PSYCLOSIS

The Circularity of Experience

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PSYCLOSIS

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Preface

My dear friend, I send you a little work of which no one can say, without doing it an injustice, that it has neither head nor tail, since, on the contrary, everything in it is both head and tail, alternatively and reciprocally.

Baudelaire

This book is about the structure of experience (by which I mean all aspects of mental activity, including perceptions, emotions, images, ideas, thoughts, etc). Since language is a symbolic representation of experience, a written work must refer to experiences of one kind or another. It cannot transcend experience and describe an "external reality" that is independent of experience. The differences in language between intellectual disciplines reflect the different aspects of experience with which each discipline is concerned. Moreover, each discipline uses different criteria in establishing relations between experiences.

Scientific theories and literary works both deal with experience. The scientist's experiences are obtained predominately by the construction, manipulation, and

observation of measuring instruments, whereas those of the novelist are obtained by the observation of people and *milieu*. Much is made of the objective nature of science and the subjective nature of the novel. But the distinction between "subjective" and "objective" lies in the degree of correspondence that exists between the experiences of individuals—the higher the degree of correspondence the greater the objectivity. Through the experimental isolation of certain events from uncontrolled influences and the observation of precise and reliable technical instruments, scientific experiences become universal.

Prior observations can be recalled through memory. The process of memory allows us to associate one memory image with another and from two memory images we can draw an infinity of relations. Since analysis constitutes an examination of relations, it follows that an analysis of experience must be either inconclusive or circular. If the analysis progressively draws new relations from an initial body of experience but does not relate all the newly established relations back to their source in the initial body of experience, it is open-ended and inconclusive. If it limits itself to the internal organization of a limited body of experience, it must necessarily be circular.

Circularity applies to most philosophical analyses, including the one I am about to present in this book. If one attempts to apply the conclusions of a particular philosophical analysis to the analysis itself, one must eventually face the fact that the system does not have any application beyond itself. One finds oneself trapped within circles of thought. To illustrate, let us take the analysis in this book. I shall examine the structure of experience in terms of certain brain processes that form

the necessary conditions for experience. But "brain processes" are themselves concepts derived from experiences of scientists—obtained by observing various mechanical, electronic, optical, or chemical measuring instruments. The conclusion that brain processes are necessary conditions for experience in general is therefore circular from the standpoint of experience itself. The only alternative to this circularity is the inconclusive strategy of an endless reduction of one set of brain processes to another, more "fundamental" set.

It is sometimes argued that *sound* scientific theories are not circular because new evidence is subsequently found that is consistent with those theories. But it should be recognized that such "new" evidence is uncovered in experiments designed to test a particular scientific theory. The theory dictates the method of investigation, and the methodology in turn dictates the kinds of evidence that will be "discovered." Consequently, the evidence cannot fail to be consistent with the theory.*

Scientific theories are thought forms that relate a collection of past experiences. They act as shorthand expressions, saving memory capacity that would otherwise have to be devoted to remembering countless isolated experiences. Science relies on the development of theories, since predictions about particular future experiences are drawn from them. When the predictions are not confirmed, theories are disproved and new and more productive ones are sought.

But science is simply one example of a more general process of memory and expectation. Memory reflects the past in images, and the future is anticipated by new

*Theories that are falsified by empirical evidence are, by definition, unsound.

constructions derived from memory images. This *imagined* future is subsequently compared with unfolding present perceptions and either confirmed or disconfirmed. When confirmed, these constructions known as the future are considered to be actual and true; when disconfirmed, they are considered to be subjective and false. Thus the future as well as the past involves memory—without memory neither a past or future, or time itself, could be conceived.

Science, the humanities, and the arts are all modes of apprehending the world; in each, past experiences are structured in particular ways. Whereas science attempts to understand nature by acting upon it, the humanities and arts are satisfied to merely contemplate it. Such contemplation may lead to works of art, but these are made not to confirm or disconfirm any specific prediction resulting from reflection on experience, as in science. Instead, works of art are intended to act directly on those who view them by restructuring their experiences along lines similar to those that originally occurred in the artist. This difference in intention is one of the principal distinctions between science and other creative enterprises.

The sciences and the humanities also differ in their subject matter. The sciences analyze physical phenomena, whereas the humanities analyze mental experience. The social sciences have attempted to bridge the two disciplines, but so far unsatisfactorily. Clear relationships have not been established between the two kinds of experience and we continue to be confronted with the seemingly insoluble dualism of mind and body, and free will versus determinism.

My aim in writing this book was to analyze the scientific and humanistic modes of experience in such a way

as to integrate them. The key to achieving that aim appeared to me to lie in a consideration of the evolutionary functions of the brain, which form the necessary conditions for all experiences. The physical phenomena "described" by science are the result of particular experimental operations in which the human body and brain interact with the external world either directly or by intermediary technical instruments. Experiences of physical phenomena do not entail the existence of the physical phenomena independent of the experiences themselves. Instead, they reflect the physiological and cultural dispositions of the human brain to interact with the environment in certain ways.

By examining the nature of memory and time from a neurobiological standpoint, I found that the traditional problems of mind and body and of free will and determinism no longer presented themselves as meaningful questions. Rather than representing different aspects of an "external reality," the mental and the physical could be regarded as different *categories of experience*, which can be related to each other in terms of certain neurobiological functions of the brain. Of course the "neurobiological functions of the brain" are themselves phenomena, so that it should be clear that the philosophical approach I shall take is phenomenological.

In concerning myself with memory and time, my intention is not to offer an explanation of these concepts, but instead to analyze them in such a way that we are led to the realization of the biological relativity and essential circularity of all experience and knowledge, including that of memory and time themselves. To do so I shall consider a variety of closely related concepts, including the Second Law of Thermodynamics, organic evolution, ontogenesis, learning, reinforcement, ho-

meostasis, perception, consciousness, dreaming, the Collective Unconscious, and the will. In relating these concepts to one another I shall take up the evolutionary approach to neural, behavioral, and experiential data begun by Mach (1943), Pearson (1951), von Bertalanffy (1969), Munéver (1975), and Stent (1975), and shall rely heavily on neo-Darwinian theory for their interpretation. This approach can be called *biological relativism.* I shall argue that a necessary condition of experience is *interaction* between the organism and the environment, so that the structure of experience reflects the structure of both the organism and the environment with which it interacts. It follows that an organism cannot experience its own structure or that of the environment independently of the other.

Since I am about to engage in a circle of thought, wherever I choose to enter the circle is arbitrary. I have chosen time and motion as my starting point. As far as possible, I have tried to avoid the use of dualistic language in reaching towards a monistic philosophical endpoint. Wherever I have failed to do so I beg the reader's indulgence.

Santa Cruz *Ralph Berger*
June 1977

PSYCLOSIS

Contents

Time and Motion 1

Movement is a principal characteristic of life, being most pronounced in animals but also exhibited by plants as they raise and lower their leaves, open and close their petals, or turn toward the sun. Even such seemingly sedentary animals as corals are not static, since the polyps move in and out of the protective limestone skeleton that they communally secrete. Movement also exists *within* the bodies of living things, ranging from the macroscopic level, such as heartbeat and blood flow, to microscopic levels, such as the descent of auxins from the shoots toward the bases of plants.

But is movement an *essential* characteristic of life? What if we could freeze an animal and thaw it out later so that it behaved the same way as it did prior to freezing? Would we consider the animal "alive" while frozen, even when all physiological variables proved to be

absent? We might try to escape this dilemma by using the phrase "suspended animation." Suspension of overt movement (but not internal physiological changes) occurs naturally in such states as sleep, torpor, and hibernation. But these differ from the above hypothetical example in exhibiting endogenous reversal to the waking state, without requiring an external change in such variables as temperature or illumination to provoke the reversal. In the hypothetical state of "suspended animation" the return of life would depend upon the Faustian intervention of the experimenter.

An implicit assumption underlying the life sciences is that the evolution, growth, and behavior of organisms should ultimately be explainable exclusively in terms of energy fluxes originating outside the body of the organism. But the attainment of such an explanation would mean, paradoxically, that an organism could not be considered any more alive than a marionette, since both could be unequivocally shown to be driven by specific identifiable external forces. In other words, were we able to predict to the finest detail the motions of certain organisms we would most certainly regard them as automata, and our notion of "life" would simply mean "organisms whose motions remained to be explained." Such a change in view has recently occurred with regard to viruses, as a result of the success of molecular biology in explaining their structure and processes of self-replication. At present, viruses represent to us a borderland between "living" and "non-living" matter. Clearly, our definition of life changes with the current state of biological knowledge and level of technological development. But it should be emphasized that the technical instruments used in scientific experiments to develop physical explanations of organismic

behavior are artificial products of human actions that themselves require physical explanations. Thus we find ourselves caught within the circle of our investigations—a situation we shall repeatedly encounter throughout this analysis.

Of course, the question "What is life?" cannot be answered by pointing to a single attribute such as motion. The phenomenon of life involves many attributes acting in concert. At this point I merely wish to call attention to the intimate association of life with motion, without trying to draw a distinction between living and nonliving matter solely on the basis of this association.

The concept of motion is inextricably linked not only with that of life, but with that of time as well. In fact, it is impossible to think of time without motion or of motion without time. One concept is always defined in terms of the other, so that they are inseparable. An analysis of the nature of time has raised inexorable difficulties for those philosophers and scientists courageous enough to attempt it. Saint Augustine expressed the problem in the well-known epigram taken from his *Confessions:* "What is time? If no one asks me, I know; if I want to explain it to someone who does ask me, I do not know." Contemporary treatises on time continue to express the same perplexities. For instance, in a review of P.C.W. Davies' book *The Physics of Time Asymmetry* John Wheeler writes (1975):

> Never has a saner book been written on a more insane subject. In every other part of physics there is reasonable consensus as to the lay of the land; but this is not so when it comes to the "arrow of time." One has only to question a dozen responsible and thoughtful physicists to find that there are two camps on the matter. No one doubts that entropy increases, stars pour out energy, evolution moves

> forward in time and memory contains only the past—and that all this development goes on while the universe is expanding. But the evidence is powerful that the expansion of the universe is slowing down and that there is truth in Einstein's views that this expansion will come to a halt and be followed by a phase of contraction.
>
> As dynamic time marches forward, what will happen then to statistical and biological time? Will they continue to point in the same direction or will they point in opposite directions? In the one case, to a person alive in the second phase of the universe, the universe will appear to be contracting. In the other case, it will appear to be expanding, simply because a moving picture of contraction run backwards looks like expansion. Many colleagues agree that the question is open and that the answer is one of the great puzzles of our day; but others are strongly convinced that the one answer or the other is the only right answer and that the answer is perfectly obvious and should be accepted without question. This is the insanity of the subject. [p. 49]

My aim here is not to engage in an exhaustive discussion of the complexities involved in any satisfactory explanation of time, but instead to focus on those aspects of time that indicate that a complete explanation of time cannot be rendered by invoking only concepts referring exclusively to physical events, but must also include certain biological and psychological concepts. Bergson (1910) showed how meaningful descriptions of nature implicitly include the connotation of time as *duration* within them. Although we can abstract the idea of an instant of time from our perceptions of nature in terms of coincidences between certain events, if we then try to describe nature as a *series* of instantaneous events we effectively introduce duration into the description. Time itself connotes the idea of the instant in conjunction with that of duration. Georgescu-Roegen (1971) elaborates this point in the following manner: