therefore ontological.

As is typical of Kantor, he also has some disagreement with those who hold that the logical is also ontological. His primary objection to such positions is that they are not interbehvioral. For example, there are those who claim that logic is ontological because ideas are derived from, and thus continuous with, things and events. Kantor agrees with this in the sense that all logical behavior is psychanthropic in nature. However, Kantor goes a step further in his analysis and describes how logic can be used to build systems based on non-existants and still be described as an ontological enterprise. In this case, as in his argument against a non-ontological view of logic, Kantor makes his argument from an interbehavioral perspective. He points out that all logical operations occur within interbehavioral fields. Non-existants are derived from contact with existing things, and constructing behavior is interbehavior. Therefore, the existence of it's subject matter is not a criterion for an endeavor to be characterized as ontological. An enterprise need only involve interbehavioral events to be considered ontological.

There is a direct relationship between this view of the ontology of logic and Kantor's position on the epistemological nature of logic. Kantor claims that a serious flaw in most logical treatises is the assumption that logic is universal, ultimate and transcendant. Kantor instead contends that logic is limited.

The ontological nature of logic, in the sense that Kantor views it, is precisely what limits the universality, ultimacy, and transcendence of logic. According to Kantor, logical systems are constructed through the logicians contact with ontological things and events within particular interbehavioral fields. An interbehavioral logic addresses specific questions, using specific techniques, within the framework of a particular logical system. It is this quality of logic that limits it's ultimacy and universality. Because logical behavior is human behavior, it is not transcendent. A non-ontological logic could have some of these qualities, because such a logical system would not require that it's epistemology be limited to interbehavioral events. For example, knowledge could be imparted through revelation as well as through direct contact with things and events. Such a logical system would not meet Kantor's requirements for an ontological logic.

Kantor's views on ontology are based on interbehavioral psychology, and make clear that logical behavior is merely one form of human behavior. His position on the ontology of logic is consistent with his view of the epistemology of logic. Such a view is functional, as it allows one to account for such things as the study of abstractions, and even non-existants, without resorting to notions of ultimacy, universality, and transcendence.

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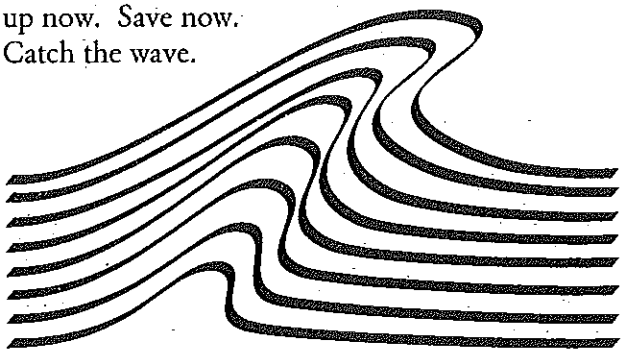

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