

Logical Learning Theory: Kuhnian Anomaly or Medievalism Revisited?

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Logical learning theory, a teleological interpretation of behavior which subsumes traditional personality descriptions without distortion, is presented in light of seven criticisms frequently put to its supporters. Issues are discussed such as the need for learning theory in personality study, the role of empirical evidence in science, and the need for introducing new terms to an already complex psychological lexicon. The shortcomings of mechanistic, mediational explanations of human behavior are highlighted. Primary consideration is given to the current status of the telic model, with only general references made to empirical researches that have been conducted in support of this model. The presentation follows a question-answer format, with the discussion sequenced so as to give the reader a good sense of both the objections to logical learning theory, and the grounds it has for being a legitimate alternative to the reigning behavioral paradigm of psychology. It is concluded that logical learning theory is more concordant with the ongoing theoretical revolution in modern physical science than any extant learning theory.

Logical learning theory (LLT) is a gradually evolving position which seeks to unite a tender-minded view of human behavior with a tough-minded interpretation of psychological science (see Rychlak, 1977, chaps. 7-11). It has been under development for roughly 25 years and is held to be of special significance to psychologists interested in the study of personality. Though several dozen experiments have been conducted on various aspects of LLT, the present paper will focus on the broad-ranging implications of the model *per se*. The reader is referred elsewhere for a more detailed review of this research literature (Rychlak, 1977, chaps. 10-11). Logical learning theory was framed by the writer almost reluctantly, in reaction to what was perceived as a distortion of human nature in the traditional "basic" or "laboratory" explanations of behavior. As a result, LLT has a polemical quality about it which has probably hurt its acceptance by certain, properly cautious, colleagues even as it has provided a sense of excitement to those who have found its framing assumptions instructively meaningful.

The advocates of LLT do not agree with those critics who would have our polemic a mere "puzzle," in the Kuhnian (1970) sense of a minor problem

with the reigning paradigm, which can be worked out in time thanks to refined methodologies of one sort or another. The issues raised are basic to any conceptualization of human nature and hence LLT must be considered a full-fledged Kuhnian *anomaly*. Here is another reason for the resistance faced by LLT. Not only do we necessarily challenge the reigning paradigm of psychology, but we do so in the context of extended arguments which seem unrelated to the profession of psychology—more a throwback to medieval philosophy or theology than anything else! This false impression is deepened by the fact that unfamiliar and new terminology must be introduced to capture what we are intending to say. The combined effect of all these factors is to diminish the probability that LLT will receive a proper hearing much less be accepted as a useful outlook by colleagues, caught up as they are in the traditional experimental role of research scientists and finding the reigning paradigm suitable to their empirical needs.

And yet, there is no other course for us to follow but to try in possibly a fresher, more incisive format to address those questions which repeatedly arise to form the core of resistance against LLT. A number of such questions have been directed to the writer by colleagues in conversations, at scientific presentations, or largely in written exchanges with reviewers of manuscripts over the years. They are not the kinds of points likely to be raised in a publication, but in one sense represent a “back door” scientific literature in which considerations of professional propriety are less evident. The writer has had his share of “hard knocks” in these colorfully direct (though frequently anonymous) verbal encounters. The thought occurred that a paper framing the essentials of LLT in terms of frequently raised questions of this sort might prove interesting to a reader, and make for an alternative way in which to convey the model as presently conceived. The format of the present paper is therefore question-answer, with questions sequenced so that a good sense of the LLT model will emerge as the reader makes his or her way through the discussion. It should be emphasized that the seven questions framing this paper have in fact been put to the writer, one way or another, on *several* occasions.

1. *Why a “learning” theory? Learning theories are passé in psychology. Nevertheless, I am a personality (social, clinical, etc.) psychologist and have no interest in learning theory. I have my own theories to consider.*

It is mildly shocking to discover how many psychologists openly dismiss learning theories today. Some of these rejections are based on the belief that modern cognitive theories somehow supplant the older learning theories, but many psychologists disdain all learning theories *per se*, believing that their professional responsibility is in “another realm” of theoretical explanation. The reason we selected “learning” to focus on in what has since become LLT is our desire to confront the extant learning theories of psychology—Skinnerian, Hullian, Social, etc.—at their own level of description. All such explana-

tions of human behavior are based upon assumptions of a mechanistic, non-telic nature. There was no way, even in principle, to "account for" purposive, intentional behavior through such theoretical descriptions without distorting the very teleology that we were trying to formulate.

Any psychologist who believes that he or she is capable of framing a theory without concern for its being "reduced" to a learning theory—or, some derivative thereby as in the modern cognitive, cybernetic, or information-processing views—is practicing a monumental self-deception. Psychology as a discipline has certain institutionalized ways of expressing its most *basic* principles, and anyone who thinks that a theory can be spun in some "other" realm of explanation which does not connect with these basics is naive in the extreme. When Dollard and Miller (1950) brought the benefits of "the rigor of the natural-science laboratory" (p. 3) to psychoanalytical description, they unfortunately undermined all of the more self-directing and (we would argue) teleological meanings which Freud was trying to convey (see Rychlak, 1981b). For example, Freud (1953, p. 593) viewed unconscious thought as highly informed on what was taking place in experience, framing intentions or "wishes" that could not be expressed openly, and cleverly circumventing repressive censorships to make these ends known through the parapraxes. Yet, Dollard and Miller (1950) describe unconscious behavior as "stupid" (p. 198 and 224). That is, unconscious acts are purely instrumental motions, in which no mediating cue-producing responses intervene between current inputs and behavioral outputs to make known why a course of behavior is being carried forward.

It is clear that a personologist interested in the study of psychoanalysis could not hope to understand Freud's theory of personality by studying Dollard and Miller's mechanistic translations. When Alfred Adler (1964) said that "*a person's behavior springs from his ideas*" (p. 19) he was not speaking about mediating cue-producing responses, or "information" that had been input, coded, stored, retrieved, and then output. These latter constructs simply fail to capture the *active* interpretation of intellect which Adlerian theory is founded on. Adler would have agreed with Jung (1961) that "psychologically speaking, we [human beings] are living and working day by day according to the principle of directed aim or purpose" (p. 295). What if a personologist did not accept psychoanalysis, but wanted to frame his or her understanding of people in light of Binswanger's (1963) a-priori ontological structure known as the "world design" (p. 31), Rogers' (1951) "phenomenal field" (p. 483), or Kelly's (1955) "personal construct" (p. 76)? Would such equally telic conceptions be likely to retain their meaning following subsumption by the typical learning/cognitive theories of today? Most assuredly, they *would not*.

Now, it might be argued that few psychologists really care about the contents of traditional personality theories. Even if this is true, we cannot

require that every professional psychologist conform to the tenets of a non-telic description of behavior. So long as the psychologist is willing to put a telic theory to empirical test, we must allow its development or admit to practicing repression. It would therefore be helpful to the profession of psychology if a modern learning theory could subsume such telic terminology without distortion. More fundamentally, even if these classical personality theories had never been advanced, there is still every reason to expect that some psychologists would take an interest in telic formulations if such were only made available. Allegiances to theoretical outlooks change. The personologist in particular seems drawn to this style of description in which people are said to have an identity, are free to choose, or reflect a capacity for self-determination. We do not have to accept traditional personality terminology to view people in this manner.

Returning to the key word of "learning," the LLT position on this construct stresses *meaning*, and the extension of meanings which have been premised or predicated by the individual from the outset of a sequence of behavior. Learning is said to occur when the person's premised understanding is enriched thanks to the meaningful conceptualization he or she affirmed as a premise and then brought forward via the instrumentalities of overt behavior to fulfill what was initially intended, as per Adler's suggestion above (see Rychlak and Nguyen, 1979, for an empirical demonstration of this process). In line with Freud and the other psychoanalysts, LLT entertains the likelihood that this process can take place without conscious awareness. Hypnotic states are a perfect example of the person taking on premises which not only deny the recollective capacity but induce consciously unintended behavioral instrumentalities.

2. *What do you mean by a "logical" learning theory, and what is the relation here to teleo-logical? Are not machines logical—especially thinking machines? Why then are you so critical of mechanistic descriptions?*

Advocates of LLT take logic to mean an emphasis on the *patterning* of behavioral events, as opposed to their motility or frequency and contiguity of occurrence ("happening") over time. We trace the roots of logic as a concept to the Heraclitian concept of *logos*, or "rational order" that is discernible in the universe. Patterns and orders are what constitute *meaning*—i.e., relationships falling into a logic of "this goes with (means) that" or "that implies (means) the following," and so on. Patterns merge and melt, one into another, constituting a totality of "one" meaning, but also conveying "many" meanings depending upon how we slice this pie up (one and many principle; see Rychlak, 1981a, pp. 394-397).

Another way of looking at logic is in terms of causation. When Heraclitus spoke of the *logos* in nature, as when Pythagoras spoke of the patterned numbers in all of nature, the emphasis was being placed *primarily* on what Aristotle would later call the *formal* cause. This word "cause" apparently

upsets many psychologists today, and, as noted in the introduction to this paper, the fact that we have relied upon its classical meaning has been used as grounds for considering LLT to be a regression to medievalism. The Greek word which Aristotle used for what we translate as cause was *aitiá*, which has the meaning of "responsibility." In accounting for some natural object or line of behavioral action, we would therefore be trying to assign responsibility for its existence or activity. Aristotle (1952, p. 128) was unable to frame nature and natural actions in terms of just *one* kind of cause. He found that his predecessors had effectively summed up life in terms of *four* causes. Thales, Anaximander, and Empedocles had talked of the various substances that go to make things up, and Aristotle called this the *material* cause. Parmenides and Empedocles had wrestled with the problems of change and motion, and Aristotle referred to an antecedent object or event thrusting or triggering a consequent object or event along as an *efficient* cause. And Socrates had discussed the ends, goals, or reasons "for the sake of which" humans behave, a form of responsibility which Aristotle coined as the *final* cause.

These four causes (material, efficient, formal, and final) have been employed for centuries in all manner of debate and conceptualization, both in Eastern and Western thought (see Rychlak, 1977, chap. 1 and especially Table 1). During the 17th century when ground rules for scientific description were being laid down, the formal and final causes were de-emphasized in favor of reductive explanations, which promised to trace every pattern (formal cause) and/or reasoned intention (final cause) that might be found in nature to underlying bio-chemical and related energies (material and efficient causes). Psychology has since its birth in the 19th century made an effort to comply with this natural science reductionism. Constructs such as stimulus-response or input-output are traceable to the efficient-cause bias of classical (Newtonian) science, on the grounds of which psychology has been sinking its roots for over 100 years now.

The two major—perhaps exclusive!—principles of explanation which psychological learning/cognitive theories have employed to date are *frequency* and *contiguity*. Behavior is said to be patterned after two events (e.g., stimulus and response) occur closely together in time (contiguously) and do so repeatedly (frequently). This efficient-cause account is occasionally supplemented with a material-cause feature suggesting that the contiguously occurring events must be followed by a reinforcer of some type (drive-reduction, etc.). But the point is: Any pattern which occurs in nature is a *secondary* result, and must be explained ("accounted for") through some other principle of explanation than patterning itself! This effectively dismisses formal causation as a true "cause," in that all those natural patternings which would qualify are suddenly "effects" of underlying primary or "true" (material and efficient) causes (see Question 3).

With the loss of formal causation as a *primary* constituent of description in

natural science, the final cause lost relevance as well. In order to speak of reasons, intentions, purposes "for the sake of which" behavior is carried out the theorist must assume that there is some kind of *pattern* (formal cause) of meaning which is being affirmed and brought forward. A motorist employs a road map (formal cause) "for the sake of which" (final cause) he or she intends to reach a prearranged destination. This goal or "end" is what the Greeks meant by *telos*. Actually, such ends exist in the patterned meanings affirmed as premises and then worked towards; they need not *literally* exist independent of the person's premises. We work for "perfection" as an end even though we realize we shall never reach this impossible goal. Theories which combine formal and final causation in this fashion are said to be teleologies. The formal cause is a necessary but not sufficient ingredient in all telic accounts. The unique thing about a final-cause meaning is that it suggests that the actor behaving "for the sake of" the formal-cause meaning affirmed as a premise (plan, intention, reason, wish, etc.) could behave according to this meaning *or not!* A computer "behaves" in the sense that its initiating program patterns its successive moves in processing information. But the computer never behaves *for the sake of* this patterning (programming) because it has no capacity for transcendence and self-awareness. So, though machines surely follow out a logical progression, they do *not* reason in the same final-cause or telic manner that people do.

The key difference between the reasoning of the human being and the reasoning of the computing machine is the fact that humans employ a *dialectical* as well as a *demonstrative* logic. By demonstrative logic is meant the classical, Aristotelian form of analysis in which we strive to begin reasoning in primary and true premises and avoid making missteps in our deductions to conclusions. The law of contradiction (i.e., A is not non-A) holds in demonstrative logic. However, there is a way of discussing logic that encompasses a bipolar, "thinking in opposites" form of reasoning known as dialectical logic (Rychlak, 1976). Framed in terms of formal causation, we might say that some patterns in nature suggest *bipolar* meanings. Indeed, if we look at the lion's share of personality descriptions in our empirical literature, we find this bipolarity rampant in dimensions such as introversion-extraversion, dominance-submission, repression-sensitization, person-situation, assimilation-accommodation, and so on. In LLT, the dialectical conception is employed to understand how the person both knows and does not know—or, knows but realizes transcendently that an alternative knowledge is always possible—at the same time.

This is what makes the logical reasoning process of having to "take a position" on life not only possible but absolutely necessary. The newborn infant is not in the Lockean position (Rychlak, 1981a, p. 274) of having experience "etched" upon its *tabula rasa* intellect, and then subsequently using these basic (efficiently-caused) etchings as mediators for later "interac-

tions" with the environment in the way that modern learning/cognitive theories contend. The newborn infant is in the Kantian position (Rychlak, 1981a, p. 278) of having to *predicate* or *premise* from the outset of life, based on affective preferences initially and then subsequently bringing to bear what the existentialists call world views, or the constructive alternativist calls personal constructs (refer above). It is dialectical intelligence which makes *transcendence* and *self-reflexivity* possible in human mentation. In the place of the Cartesian "I think, therefore I am" LLT offers "I think, and realize that I could be [dialectically] thinking otherwise, therefore I exist." The infant takes time to learn of his or her role as an agent in the predicational process. We begin life as credulous and even gullible organisms, accepting the evidence of our senses and the opinions of others (parents, etc.) without question. In time, however, as we transcend the course of events and begin to experience doubts concerning the validity of our senses or the opinions of others, we begin to learn about our own agency as predicators of what will be known, understood, and believed in. It is this telic quality of the human experience which machine models will never—even in principle—be able to capture (see Weizenbaum, 1976, p. 203, on this very point).

3. *How can you argue that a formal- and final-cause explanation is a scientific explanation? Other sciences do not use such meanings to explain things, do they? Why then should we?*

There is great misunderstanding among psychologists concerning the actual role of formal causation in the explanations of science. It would not be incorrect to state that formal causation is now and always has been "the" basic causal meaning employed to account for things. Just before the birth of modern science, in the late 15th century, scholars at Padua University in northern Italy debated whether or not concepts like "force" were to be understood in a formal- or efficient-cause sense (Randall, 1940, p. 182). Galileo subsequently took a middle position on this question. However, Galileo was above all a mathematician, and as the "language of science" we must not forget that mathematics is reducible to logic—a discipline which employs formal causation to the exclusion of material and/or efficient causation.

Indeed, when Dirichlet refined the Leibnizian "function" construct, specifying what the independent and dependent variables meant, he did so exclusively in the sense of formal causation (Eves, 1969, p. 371). The meaningful relationship between independent and dependent variables was a patterned ratio, so that the mathematician assigned one value (*X* variable) "at will" and the other value (*Y* variable) was immediately determined "by (ratio) definition." Unfortunately, the wedding of mathematical statistics to experimental manipulation led to a confusion between the efficient-cause controls of the defined variables in the experimental design, and their resultant statistical relationship as *literally* observed. The tough-minded psychologists of the early

20th century thought that they were actually seeing antecedent-consequent sequences of efficient causation functioning in material reality as what Spence (1956) was to call "S-R laws" (p. 17) of behavior. These efficient-cause sequences were, according to Spence, *more basic* (Spence, 1956, p. 9) representatives of experience than simply a patterned correlational relationship of the R-R variety. The upshot is, psychology has always assumed that it is the material/efficient cause "reality" which is basic and the resultant patterns to be seen in events are secondary phenomena which must be "reduced to" these more fundamental determinants.

In the meantime, modern physical science has reinforced the primacy of formal causality in scientific explanation. At the turn of the present century, Ernst Mach was already suggesting that efficient causation would simply not suffice as a basic principle of explanation in physics. Mach placed formal causation at the level of a basic description when he insisted that all causes in physics are essentially correlational patterns (Bradley, 1971, p. 44). Later, when Niels Bohr (1934) advanced his "stationary state" (p. 108) theory, he specifically denied that an efficient-cause "tracing of atomic processes" (p. 100) would *ever* be possible. Each perceptible state or *pattern* of electrons moving in orbits around the nucleus of an atom was to be taken as a basic item of knowledge for the length of its existence, even though such patterning changed from state to state over time. No reduction of formal to efficient or material causation was possible in this instance—not even in principle. Werner Heisenberg, who was inspired to a comparable view by the reading of Plato's *Timaeus*, in which the role of formal causation in knowledge attainment is highlighted, found no difficulty in accepting Bohr's analysis (Feuer, 1974, p. 166). And as for Einstein's theory of relativity, Capra (1975) has this to say: "The fact that the mass of a particle is equivalent to a certain amount of energy means that the particle can no longer be seen as a static object, but has to be conceived as a dynamic *pattern* [*italics added*], a process involving the energy which manifests itself as the particle's mass" (p. 77).

It hardly seems necessary to document further the significant role which formal causation has played in scientific description. Final causation is also to be seen in modern science, but in a less direct manner. That is, rather than assigning final causation to the universe, or to physical reality *per se*, modern science has learned to live with the fact that the scientist *qua* human being comes to know things based on the theoretical viewpoint for the sake of which "reality" is framed. There is no single, basic reality to which all things can be reduced. Early physical theory was written from an extraspective or third-person perspective, in which the account could be said to describe the nature of "that" or "it"—things "over there" (see Rychlak, 1981a, p. 27). This was well suited to an efficient-cause reductionism. Though the early critics of teleology in scientific description like Sir Francis Bacon (1952, p. 44) may have rejected the final cause in descriptions of muscle and bone, they did not

dismiss it when they considered their own reasoning capacities as human beings. Thus, Bacon included both formal and final causation in his characterization of metaphysical analysis—an activity of what today would be called the “higher mental processes.” In the latter instance, Bacon was describing things from the introspective or first-person theoretical perspective of an “I” or “Me” who brings ideas to bear “over here” as an identity (Rychlak, 1981a, p. 27).

Introspective description did not intrude on “natural” physical science until the rise of modern physics in this century. Not only was it found that the same datum (such as light) could be understood in more than one sense (wave or particle) without requiring a resolution, but two “basic” descriptions of the same reality could hold, as in the case of Einstein’s and Whitehead’s theories of gravity. Each of the latter theories predicted certain natural phenomena equally well, even though they were based upon diverse philosophical positions, theoretical formulations, and mathematical devices (Palter, 1956). The theories also generated contradictory predictions, but these were very difficult to test and would not necessarily resolve the question of which theory is “the” correct one in any case. Recognitions of this sort suggest that the nature of human theorizing or thinking (who can separate these two?) involves the taking on of assumptions or affirming premises in a way that is designed to align as meaningfully with experience (“reality”) as possible. The observer becomes as important to the total configuration of knowledge in modern physics as the independent source of data under observation (Capra, 1975, p. 81). Indeed, the observer is a creative conceptualizer of these data, who can never be separated from their meaning.

It is in this latter sense that we begin to see the need of telic description in the physical sciences—to account for the human being known as a “scientist” who generates the knowledge we call “scientific.” Scientists are shown to be human beings behaving “for the sake of” presumptive meanings which in turn order, pattern, or make meaningful that which they observe and attempt to explain. Kuhn’s (1970) description of the paradigm is merely an extension of this insight. The paradigm is a premising (formal-cause) meaning which, when affirmed as a “that” for the sake of which (final-cause) understanding will be framed by the person, *necessarily* brings about a description of the observed “data” in kind. Logical learning theory refers to the premising meaning as a precedent. A *precedent meaning* is therefore one that goes before others in logical order or arrangement (i.e., *sans* time considerations), and establishes the nature of meanings which follow or extend from it through such psychological processes as induction, deduction, inference, the drawing of conclusions, and so forth. The flow of meaning here is sequacious or logically necessary. A *sequacious meaning* is one that follows or flows from the meanings of precedents (*sans* time considerations), extending these in a necessary way so that patterns of meaning occurring later in an order or arrangement—e.g.,

over a course of learning something—are always dependent upon the patterns of meaning which have gone before.

As evidence for this view we have shown that subjects who (*precedently*) premise a learning task, the materials to be learned (words, pictures, etc.), and themselves as personalities, in an affectively positive way, tend to extend meaning more readily (*sequaciously*) along a positive (liked) than a negative (disliked) course of learning (Rychlak, 1966; Rychlak, Galster, and McFarland, 1972; Rychlak, Tasto, Andrews, and Ellis, 1973; Rychlak and Tobin, 1971). Such subjects will tend to “acquire”—extend predicated meaning to—more positive than negative items in the task facing them. On the other hand, subjects who (*precedently*) premise the task, materials to be learned, and themselves as personalities in an affectively negative way, will (*sequaciously*) place more emphasis on the negative aspects of the learnable items (August, Rychlak, and Felker, 1975; Rychlak, Carlsen, and Dunning, 1974; Rychlak, McKee, Schneider, and Abramson, 1971). In this case it is not unusual for the subject to “acquire”—extend predicated meaning to—more negative than positive items. According to LLT, the precedent-sequacious extension follows a formal/final-cause course of “behavior” and cannot itself be reduced to underlying material/efficient-causes. In line with physical science, we take the former causal meaning to be basic and irreducible.

4. *Is it absolutely necessary for you to introduce uninterpretable jargon and neologisms? Are terms like precedent/sequacious descriptive of a process or merely pretentious allusions to some vague notion that you would like to believe in? How can a precedent meaning lead necessarily to a sequacious meaning if the former is not (efficiently) causing the latter to happen?*

As noted in the introduction, LLT has suffered under the onus of framing new terminology, and colleagues are understandably put off by the “strange sounding” concepts which seem to have been resurrected from hoary philosophy texts. But a moment’s reflection will surely establish that there is a clear difference in meaning between the basic terminology of LLT and current mediational models of learning such as the S-R or cognitive (input-output) models, whereas the extent of difference between the latter types of models is minimal. Antecedents impelling or triggering consequents demand a time dimension along which to be clocked in extraspective fashion, but the precedent-sequacious line of behavior is entirely outside of time and can only be understood through an introspective theoretical perspective. The stimulus is an antecedent, but the premise is a precedent. Premises do not impel the deductions which logically flow from them, nor do they trigger a release of stored information leading to a conclusion. Premises are part-and-parcel of the entire line of meaning-extension which falls into a pattern, given only that their framing organization is affirmed. We have to “look through” the person’s introspectively framing meanings to understand the behavior which is manifested, given these precedents.

And so it was that after trying fruitlessly for a decade to express a precedent-sequacious course of meaning-extension in stimulus-response or input-output terminology (with mediational, feedback elaborations of various types), we finally took the steps required to *say what we meant*. In effect, we were called upon to predicate new precedent terminology which would extend sequaciously the telic theoretical meanings intended; we could also express this as the former (precedents) *subsuming* the latter (sequacious derivatives) without distortion. The example of Dollard and Miller (refer above) had convinced us that it was impossible *in principle* for traditional "basic" learning theories or cognitive theories to meet our theoretical requirements. We were in the presence of a full-blown Kuhnian anomaly and therefore had to frame our own terminology or continue to be subsumed by inappropriate precedents. Hence, rather than continuing to equate "behavior" with responsivity or output we began to speak of *telosponsivity* as a legitimate behavioral alternative. The telosponse construct merely summarizes the precedent-sequacious course of meaning-extension as follows:

To *telospond* involves taking on (premissing, predicating) meaningful items (e.g., images, language terms, judgments, etc.) relating to a referent acting as a purpose for the sake of which behavior is then intended.

This is LLT's final-cause construct to be placed alongside the mechanist's efficient-cause conceptions of stimulus-response or input-output. To *telospond* is to behave "for the sake of" rather than "in response to." All of the personality conceptions mentioned above—life plan, world design, phenomenal field, personal construct, etc.—are more readily subsumed by *telosponsivity* than by *responsivity*! The term *purpose* relates primarily to formal causation whereas intentionality is more clearly a final-cause conception. Thus, in LLT we view the purpose as the meaning of a concept, whereas the intention arises when an organism behaves for the sake of such meaningful patterns. For example, a pencil is a practical tool devised by humans for their use. The pencil serves a purpose. but the pencil *qua* pencil knows no purpose for it cannot intend this meaning. It is the human being, acting *telosponsively*, who behaves for the sake of this known purposive meaning and thereby *intends* it to come about by drafting a written message.

Question 4 asks how it is possible for a precedent pattern (logos, meaning, etc.) to be extended sequaciously without efficient causation. In order to describe such a patterned extension, we require a principle of explanation which allows us to say that various patterns interlace as partial or total identities both "within time" (concurrently) or "across time" (sequentially). The principle of *tautology* permits us to do precisely this, and advocates of LLT have relied upon this precedent to (sequaciously) develop explanations of human behavior in sharp contrast to the explanations which extend from the principles of frequency and contiguity (Rychlak, 1977, pp. 277-290). A

tautology is a patterned relationship of *identity* between items (things, words, outlines, arguments, numerical values, shapes, etc.); this relationship is not created by antecedents thrusting consequents along, but obtains when the patterns related meaningfully fall into line as "more or less" identical. A relation of *partial* identity is what we mean by analogy, metaphor, allegory, synecdoche, and so forth.

The common tendency in psychology to view tautology as redundant or empty repetition of information overlooks the fact that mathematical assumptions ranging from the central limit theorem to F - and t -ratios rest upon tautological (formal-cause) meanings. Indeed, Bertrand Russell (1919) has specifically noted how human reason can grasp logico-mathematical regularities (proofs) only because of a capacity to see tautological identity in such orders as well as the reverse—that is, the lack of identity (pp. 204-205). Dialectical overtones are obvious here. Rigorous psychologists today who make use of quantitative measures learn whether they have found something other than a redundancy of "no difference" in the relational ties of an F -test carried out on their data. But the experimental subjects under observation are said to learn exclusively on the basis of a frequency thesis or a principle of contiguity (see Question 2). We therefore have at least two theories of learning being advanced in most empirical researches, and no one currently acknowledges the principle of tautology which surely enters into at least one of them. The *pattern* which is the F -ratio is "there" once a researcher calls his or her study "finished." It takes time to perform the calculations in order to bring this (formal-cause) pattern out, as a numerical value. But the statistical computation does not itself (efficiently) "cause" the ratio to emerge. Once again, we have the primacy of formal causation being reflected (see Question 3).

Extending this line of argument to human mentation, the person may be said to rely upon the material-cause substances of a central nervous system, or on some as yet undetermined electrical sequence of moving signals to "reason" to this or that conclusion. But in so reasoning, what is *basic*: the mechanisms "producing" the physical event called the idea, point of view, encoded message, inference, conclusion, etc., or the *patterning* of meaning which is clarified by the biological instrumentality, but already ensconced in the circumstances of life? After almost 40 years in the study of brain stimulation, Wilder Penfield (1975) concluded that "the mind . . . is not to be accounted for by any neuronal mechanism that I can discover" (p. 54). Could it be that the biological mechanisms of the brain are in the service of an *even more basic* pattern of meaning, and that they work mechanically (material/efficient causation) to place the reasoning intelligence into a certain relationship with the many alternative meanings (formal/final causation) open for possible affirmation in life? If a dialectical pattern of meaning is also tautologically related through oppositionality in which one pole *literally defines* (means) the other (good-bad, up-down, like-dislike, etc.), then we have a rationale for

understanding a *non-reductive* and *non-dualistic* mental reasoning process.

Reasoning is not being mechanically pushed or summated "from below" by bio-chemical forces, but being affirmed or decided "from above" thanks to the necessity of having to take a position on life's continually arising alternative (prospective) patterns (see Question 2). The principle of tautology permits us to bring the *duality* of dialectical oppositionality into the singularity of *identity*. The person can, in certain instances, see, know, or understand what is *not* seen, known, or understood thanks to the tautological tie of dialectically bipolar meanings (see Rychlak, 1977, pp. 277-290 and pp. 307-310). Behavior we literally observe in others and judge to be "bad" or "wrong" can teach us to behave in a way we have never observed but judge to be "good" or "right" through imagined oppositionality.

Skinner (1974) has observed that "All sciences simplify . . ." (p. 231) in propounding knowledge, but he failed to enlarge on what this process of simplification involves—implying that it was solely a matter of reductive explanation. Actually, the simplification achieved can be seen to parallel the scientist's very human capacity to grasp identities which obtain across seemingly disparate events. For example, Hooke tautologized between the concepts of sound and light, attributing thereby the known wave properties of the former to the latter as an hypothesis (Wightman, 1951, p. 130). This led to speculations of an ether, which would presumably undulate and thereby bring about the waves of light in material/efficient-cause fashion. Maxwell's theorizing was based upon an equation of electricity with magnetism (Wightman, 1951, p. 313). Hertz then did experiments to prove his contention that there was an "identity of light, radiant heat, and electromagnetic wave action" (Wightman, 1951, p. 315). Even Stahl's discredited phlogiston theory rested upon a commonsensical equation drawn between the giving off of a fiery substance by a burning body and the burning of a candle or the calcination of a metal (Wightman, 1951, pp. 180-183). The conservation of energy principle in science can be viewed as a grand tautology in which there is a fixed constant without change (Wightman, 1951, p. 279). It is fascinating to observe in Einstein's theoretical development a definite series of tautological extensions, identifying matter as energy (Kondo, 1969, p. 45), inertia as gravity (pp. 69-70), and gravity as curved space (p. 78).

Logical learning theory looks introspectively through the "conceptual eyes" of the scientist, who, as Kelly's personally construing or Binswanger's world designing human being, frames a precedent meaning and then brings it forward sequaciously thanks to a fundamentally tautological reasoning capacity. In this sense, human beings are capable of learning only by way of that which they already know, through extensions, analogies, or reasoning dialectically from one side of a conception to the other. Mentation "lends meaning to" experience rather than "takes meaning from" experience, although it goes without saying that the patterned forms of experience have an existence of

their own. We take the Kantian position of "critical realism" in LLT. Hence, in order to learn (induct, deduct, encode, and so on) the person must extend meaning from a grounding premise brought to bear at a *protopoint* as a belief, conviction, hunch, abstraction, paradigm, and so forth—to what can then be known. Dialectical mentation enables this process to take steps away from the given and known to the unknown, but such steps are nevertheless oppositionally grounded contents of mind. Learning what something "is not" suggests through oppositional implication what it "is" like, and *vice versa*.

The principle of tautology can also be seen at play in the formation of selfhood. Things may change around us, we may grow wrinkled and gray, yet a kernel of self-identity is tautologized across such ravages of time to reassure us that we are the same person as always. Doubtless self-identities are buttressed by group identities, so that people extend themselves tautologically to others who they identify as in "the same" family, country, social class, religion, political party, and so on. The tautological principle is also reflected in language formation, where words are seen to extend some earlier meaning—exactly, or through partial identities (analogously, metaphorically, or "symbolically"). We use the word *attic* in the present due to the fact that earlier human beings had analogized to a certain style of architecture favored by the residents of Attica in ancient Greece. The roof structure we name today is "Attica-like" or identical (in part) to what the people in Attica had constructed. Most words originate in this intentional fashion, only to have the etymological roots lost to succeeding generations.

We might note at this point that there are critics of mechanism who have rejected causation theory altogether, calling instead for behavior to be described on the basis of *reasons* (see, e.g., Buss, 1978). It should be understood that a "reason" is simply another term for formal/final causation. When a person behaves for a reason he or she is behaving "for the sake of" a "that"—purpose, scenario, plan, belief, etc.—which presumably directs intentional behavior in the precedent-sequacious sense of telosponsivity. Hence, when critics speak of *acausal* description they are directing their attack on the material and especially the efficient cause. Advocates of LLT do not want to dismiss material or efficient causation in human description. We hold that such traditional conceptions are necessary to an understanding of human behavior. We simply reject the thesis that they are sufficient to such an understanding.

Those who would call the handful of new terms employed by LLT a jargon must ask themselves whether they are doing so following an honest effort to understand why these innovations have been advanced. Without such examination, claims of this sort are probably nothing more than expressions of allegiance for the reigning paradigm. To the teleologist, explanations of behavior as due to inputs, which have been stored, retrieved, output and feedback are readily characterized as reflecting a jargonese. But we do not advance our

science by smugly dismissing terminology in this manner, setting up barriers to communication across paradigmatic differences from the outset. Possibly the difficulty involved in accepting new terminology stems from psychology's long-standing commitment to empirical investigation. After all, we can observe the person in our experiments walking and talking hence "responding" to provide us with dependent-variable measurements. But who has ever seen a telosponse, much less captured it in such measurements? This naive (tautological) equation of the methodological context with the theoretical context takes us into another area which the advocates of LLT have analyzed, and, another question.

5. *Since you admit that the logic of science is flawed by the affirming-the-consequent fallacy, why do you even bother trying to prove LLT empirically? Empirical data are always so much easier to interpret through other than LLT explanations that it seems a waste of time for you to do research. You have to make your case discursively not empirically.*

This question has been leveled several times, in one form or another, after we have underscored the built-in limitation of scientific method known technically as "affirming the consequent" of an *If-then* line of syllogistic reasoning. Thus, to say "*If my theory is valid then my data will array as I predict*" is parallel to the major premise of the well-known syllogism: "*If a person then a mortal being.*" In the latter statement (patterned meaning), "person" is called the antecedent term and "mortal being" is the consequent term. If we in due course find that "My data array as I predicted" this is akin to affirming [the consequent term] "This is a mortal being." Are we to conclude thereby that "My theory is necessarily valid?" This would be no more correct than concluding "This is necessarily a person." As there are other possible mortal beings than persons there are other possible theories about our observed data than the one we employed in designing the experiment to generate these data. This has been a routinely accepted tenet in physics since at least Ernst Mach's writings at the close of the 19th century (Bradley, 1971, see especially p. 83).

The reason we advance such arguments is not to detract from scientific method, but to highlight the fact that there are and always will be two basic sides to the scientific enterprise—i.e., the theoretical and the methodological. When it is suggested that alternatives to LLT are readily available in any empirical array of data, what is usually being suggested is that by confounding the independent variable "to" dependent variable or "IV-DV" sequence of *method* with the stimulus-response or input-output sequence of a *theoretical* account, the reviewer of any study done on LLT can dismiss perfectly good evidence to "see" only S-R or cybernetic "proofs" (*sic*) in our data. Even if the reviewer accepts the fact that alternative theories are possible the attitude may prevail of "The data do not lend themselves 'easily' to the theory espoused, so one remains unconvinced." In the researches cited above (Question 3), the

independent variable (IV) is a subject's affective assessment of the materials to be learned, recognized, or recalled. In order to keep a clear distinction between the theoretical construct of affection and our methodological efforts to validate LLT, we have termed this rating of like vs. dislike *reinforcement value* (RV). Reinforcement value is the operationalized measure (method) of affective assessment (theory). The dependent variable (DV) is the relative rate of learning across levels of positive and negative RV.

There is an assumption being made in these RV studies which holds that when a subject assesses a task, the words to be learned in a task, and himself or herself as a personality, these are genuine telosponses (i.e., affective assessment is a special instance of the telosponse). Although the experimenter may array lists of words for the subject to learn, some of which are positive and others negative in RV, this is not to detract from the fact that it is the subject who has delineated the nature of the IV from the outset. In other words, the subject is just as much *in control* of the IV at this point as the experimenter. The subject's "behavior" comes into play at both the IV and DV ends of the IV-DV tandem.

In contrast, traditional learning/cognitive theories applied to the IV-DV format have it that the IV measure is *itself* determined by the so-called stimulus value or habitual encoding of the input at the point of a subject's contact with the item being measured as the IV. A subject asked to rate a series of words for RV (like vs. dislike) would *not* be telosponding in this interpretation, but responding to the "stimulus" words *per se*, which have through previous incidence (frequency) of contact (contiguity) with the subject formed a mediational system that is triggered (efficient cause) by the experimental instructions to rate the words. This is a purely theoretical assumption, of course, but it has become so ingrained in the minds of psychologists that they assume this to be a fact no longer in dispute. It is the easy equation (tautological identification) of the IV-DV *method* and the S-R or input-output *theory* which undoubtedly serves to underwrite this theoretical assurance. The upshot is that once again we have a confrontation between the efficient-cause reductionism of classical Newtonian science, as reflected in S-R and input-output formulations, and the formal-cause arguments of the newer science, as reflected in the tenets of LLT. Unfortunately for LLT advocates, most of the gatekeepers in modern psychology are inclined to Newtonianism. Hence, they look at the IV-DV sequence of an LLT study and reason as follows: "Well, since antecedents have been shown here to relate to consequents, traditional explanations of an S-R or information-processing nature are more compelling than the high-flown explanations of LLT." They are not required to think any further, because their efficient-cause theory meshes marvelously with the efficient-cause method which we all use in controlling and predicting behavior during validation (see Rychlak, 1981a, p. 77).

But even if the critic of LLT were not simply confounding method with

theory, and had a well-reasoned alternative explanation of the experimental findings, this still would be insufficient grounds on which to dismiss the theory that generated the experiment in the first place. Why do we say this? Because as the affirming-the-consequent limitation on scientific method makes clear, it will *always be possible to propose an alternative to any IV-DV fact pattern!* If manuscript reviewers are going to begin rejecting submissions because they can frame explanations of the reported findings through traditional constructs, then we may just as well close shop because our profession will no longer be a science but a political ideology. And a practice of this sort can be judged as nothing short of political repression.

Given that we cannot use empirical evidence alone to base our decision on which theory to follow in our psychological science, how then do we choose among the alternatives open to us—assuming, of course, that these alternatives stand up equally well to the preponderance of the data testing them? In the final analysis, it is always a telic consideration which provides the grounds for our decision—that is, the *purpose* which the theory is framed to serve. What are we interested in studying? Knowing our purpose, and intending that we further this end, we will have clear grounds for the selection of a theory which has already met the tests of validation. Additionally, we would then be expected to frame experiments carrying forward the implications of this theory, working to put our ideas to test even as we recognize the alternative theory which might cast our findings in a comparable light. We would never, as proper scientists, rest with a theory that has been grounded exclusively in procedural evidence (Rychlak, 1981a, p. 75). This means that we conduct experiments to validate our theoretical expectations *for ourselves*. Not every alternative theory will “handle” the findings we arrive at equally well. How well are things hanging together for us, and for those who follow our line of thought? As the developments in modern physical science have surely taught us, we are not required to seek much less conform to a unified descriptive scheme. Science is a methodological affair, an approach to proof and *not* an ideology framed to limit theoretical speculation and understanding.

It rarely occurs to the critic of LLT that Question 5 “works both ways.” Looked at from the perspectives of LLT, “reinforcement,” the foundation construct of traditional learning theories, has certainly not fared well in recent years. As Brewer’s (1974) stunning indictment of current reinforcement theories documents, fully 90% of the evidence to date suggests that *only* when a subject is cognizant of the *patterned* relationship between the unconditioned and conditioned stimuli in classical conditioning, or between the operant response and the contingent circumstances in instrumental conditioning, and is *willing to comply* with what they portend, does so-called conditioning “show up” in the experimental results. We feel it is easier to subsume these pervasive findings by the tenets of LLT than by the traditional explanations of classical or operant conditioning theories. Subjects are being shown to *intentionally* con-

tribute as much to the resultant data patterns of an experiment as the experimenter who designs the empirical test in the first place. Subjects have their hands on the IV just as firmly as does the experimenter, and the resulting functional tie to the DV obviously tracks more than efficient causation. It is more a matter of cooperation or conformity than one of manipulation, as the traditionalists would have us believe.

Just as scientists have their (precedent) paradigms, subjects have their "response sets" or they make "attributions," or look for cues in the experimental design called "demand characteristics." Having affirmed what they take to be—rightly or wrongly (Orne, 1962)—the purpose of the experiment, they act accordingly. A precedent-sequacious explanation of subject behavior in *all* experiments today would not be askew from the reported facts. What makes this telic analysis all the more convincing is its concordance with descriptions of experimenter behavior. If experimenters design experiments, make assumptions about statistics, and draw conclusions in light of such reasonings, why should not the subjects in the experiments be thought of in such precedent-sequacious fashion—particularly when the "observed data" mesh so nicely with this theoretical outlook in the first place?

Question 5 does ring true to the extent that we must regularly, as in the present paper, step back from data collection to discuss our (precedent) assumptions. We do not think of this as a substitute for empirical data, of course. As noted in the introduction, this is merely a strategy aimed at getting colleagues to reconceptualize their roles as scientists. If we can show through parallels (tautologous extensions) with other sciences that LLT can be accepted without fear of violating "good" scientific practice, then hopefully our ideas will be taken more seriously (affectively assessed more positively!). Before acceptance or rejection can be properly arrived at the innovator requires that simple consideration be given to what is being contended, and the reasons for so contending. But it would be a great mistake for either friends or enemies to assume that LLT is a doctrine of refuge for those who would like to forego rigorous experimentation in favor of a talky-talk approach to personality study.

6. *Psychology has been defined as the science which "controls and predicts" behavior. You say that people are "free" agents. How can we remain a science and still believe that people are free to do as they please in behavior?*

It is probably a measure of the ease with which psychologists have founded their theories with their method that so many of them believe their professional role is *literally* to "control and predict" behavior. This phrase—control and prediction—is central to the scientific method of validation. We accrue validating evidence to the extent that we control circumstances, prescribing a succession of events beforehand which we have come to believe will test our theoretical proposition, predicting the course of this alignment as our experimental hypothesis (Rychlak, 1981a, p. 77). This telosponsive sequence

is flawed by the affirming-the-consequent problem (Question 5), but it nevertheless forces us to put our ideas "on the line" in an open, objective, and repeatable test of validity. We move from complete reliance on a coherence interpretation of truth (procedural evidence, common sense) to a reliance on a correspondence theory of truth in practicing the scientific method.

But there is nothing in scientific practice which demands that we literally control people's lives, nor must our predictions always come out exactly as expected. In fact, due to the logical flaw implicit in validating evidence, even when we have predicted behavior with 100% accuracy, this does *not* mean we necessarily understand why it is true that such accuracy in prediction obtains. Sir Isaac Newton once frankly admitted that, though his concept of gravity predicted real events marvelously well, he did not know very much about its actual nature (Wightman, 1951, p. 101). We can also make perfect predictions on the wrong assumptions, learning after the fact how our good fortune actually came about.

Assuming that we do learn through the control-and-prediction sequence of validation that people are more likely to buy a product in a brightly packaged container than a dull one, and we put this knowledge to use, precisely how are we "controlling" those who now reach for our attractive container? Have we somehow flipped the toggle switches of their mind, so that they "respond" as efficiently caused "effects" to our manipulative interventions? Or, have these telosponding organisms rendered an affective assessment, based on discernible aesthetic grounds, and made a choice which is best understood in a formal/final cause sense? It should be clear to even the novice in research methodology that the "observed data" cannot decide this question for us. Psychology merely takes the mechanistic alternative out of a Newtonian tradition of reductive explanation.

The status of personality scales is even more interesting to contemplate. There has been little or no discussion by personologists on this question of what might be called the psychology of test taking. Psychometrically oriented psychologists have eagerly assumed the guise of actuaries, seemingly content to debate the assumptions of a scaling device or the statistic used to analyze data in what is purely a *tracking* effort to increase predictability, even if this is achieved at the cost of psychological understanding. Scales which "predict behavior" are valued because of their actuarial qualities alone, without concern for how this predictability relates to a coherent picture of the human being who takes the test and then somehow manages to enact the behavior sampled, allowing thereby for a subsequent criterion measurement to which the test "score" predicts. We name a personality dimension, refine a handful of reliable scale items tailored to measure this conception, and then predict its role in "observed behavior" based ultimately on the tenets of sampling theory. Sampling theory is not exactly a theory of personality, for it provides the rationale for predictions of crop growth and changes in weather based on

an *identical* mathematical rationale. Surely there are noteworthy differences in what is being statistically traced as the “behaviors” of plants, cloud formations, and human beings. Hull (1937) would presumably not have agreed here, for he once quoted from Albert P. Weiss’ remarkable raindrop analogy, as follows:

We may start with the assumption that every drop of rain in some way or other gets to the ocean . . . Anthropomorphizing this condition we may say that it is the *purpose* of every drop of rain to get to the ocean. Of course, this only means that virtually every drop *does* get there eventually . . . Falling from the cloud it may strike the leaf of a tree, and drop from one leaf to another until it reaches the ground. From here it may pass under or on the surface of the soil to a rill, then to a brook, river, and finally to the sea. Each stage, each fall from one leaf to the next, may be designated as a *means* toward the final end, the sea . . . Human behavior is merely a complication of the same factors. (p. 2)

This anti-telic attitude rests on a reductive assumption in which underlying natural forces of a material/efficient cause nature are thought to move all events, animate or inanimate. Therefore, all we need concern ourselves with as psychological scientists is the measuring, sampling, and predicting of the course of such lawful sequential events. Although rarely expressed so concretely, this attitude is far from dead in current psychology. Not infrequently, actuarial personality psychologists fall back on a mediation theory in the style of Cattell (1950) or Eysenck (1956) to account for the behavior of their subjects. The claim is made—or at least implied—that scaling devices “sample” biological (genetic, etc.) factors and/or learned habits (traits, etc.) which influence the course of behavior in the present as “intervening variables” (note the theory-method confound here). By sampling such factors on the order of sampling chemical ingredients in the soil or atmospheric pressure points, we can anticipate what will “show up” in the person’s ongoing behavior just as we can predict crop growth and weather variations. Some psychologists avoid the issue altogether by claiming that they simply use tests for practical utility and take no real stand on why they may work in certain instances. The only trouble with a position of this sort is that the longer we avoid taking a clear theoretical stance on the psychology of test taking the more assuredly will our sampling theory come to serve as our personality theory—and yet there is no reason why this has to be the case.

If the actuarial psychologist confounds theory with method he or she may believe that in tracking an observed regularity methodologically an “S-R law” is being proven to exist (rather than an IV-DV law). From this perspective, since everything is lawfully tied to everything else, and sampling theory enables us to single out what goes (varies) with what, then making accurate predictions is simply capturing the reality of “nature in action,” and this requires no further analysis. The advocates of LLT reject this interpretation of the scientific process. It is entirely possible for sampling theory to “work” by tracking the Heraclitian *logos* in nature—i.e., the patterns of experience which

wind their way, one into another as we come at life daily—yet fail to address the dynamic *process* which occurs to make the patterns possible.

For example, the observed fact that a seated or standing man reaches upward to remove his hat cannot be “reduced” to explanations in terms of material/efficient causes alone. It is the pattern of where the head “is” in relation to the shoulders and arms that “determines” (formal-cause determination) the upward reach, as opposed to a reaching downward to adjust a shoelace. This entirely formal-cause feature of bodily pattern (shape) is a vital ingredient to any explanation of why it is that a man may “reach upward” in certain situations—situations of a “hat removal” variety. If we now consider the additional situations of an elevator or a Christian church, the probability of such “reaching upward” would doubtless increase accordingly. But is this pattern of observed and predictable behavior to be understood in terms of natural lawfulness akin to the raindrop’s “behavior,” or, do we not require an explanation in light of the final-cause meanings which subsume value conceptions such as conforming to social niceties and religious prescriptions? Given that we sample the behavior of other people inside and outside of churches it is possible for our “sampling theory” to predict the increasing likelihood of men reaching upward across such varying life circumstances, and yet *fail* to elucidate the dynamic process of a formal/final causal nature which truly accounts for the differences empirically sampled and predicted.

According to LLT, if we want to predict what people might do in any situation, we have to sample in some direct or indirect manner just how they personally (introspectively) premise the situation we have in mind. If the situation calls for aggressive action, and we know with certainty that our subject avoids confrontations with others, expressing the attitude that it is anxiety-provoking to have to force oneself on others, etc., it is unlikely that he or she would change premises in this situation; hence, we would expect the precedent non-aggressivity (low score) to extend sequaciously to the aggressive situation. The result would obviously be a so-called prediction of low probability for manifesting aggressive behavior. By asking this subject the right kinds of “objective” questions beforehand, or, by gleaning from the subject’s interpretations of a “projective” test item (inkblot, picture) the affection he or she has for certain behaviors in certain situations, we can extrapolate such an estimate given that our measuring instruments are reliably constructed.

Why do tests predict? Because they capitalize on the precedent-sequacious nature of telosponsivity. Even though several factors enter, the person is *always* creating the “criterion” behavior or the “dependent variable” measurement along which we array him or her in relation to others whom we have also measured. We are not sampling a genetic pool. We are not sampling a reinforcement history. It would be much easier to predict behavior if such delineable and non-dialectical aspects of behavior were being sampled. We are

sampling meanings (patterns) that have been wound into life premises for the sake of which people behave. The resultant observed behavior is an instrumentality brought about sequaciously thanks to the precedent affirmations of meanings tapped by the objective or projective instrument used. The problem of accurate test prediction therefore involves tapping the right premises for the right situation, and to find out which of these the subject truly would want to take on and further in his or her behavior.

Hence, rather than being an enemy to the "control and prediction" of behavior, LLT provides a clear ground for explaining the activities of the scientist who controls events and predicts the outcome. It provides an explanation for the subject, who must frame the experiment properly, with awareness, if it is to "work" as designed—e.g., the "reinforcement" conditions being brought to bear by the experimenter *a la* Brewer's critique (refer above, Question 5). Finally, LLT provides an explanation of how it is that tests predict observed behavior. It would probably be best if the terms "control" and "prediction" were limited to the methodological context. There can be no argument in this case, for all psychological scientists control and predict behavior. This evidential tie of validation binds all scientists together. But when we begin now making theoretical claims about how "best" to shape people's lives or how their behavior is supposedly the result of natural laws which direct all things (including raindrops) that trouble begins to develop. There is no contradiction between human agency and predictability. We sometimes forget that in the "free will" phraseology the second term refers to predictable, iron-clad determination that certain ends will come about (see Rychlak, 1980, for an analysis of free will concepts). This takes us to the last question.

7. I still fail to see what is so useless about mediational cognitive models of behavior. The cybernetic or information-processing model with its feedback mechanism is specifically aimed at the description of self-determination. Interactionist models of the person and situation are also modifying the "old line" behavioristic theory in this self-controlling direction. Why then are you so adamant in your rejection of these theoretical models?

It would appear that if reductionism in psychological explanation ever loses complete popularity, the feedback and interaction conceptions currently emerging from the wings will assume center stage in the psychological drama. They may have already stolen the show. Norbert Wiener (1954), the father of cybernetics, was the first to draw a parallel (need we mention "tautology"?) between the living individual and the machine based upon their mutual capacity to "control entropy [loss of pattern] through feedback" (p. 26). This idea of a self-controlling mechanism which directed the course of a machine merged beautifully with psychological mediational models dating back at least to Tolman (1967), although Goss (1961) has argued persuasively that the mediational conception was already implicit in Watsonian behavioristic the-

ory (p. 288). Feedback, of course, is the return of some of the output as new input, enabling the ongoing process to adapt and self-correct based upon what is continually occurring in "behavior." The term has been broadened through popular usage to include getting more information as new input from others—as when we say "I would like some feedback on this" before expressing an idea or initiating an action.

There are several reasons why LLT advocates have found it impossible to embrace cybernetic or information-processing conceptions. The most basic problem stems from the fact that these theories, which are in essence mathematical hence *logical* formulations (see Wiener's [1954, p. 154] comments to this effect), fail to recognize the existence of dialectical logic. Thinking machines employ only *demonstrative* logic, being unable in principle to transcend and construe an alternative *before* outputting a behavioral "step." They can never challenge their major premises (programs) in the way that LLT construes people as doing. Hence, to force this one-sided characterization onto descriptions of people is to commit a fundamental error which is simply non-negotiable.

This lack of reflexivity in cognitive/feedback models results in a completely extraspective description of behavior. The identity of the person remains essentially irrelevant, for what he or she "does" is precisely what the program setting the pseudo-premises dictates. There may be a formal-cause pattern in this extraspective account, but there is surely no final-cause pattern taking on or rejecting of the premised patterns (programs) by the machine. This is what Weizenbaum (1976) means when he says that: "Machines, when they operate properly, are not merely law-abiding; they are the embodiments of law" (p. 40). We have already touched on this issue in our discussion of Question 2, above. Whereas human beings approach the "law" (pattern, guiding purpose, etc.) in a *vis-a-vis* manner, realizing due to their dialectical intelligence that they may conform *or not*, the machine is never rent with the cognizance of what Kelly (1955) called a constructive alternative (p. 15). What is "thought" (i.e., calculated; see Weizenbaum, 1976) is *only* that which could be thought given the input circumstances. Of course, if the input frequency is inadequate to meet the circumstances "facing" the machine's calculations it may simply do nothing ("that does not compute").

Feedback is *literal control*. As an account of self-direction feedback misses completely what the person does in facing a decision. Feedback tells the organism or machine what has just taken place, so that in the next moment an adaptation can be made in the ongoing course of motion if a problem in literal behavior occurs. There is never any decision rendered "before the fact" of behavior. There is never any doubt or wavering in a machine intelligence (although, once again, failure to compute occurs). No machine would ever react-formate, "protest" too much, or be inclined to play a hunch against the drift of the informational input. Nor would a machine be capable of regret,

remorse, resentment, or similar reactions (some would say "emotions") which signify dissatisfaction over how things may have gone in a series of behaviors. It takes an intelligence which realizes that things might have gone another way to experience these latter reactions. Another way to express what we are now considering is to say that due to their demonstrative reasoning capacities, in which they always take their initiating programs as "primary and true" premises, machines fail to reason *arbitrarily*. They never do so!

Advocates of LLT believe that in order to qualify as a genuine teleology a theory must allow for the possibility of behavior to occur in an arbitrary fashion. The term arbitrary has been so identified with unreasonableness and caprice that one might erroneously believe it refers to unpremissed behavior. Yet what arbitrariness actually signifies is that the grounds for the sake of which behavior is teleologically responded have shifted. For example, after claiming that no partiality would be shown in hiring practices, an employer places on his payroll a clearly unqualified family member. This is an arbitrary move, in which the grounds of impartiality have been superseded by some unnamed "blood is thicker than water" assumption. To find the precedents of arbitrary actions may be difficult, particularly because they often have such subtle personal involvements, but they are present if we are privy to all of the thinking involved in an individual's actions.

We therefore find the feedback conception severely wanting as a tool for the description of human behavior, particularly when we think of "personality" or the style which behavior takes on. This conception does not alter the fact that all mediation models have yesterday's push acting as today's shove in the ongoing, efficient-cause sequence of stimulus or input leading to mediators (cue-producing responses, encoded information, etc.) that can be retained in memory (stored, retrieved, etc.) and flow out again as responses or output. In contrast to this style of description LLT construes the person as predicating (premissing) life. A predication is also a form of mediation, in that the content of the premise which is affirmed will establish precedently what will sequaciously occur overtly. But this is a telic view of the mediational process, and at present there is no other theory except LLT in psychology which advances this interpretation of behavior.

Bandura (1978) has helped to popularize the term (reciprocal) *interaction* as a concession to the fact that the person or person/behavior interacts with his or her environment to bring about a modicum of self-determination in events. It seems difficult to argue with this point of view, particularly since there is a way in which literally *everything* in existence can be said to be reciprocally determining everything else. Causal events are continually at play, interlacing one with another, and bringing about changes in a complex manner. But do we really answer anything by suggesting "behavior is a function of everything," or, do we merely state an extraspectively framed truism. It is the task of the scientist to frame positions within which this—essentially, *methodological*—

truism can be understood theoretically. What is the mechanism or process through which the continually shifting arrangements of reciprocal events take form? Is form basic to (the "cause" of) change, or is form always the result (the "effect") of change?

Bandura's (1979) concept of reciprocity subsumes not only the person's transcendental reasoning capacity, but also the inanimate actions of the environment and the behavioral instrumentalities of shaped behavior, all acting one against the others (Bandura, 1979, pp. 439-440). The closer we look at his conception, the more it seems to be just another rephrase of efficient causality. Thus, though Bandura acknowledges that infants "reciprocally influence their social environment from birth" (p. 440) he also believes that: "There is a difference between analyzing cognition as a contributing factor in the reciprocal determination of events and conceptualizing cognition as a psychic agent that orchestrates behavior. Understanding of how people exert some influence over their actions is more likely to be advanced by delineating and exploring the nature of self-regulatory mechanisms than by simply ascribing behavior to a psychic agent" (p. 440). This strikes the teleologist as giving something with one hand which is then taken back by the other.

Logical learning theory holds that the capacity to affectively assess (a special case of the telosponse) is *not* learned, anymore than the capacity to respond to stimuli or to input and encode information needs to be learned. These are foundation conceptions which reflect the image of humanity that various theories hold as precedent assumptions. According to LLT, telosponsivity makes learning possible rather than *vice versa*. If Bandura holds that infants can reciprocally influence their social environment from birth, so that no earlier input is involved acting as a mediator of this influence, why would this not be a true agency? We do not require a homunculus to say that the person is a contributing agent to the course of affective predication from birth. All we need do is to subsume transcendence and self-reflexivity by way of dialectical reasoning under our "person" construct to effect this style of description.

It is the dialectical construct which permits us to conceptualize how it is that the person can rise above (transcend) the unidirectional, demonstrative flow of efficient causality. *If the human being cannot reason dialectically then the telosponse is a superfluous construct!* Everything LLT contends about human behavior hinges on the precedent belief in dialectical meanings (patterns) and the oppositional reasoning this makes possible. We escape the pitfalls of a dualism and the vagueries of a homunculus theory by suggesting that the person is forced to "take a position on" life due to the *dualities in meaning* faced by the dialectical human intelligence. This is why, unlike the computer, the person's behavior is never lawfulness incarnate even though it is predictable (see Question 6). The person is in effect the creator of the law determining his or her behavior. It is the basic Heraclitian *logos* which the human awareness takes on, assumes, relates to, etc., as a "that" for the sake of which behavior is

intended that makes lawful behavioral regularities come alive in our experimental researches.

It is this formal-cause conception of a logos, a *basic* and irreducible factor in human behavior, which LLT seeks to understand. Put in more familiar terms, it is the *meaning* or *meaningful content* of premises which we examine in coming to understand human behavior. Much in life is forced into these premises by non-psychological, i.e., material/efficient-cause factors. A person standing in the rain is surely going to get wet. Physical illness saps the energy of the person no matter how much he or she may wish for strength and vitality. But the ways in which people frame the experiences of "being rained on" or "confronting illness" are *not* fixed in the material/efficient-cause substrate alone. The person, the premisser, the predicator is an essential ingredient—an agent—in this experience. This is how we interpret Penfield's (1975) conclusion that the human being's mind is best characterized as "the person" (p. 61), who writes the program for the brain to instrumentally coordinate as behavior unfolds. Penfield said the person did so out of purpose and interest, suggesting thereby that orchestrator of behavior which Bandura finds so offensive to proper scientific description. Though we do not accept Penfield's dualistic solution to the problem of mind, the advocates of LLT believe that he has the proper attitude for an understanding of human nature in this instance. We are prepared to insist upon a full and legitimate role for the agent or orchestrator in behavior.

Although this style of teleological theorizing may offend the scientific sensibilities of psychological colleagues, most of whom have been steeped in the traditions of Newtonianism, we who advocate LLT can take solace in the currency of our views. It seems clear that, rather than a throwback to medievalism, LLT is more concordant with the revolution going on in modern physical theory than any other school of thought now purporting to represent the science of psychology. Ironically, this very concordance makes LLT a Kuhnian anomaly in psychological science.

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