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RABKIN, R.
1976

SPACE AND TIME IN PSYCHIATRY

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Scientists proceed with a paradigm or model which allows them to collect data about many events which are expected to fit the model. As time goes by, more and more observations are made that do not quite fit, or can be made to fit the model only with great effort. Eventually these observations constitute a serious problem; the paradigm is abandoned, and a new one is adopted or an old one rediscovered. The cycle then begins again with the new paradigm.

In psychiatry and psychology the metaphors, paradigms, and models can be of various sorts and at differing levels of profundity. It is my thesis that ultimately the most fundamental models rely on certain conceptions of space and time, two of which I shall discuss in this paper. The older spatio-temporal paradigm will be called the Pythagorean-Platonic model and the newer and more generally accepted one will be called the Aristotlean-Newtonian. Starting with the Aristotlean model the paper will first describe its use in psychology, then I shall discuss certain difficulties that have arisen with the model, and finally I shall introduce the Pythagorean model as an alternative.

The Machine Paradigm

In dealing with the mind, the prevailing paradigm (the "dynamic" view) is essentially that of a machine, the particular type of machine being revised occasionally over the years. Thus the clock-work paradigm occasionally shifted to the thermodynamic paradigm, although the larger and more inclusive mechanical concepts

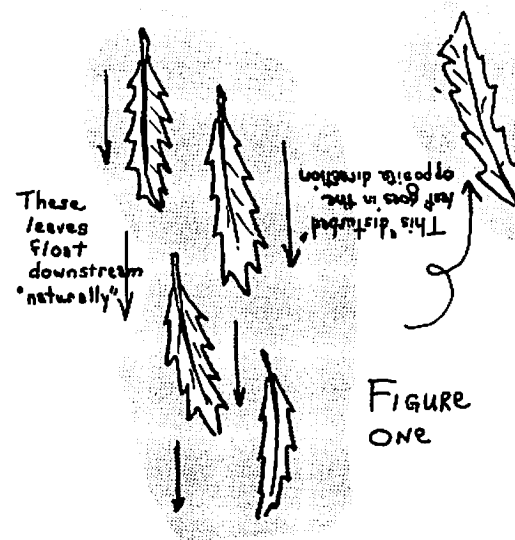
still prevailed. Even the computer model has been largely viewed as a "communication machine," as Levenson¹ has demonstrated. We have so incorporated this machine model, which is less like a metaphor or model to us and more like the very atmosphere in which we conduct our lives, that to some it appears strange to examine and to question it. Like the proverbial fish it is hard to be aware of the water. However, we are currently at one of those junctures in science when paradigms are beginning to be challenged. At such times it is possible to be more aware of the components of our paradigms. The machine paradigm seems composed of two elements: the idea of force and a concept of linear time.

Force as the Disturbance of the "Natural"

Metaphorically, when we look at an ordinary person, it is like looking at one of a group of leaves floating downstream. The leaf appears to be moving "on its own;" we can say that this movement is the path a "free" leaf takes. When suddenly this leaf starts to go off in an odd direction instead of taking the "free" path, we are puzzled by its behavior. We assume that something must have caused it, "forced" it, to behave so strangely, so contrary to how it would act if it had been "free" of that influence. Thus we say that it is *disturbed*. In the same manner we say that a person is *disturbed*. Yet as I shall show, we postulate the force because the inexplicable behavior of the leaf is *disturbing*. This change of emphasis from "disturbing" to "disturbed" is central to mechanical thought in psychiatry. It states, in effect, that there is a natural state or path which need not be explained. It is only the disturbance from that state that requires consideration.

Although "mechanical" and "dynamic" frequently carry connotations that suggest that the terms are wide apart in meaning, dynamics is that branch of mechanics which deals with forces acting on (disturbing) objects; psychodynamics refers specifically to forces and so-called objects usually located within us on some imaginary plane. In this paper I shall not be so concerned with the inner versus

¹Edgar A. Levenson, *The Fallacy of Understanding: An Inquiry into the Changing Structure of Psychoanalysis* (New York: Basic Books, 1972).



outer placement of the model as much as with the spatial concept itself.²

The origin of the force concept does not begin with the psychological use of dynamics but rather in physics. What we are using with reference to the person is basically a Newtonian idea. According to this notion, a particle moves in a straight line when left to itself (or doesn't move at all) and in our analogy a leaf moves consistently downstream (and a person conforms to a conventional life pattern). If the particle should deviate from its straight-line path or change speed, Newton assumed that a force was responsible. Psychodynamic theorists, in order to align the science they were attempting to construct with the then current models in physics, made an analogous assumption about the origins of behavioral changes in people.

Linear Time

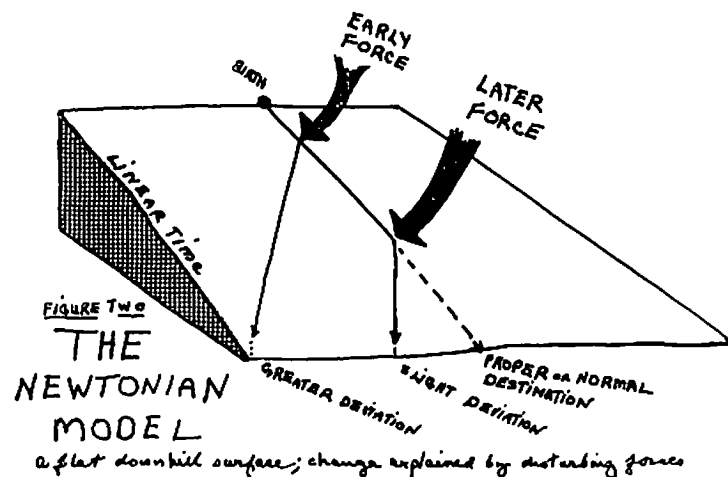
In dynamics we might say carelessly that the leaf, person or particle is disturbed, but it would be more accurate to say it "has

²Richard Rabkin, *Inner and Outer Space* (New York: Norton, 1970).

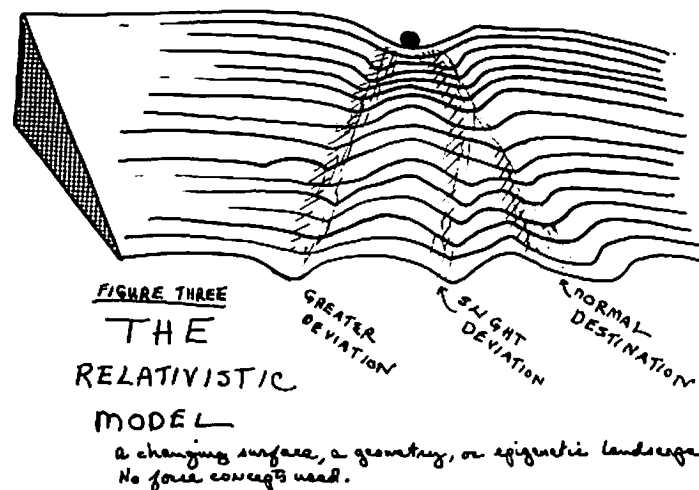
been disturbed." In the Newtonian model once a particle has been influenced, the new path that it takes will prevail, become the "natural" one, until there is yet another disturbance. The original force is an *initial event* which, once having influenced the subject, explains its current direction and speed. (The prime mover, the ultimate initial event, was an action of God.) Newtonian physicists did not ask why a particle should continue to move in a straight line, and historically psychologists did not ask why certain basic mental events occur or why people grow up the way they are supposed to be, for instance, why girls and boys act differently. It was sufficient to assert that they do and that furthermore, when they deviate from the expected, that an agent or force pushed or pulled to create the deviation.

It was assumed that major or long-lasting problems (deviations) were the result of earlier events which set in motion the person (or the particle in Newtonian physics) who then just continued on the changed course until observed at a later date far from where it was proper to be found. The degree of deviance from the expected was related to either the early origin of the disturbing force, which allowed for a greater cumulative error to develop, or to the magnitude of a more recent force creating a greater angle of deviance.

From the point of view of psychotherapy it became necessary, given this approach, to identify the initial "trauma," whether it was



something specific to the biography of the individual as Janet believed (one's horses running wild in the Bois de Bologne) or the history of the species as Freud would have it (the Oedipus Complex). However, as less and less overt trauma in the immediate past could be uncovered, the early history of the individual and the species came under intense investigation, sending several generations of psychotherapists scurrying back into the earliest past of both. This created an almost linear model.



Criticism of the Force Paradigm

About the time that force or dynamics became a powerful concept in psychology, criticism of the concept of force began to develop in physics. These critics felt that force, whether physical or psychological, is basically an anthropomorphic construct. A man-like agent (the force) is made responsible for variations from the expected. If it is impossible to account for a particular behavior, it is always possible to invent an agent to have been the cause of it, to have been the initial event. Mothers became acutely aware that they were likely to be cast as villains when their grown children entered psychotherapy. This, as the relativity physicist is fond of pointing out in the more general use of agents, is the easy way out. When the leaf in our ex-

ample takes a deviant course, and we look for a force to explain it, we are assuming that behind every deviation lies a well-defined other in the form of an agent or agency which does the dirty work. With such a concept we can also say that behind the first agent lies another and another, all the way back to original sin. There is something appealing in the simplicity and optimism inherent in this concept.

As an alternative some physicists began to critically re-examine the assumption that a free particle travels in a straight line which, it must be remembered, underlies both Newtonian dynamics and psychodynamics. In Euclidean space, which is usually the only geometry we are taught in school, a straight line is the shortest distance between two points; and it makes sense that an unencumbered or undisturbed particle would take that course on the way from one point to another. However, there are other geometries, the so-called non-Euclidean. For instance, in a certain space that resembles the surface of a sphere the shortest line between two points is assumed to be curved. This is somewhat like the representation of direct ocean ship routes when they are expressed on a flat map. They are curved lines, yet they are the most direct route.

The relativists made a crucial conceptual leap. They argued that any path a particle travels can be explained by the geometry of the space around it at that moment, not by the Newtonian initial force. It was assumed that in this "natural" space the trajectory of the free particle, whatever its shape or direction, is the shortest route *given that particular geometry*. In a sense, the particle comes by its own particular motion "honestly," whatever it is, since in this non-Euclidean space no initial force or agent is needed to blame or account for deviations from the straight line. The geometry alone is assumed to be responsible. The particle is not "disturbed" even if its path is "disturbing" to us.

Clinically the issue of a non-dynamic view is of great social significance. If a patient has a problem, symptom, or deviance which is the result of an agent or force, and if this agent has changed something within him, a part of him, then the patient must accept responsibility for that part of him that has been made sick or "disturbed" if only to the extent that he must accompany it to therapy. Freud went even further than this according to certain commentators, such as

Rieff,³ who believes that Freud abandoned the "impersonal" explanation of force and replaced it with the notion that the patient's character, his moral character, was ultimately responsible for his falling ill.

Other observers have argued that by our usual procedures we "blame the victim" even if we do so with benevolence.⁴ On the other hand, if we assume that a "well" person would follow the same course as our patient, given the same natural context or "geometry," then the patient is seen to come by his problems honestly. The alternative suggested by the relativists is a "there-but-for-the-grace-of-God" humility which many feel might be a welcome change from the arrogance currently displayed.

In the eyes of the relativist, force concepts are generated by the discrepancy between the natural and the assumed space to which we arbitrarily refer a particular behavior. In our assumed space, in our assumed context, force is necessary to account for the otherwise inexplicable deviation in the disturbing behavior of a particle or person. The relativist refers all such matters of the characteristics of the surrounding natural space and finds the introduction of a man-like force entirely superfluous. If we expect a particle or person to behave in a certain fashion, it is because we have imagined or assumed a particular circumstance (context or space) in which the behavior we expected should occur. However, if the particle or person does not behave as expected, there are two possibilities: the Aristotelean-Newtonian mechanical option is to postulate an initial event (a disturbing force or agent) that is responsible for the unexpected behavior. The relativistic option is to acknowledge that our contextual assumptions were inaccurate, requiring us to postulate a different framework for the event in question—geometry in the instance of the particle and social context in the case of the person.

The problem with the latter option, reconsidering the context, is that it is difficult to do within the prevailing Newtonian paradigm. It brings to light certain concepts which for centuries have been thought of as superstitious and non-scientific. Nevertheless a new

³Phillip Rieff, *Freud: The Mind of the Moralist* (New York: Viking, 1959).

⁴William Ryan, *Blaming the Victim* (New York: Vintage, 1971).

paradigm is developing, relativity physics being only one aspect of it. It is new only in the sense that it is new for us. When examined carefully, it seems to stem from thought that preceded the Aristotelean-Newtonian view.

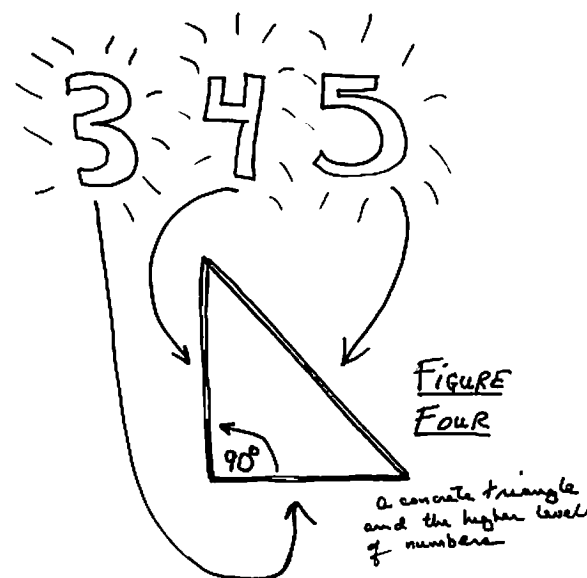
The Once and Future Paradigm

That a straight line is the shortest distance between two points is an illustration of a geometry which is assumed to hold everywhere, and hence it reflects the underlying assumption of a universe—that there is a set of rules that apply to everyone everywhere. As we have seen, this assumption which explains deviations from the universal rules with the concept of force has been challenged in physics. The result has been the rediscovery of thought that predated the concept of a universe.

Many centuries ago Pythagoras taught that there were two levels to reality. There was the level of the particular, the empirical, the concrete, and visible—the level on which force concepts seem to operate when, for example, one billiard ball hits another. And, in addition, Pythagoras taught that there was another level which was more abstract, invisible, and unlimited. Furthermore he believed that this other level was not chaotic but organized. For him mathematics was the study and discovery of this higher level and the rules by which the higher level generated the lower. In a sense he believed that there was a geometry, or rather a variety of geometries, that had to be understood in relationship to the actions of things on the empirical level.

The best current-day illustration of an abstract and invisible organization or system generating something specific in an analogous way to Pythagoras' concepts is not in mathematics or physics but in linguistics where one can say that a grammar generates specific utterances in that language. A grammar need not be written down; there are no grammarians acting like policemen to enforce its rules, yet each time we say a sentence we conform to the grammar's rules. The followers of Pythagoras exerted themselves to find mathematical "grammars." Like utterances of speech they felt that things as we know them are formed and behave in accordance to some overall design. With this conception the world of mathematical forms was seen as a higher, more important reality. For example, the triangle

with a right angle, which was important in building, had sides which were in the same proportion as the numbers 3, 4, 5.



Pythagoras relied heavily on the idea of rational numbers. "Numbers rule the world" was his motto. There are two directions that one can go with his ideas. One direction is toward the occult and numerology. This was certainly the case. Pythagoreans apparently thought that elements such as fire were determined by various geometric forms such as the tetrahedon, believed that the number ten was special, and prayed to the number four. All this is nonsense, of course, and has tended to be the source of current-day evaluations of Pythagorean thought. However, the Pythagorean doctrine that "things are numbers" was no fantastic analogy, but the reasoned conclusion of competent thinkers. If we abstract what is behind such thought as Plato seems to have done after studying Pythagorean doctrines, we arrive at what is the most promising alternative to the mechanical view.

Basically the Pythagorean point of view endorses the concept that "the environment," rather than initial disturbing forces, gener-

ates events and the concept that this environment is an abstract, non-empirical, non-particular, "invisible thing" which has independent existence. In the United States we now refer to this "environment" as a system and the theoretical point of view as "ecology," "systems theory," or the "holistic view." In Europe the environment has been called a "structure" and the theory, "structuralism." The defining characteristic is the concept of a "higher" order of reality. Plato's rhetoric distinguished between "appearances" (empirical reality) and "reality" (structures.)

Pythagorean thought, Platonic philosophy, systems theory, ecology, structuralism, and what was called relativity above in physics and psychiatry share three defining characteristics: a) the concept of an organized wholeness that is autonomous of its parts and ingredients (a set of rules, a geometry); b) self-regulatory processes (cybernetics); and c) a concept of how the higher level affects the lower level, of how the geometry influences us and how change takes place.

Invisible, Autonomous Wholes

This aspect of the paradigm has two parts. The first is simply that there are structures that are autonomous from their parts. Piaget puts the question this way:

The reader may ask here whether "structures" have real, objective existence or are only tools used by us to analyze reality. This problem is only a special case of a more general question: do relations have objective *independent* existence? Our answer will be that it is nearly impossible to understand and justify the validity of our knowledge without presupposing the existence of relations. But this answer implies that the word existence has to be taken to have a multiplicity of meanings.' (Italics mine)

Put another way, a grammar is not some abstraction that we invent to explain the rules of a language but it is assumed to have "independent existence," to be an "invisible thing."

The second aspect of the idea of autonomous wholes is that they are organized. Rather than assume that the "raw" state of nature is chaotic, that order is something introduced into chaos and imposed on it only to be worn down by time or friction from without

¹Jean Piaget, *Genetic Epistemology* (New York: Norton, 1971), Footnote, p. 23.

by some basic internal tendency to chaos, the paradigm assumes order as more fundamental. If relationships have independent existence, then chaos is not the natural state. The paradigm contradicts Hesiod, "At the very first chaos was created, and thereafter the broad-bosomed earth." Stafford Beer² in discussing this subject suggested that St. John might be a better text, "In the beginning was the Word (i.e. a grammar, a system.)"

Cybernetics

The area of "feedback" has received so much attention that it hardly needs to be discussed in detail. Perhaps the area least understood is what Maruyama³ calls the "second cybernetics" or "deviation-amplifying mutual causal processes." Basically this is the proposition that a small and in fact trivial deviation can start a vicious cycle which produces out of almost nothing a new object. This revises certain "sacred acts of causality." Particularly in psychiatry if one were to say that a condition such as a phobia originated from trivial events, there is likely to be incredulity, yet arguments are now being made to that effect.⁴ This approach is the opposite of the disturbing force notion which is basic to mechanical thought.

Saltology

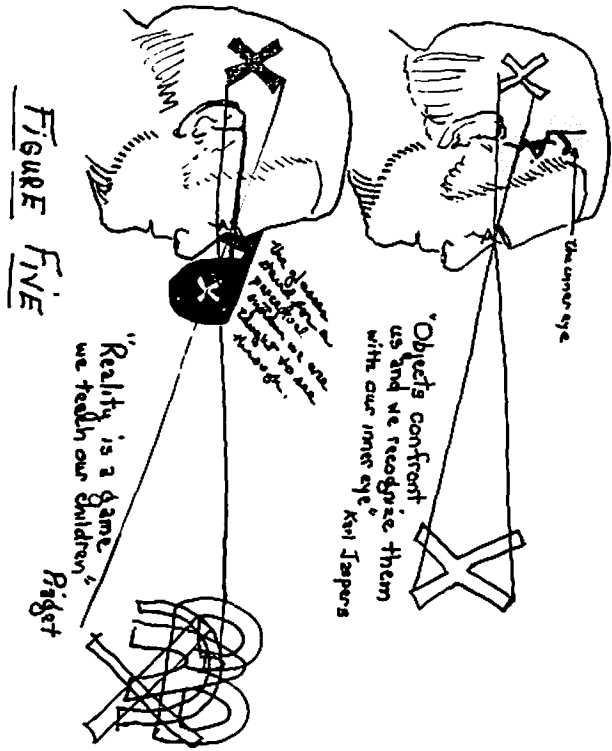
I have proposed that the study of the relationship between the more abstract or higher level and the surface, empirical world of "appearances"—between grammars and the languages they generate—be called "saltology." The word comes from the latin for "jump." The term has been chosen to bring together studies from many disciplines, ranging from physics to the study of creativity, because in most cases there is a discontinuous step function or jump from one state to another. Some of the topics of interest include re-thinking several old assumptions about perception, associationism, and change.

²Stafford Beers, "Below the Twilight Arch, A Mythology of Systems," *General Systems*, Volume V, 1960, pp. 9-20.

³Magorah Maruyama, "The Second Cybernetics: Deviation-Amplifying Mutual Causal Processes," *American Scientist*, Volume 51, 1963, pp. 164-179.

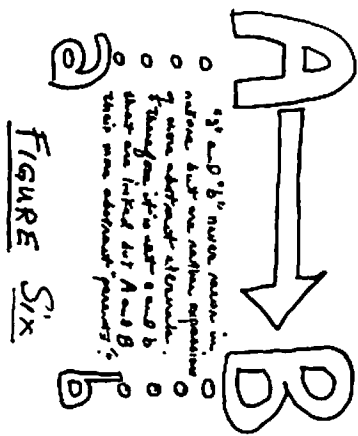
⁴Paul Watzlawick, John Weakland, and Richard Fisch, *Change* (New York: Norton, 1974), pp. 87-88.

Perception. One of the arguments that supports the Aristotelean view is that expressed by Karl Jaspers: "Objects confront us and we recognize them with our inner eye. Perceptions stand bodily before us. Ideas do so imaginatively."⁹ Hallucinations become almost impossible to explain in this framework.¹⁰ The alternative is that we "filter" what we see through our abstract theories or perceptual apparatus or systems. The reason why we see an object, X, is because we look at the world through certain "glasses" which have a built in tendency to see X's. Hallucinations become merely changes or differences in these glasses. Piaget summarized this idea by saying that reality is a game we teach our children not something out there that stands "bodily before us" and into which we must collide.



⁹Karl Jaspers, *General Psychopathology* (Chicago: University of Chicago Press, 1964), p. 35.
¹⁰Richard Rabkin, "Do You See Things That Aren't There? Construct Validity of the Concept 'Hallucination' ," *Origins and Mechanisms of Hallucination*, Wolfram Kunz, ed. (New York: Plenum Press, 1970), pp. 115-123.

Associationism. We speak frequently in such a fashion as to predispose us to believe that two surface elements are linked when, in fact, they are linked only through certain abstractions. For example, in a phobia we say that the rabbit is the stimulus for fear. However by "fear" we can mean any mixture of crying, yelling, running away, cringing, whimpering, and so forth. If fear can mean any one of these responses, then it is an abstract "thing" that generates a whole "language" of behavior. The stimulus is also not a particular rabbit, but a class of animals—probably not restricted to rabbits—and the stimulus, as we have mentioned in the previous section, is something that is filtered through an abstract perceptual apparatus. As another example, when a rat pushes a lever or a pigeon makes a Figure Eight, they produce that response even if they have to do so by changing the means by which they do it. The rat might move to the left or change paws to press the lever and the pigeon might place his feet, bob, and waddle differently each time depending upon other changes in the environment.¹¹ We are not dealing with epileptiform stereotyped behavior but behavior which is defined by certain abstract rules. It is not one specific Figure Eight but the "gestalt" that the pigeon learns. The rat learns the abstract "press the bar." Therefore, what is linked in these cases is not certain surface representatives. When we say that A and B are linked, we mean that two abstract, universals or deep structures are linked so that their surface expressions, which we can call A and B, are to be found in sequence.



¹¹William T. Powers, "Feedback: Beyond Behaviorism," *Science*, Volume 179, 1973, pp. 351-356.

Change of Change. Objects and systems as we know them are constantly changing but remaining the same. They are steady-states, constants which organize the flow of ingredients through them in terms of a maintained structure. A human bone has a flow of elements through it, yet it remains the same. In one meaning of the term, there is change, but of the kind represented by the French saying "Plus ça change, plus la même chose." However, there has always been another sense of what change means. If all objects are changing, then what the second meaning of the term refers to is change of this change. For example, the change from being phobic about a dog to being phobic about a bear might help a city-dweller to move around the streets, avoiding the zoo, but it is a different sort of change from being phobic to being "healthy." Interestingly Aristotle explicitly denied the possibility of change of change.¹²

Western language has a great deal of trouble expressing change in the structure of systems or change of change. That being the case, this sort of change can often be found by looking for phenomena that are expressed badly in our language, particularly that awkwardness which appears most commonly in the expression called a paradox. If we take "falling asleep" as an everyday example of the type of (total) systemic change under discussion, it can be expressed paradoxically: we *deliberately* go about *spontaneously* going to sleep. The paradox, of course, only makes itself felt for the insomniac. It is my contention that what is happening in this sort of achievement (falling asleep) is a change in the deep structure of a system, a change of change in an organic system. Examples can be found from interpersonal systems as well. "Falling" as in "falling asleep" is a common metaphor used to express the sudden onset of such changes: falling in love, falling into a hypnotic trance, falling into a mood, stumbling on a new idea, and so forth.

While it is hard to describe such changes in systems—sleep, humor, play, teasing, concept formation (insight), creative acts, hypnosis, mystical states of consciousness, method acting, psychotherapy, and psychosis in the sense of being driven crazy—these changes of change

¹²Aristotle, *Physica*, Book v/2 (225^b 14-16), R. P. Hardie and R. K. Gaye, trans. (Oxford: Clarendon Press, 1930).

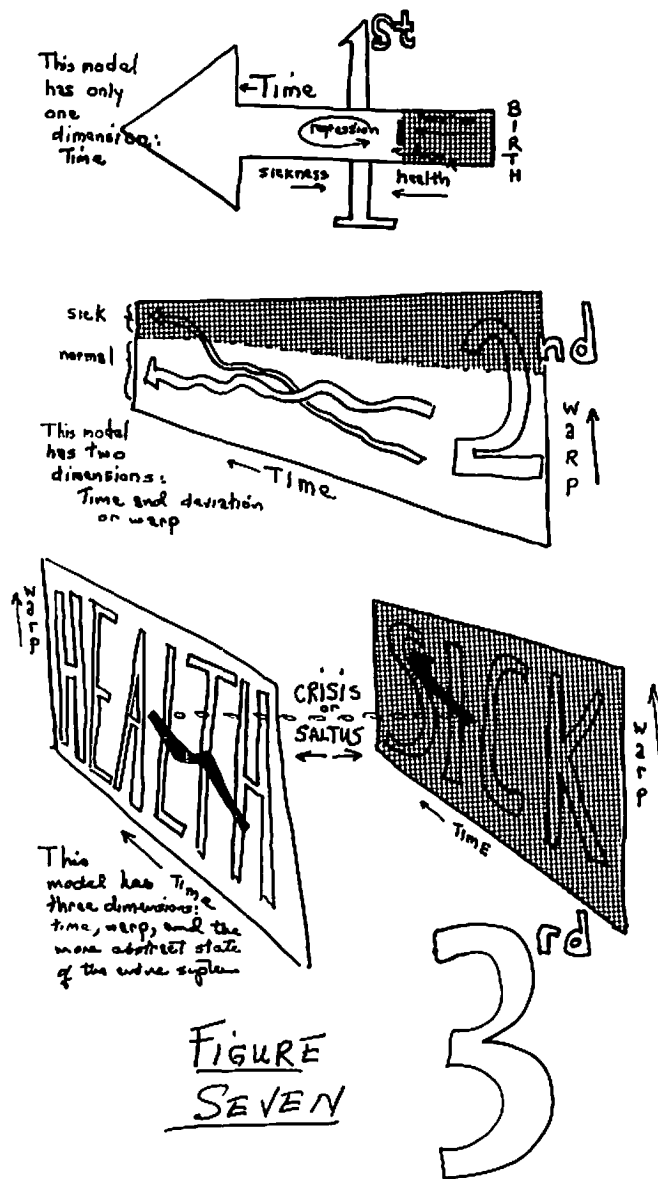
are understood to be things that we set out to make happen. Just as it is hard to describe them, it is hard to make them happen by explicitly directing them to do so, by injunction. I have proposed that we use a special term, achievement, to set this class of events aside.

In contemporary slang the emphasis is on the result rather than on the sudden onset. "Getting turned on," "getting it all together," "grooving on" something, are all expressions of the class of injunctions (achievements) I have in mind. Our terminology is confusing. Sometimes we name the achievement (such as falling in love), and sometimes we name the failure of the achievement (such as the failure to go to sleep, insomnia.) Further complicating the picture are achievements like "going crazy" or anxiety attacks which are undesirable and to which our efforts are directed in terms of prevention. What we have is a four-fold table. (See Table One)

Table One
Different Types of Terms Associated with Systems Change

	Achievement	Failure to achieve change
desire	1. falling asleep	3. Failure to have further anxiety attacks, psychotherapy
undesired	2. Anxiety attack	4. Failure to go to sleep, insomnia

If we use sickness and health as examples of what we mean by change of change, we can see that there are three dimensions in psychiatry, each of which delineates an area that has been called sickness. There is really no conflict and consequently there are three ways to be sick. The first concept relies heavily, if not exclusively, on linear time. Fixation, regression, blocks, and immaturity are some of the concepts employed. Sickness is equated with earlier life. One is born into sickness, so to speak, and matures into health. Therapy aids development and growth.



The second dimension, which can be combined with the concept above, is essentially a comparative or social dimension. In Figure Seven, the wavy lines in the middle illustration illustrate two different careers plotted against each other in terms of deviance. Sickness in this view is a warp away from the normal range. The shaded area in the illustration indicates that area which is deviant at each moment in development. Therapy is viewed as adjustment, re-entry, or taking an advocate position for the patient.

The third conceptualization deals with change of change, with systems properties or the state of the total organization. These changes must be plotted alongside the previous illustration. They are revolutionary changes. In this case what is sick is not any specific deviance but a much more abstract quality of the entire organization. Therapy in this view consists of creating or preventing radical change.

IN HUMANITAS