

INTRODUCTION TO “ANTHROPOSOLOGY (A FRAGMENT)”

by Dr. James Dyson

It is perhaps significant that this first English edition of *Anthroposophy (A Fragment)* has awaited publication for so long. Eighty-five years have elapsed since it was written, encompassing virtually a century of unprecedented scientific and technological developments. Its content is interdisciplinary—essentially an attempt to address, through cognitive science, subjects that would at the present time be classified as developmental neuro-sensory psychology and neuro-physiology. Since it was written, these disciplines have seen developments as radical as those in nuclear physics, genetics, or immunology, and research methodology has entered a new era of technological possibilities.

What relevance, then, can an eighty-five-year-old unfinished document such as this have for the present? Ultimately, the question can be answered only by the reader and by the test of time. Nevertheless, convinced that the neuro-sciences have needed the intervening decades to catch up with Steiner, I have responded positively to the publisher's request to write an introduction.

Although this last statement may sound extreme, I shall try in what follows to point to a number of developments in neurology and psychology that have taken place since Steiner's time and that support the view that this "Fragment" is particularly timely today.

First, however, I will give a brief biographical introduction to Steiner himself, as his work is generally not as well known in the English-speaking world as it has become in central Europe.

An Austrian-born philosopher and cognitive scientist, Rudolf Steiner (1861-1925) embarked on his own path of research at a very young age. As a child, he felt painfully isolated from other people. Not only did he experience, like everyone else, the world of sense-perceptions and the ideas related to them, but he was also aware of an inner dimension of experience not based on sense perception at all. He later used the terms "the sense world" and "the spiritual world" to describe these two dimensions. During his adolescence, he set himself the task of understanding how these two worlds were connected, in terms of cognitive science and philosophy. While pursuing this task as a young university student, he became committed to making the results of his research generally available in the prevailing language of his day. He was convinced that, if it was presented in the right way, it would be understandable on its own terms and would not have to rely on any presumed system of spiritual or religious belief for its validation.

His main subjects of study were philosophy, mathematics, and natural science. Since the days of Isaac Newton, these disciplines have been based upon a methodology of reductionism. Essentially, reductionism endeavors to understand the whole as a function of its constituent parts, which, in turn, are subjected to quantitative analysis. By concentrating only on the weighable and measurable, the reductionist researcher increasingly excludes from consideration the qualitative aspects of sense-perceptions—these being regarded as subjective and outside the field of proper scientific inquiry.

Steiner soon recognized a different research methodology in Johann Wolfgang von Goethe's approach

to such diverse subjects as botany and color; and, as he deepened his understanding of this, he became convinced that he had found the key to the problem of how to connect his two worlds of experience. In contrast to reductionism, Goethe's methodology regards the qualitative experience of nature to be a primary perception as much as the quantitative—not just a subjective elaboration of the latter. Goethe was convinced that qualitative perception could be raised to the level of objectivity through training a faculty, which nowadays could be termed deductive intuition. According to this method, the part can only be understood in its relation to the whole. This approach is outlined in depth in *Goethe's Scientific Consciousness* by Henri Bortoft.¹

In his *The Metamorphosis of Plants*, Goethe endeavored to lay the foundations for a new natural science of the organic world.² Steiner, who at the age of twenty-one had accepted an invitation to edit the scientific writings in the Centenary Goethe-edition, published a commentary and interpretation of Goethe's methodology as an introduction.³ This he later elaborated in the book *A Theory of Knowledge Implicit in Goethe's World Conception*.⁴ In his work Steiner made his own original contribution to the field of cognitive science. The full implications of his thesis did not, however, make the impact on the prevailing trends of late nineteenth century thought that he had hoped for.

Subsequently, at the age of thirty-three, Steiner wrote his main philosophical work, now published in English under the title *Intuitive Thinking as a Spiritual Path: A Philosophy of Freedom*.⁵ This was an elaboration of his doctoral thesis, which had been accepted by Rostock University some years earlier.⁶ In his thesis, Steiner set out to refute the Kantian view that our sense perceptions, due to their inherently subjective nature, can never be relied upon as objective instruments of truth. Steiner countered this stance by describing how our mental pictures of the outside world arise from two sides: one via pure sense-perception (originating in the outer world) and the other via an inner activity through which the sense-perception becomes recognizable and can be interpreted (corresponding to deductive intuition).

According to Steiner, human beings have the unique possibility to integrate these two processes and, thus, to participate in building their own reality of ideation. He also makes the further proposition that the integration of the apparently separate inner and outer worlds, which takes place during the course of childhood and adolescence, provides the basis for the later development of the faculty of free will. He called this latent faculty moral intuition.

Steiner also outlined a discipline of cognitive training through which powers of observation can be refined and extended to include not only the outer aspects of the sense-perceptible world but also the way in which we ourselves contribute to the act of cognition, that is, through feelings and unconscious recognition patterns. His thesis culminated in the proposition that in every act of cognition we have the possibility of extending the boundaries of our freedom and thereby also our personal responsibility. His ultimate definition of a free individuality was that of "a person who can will what one, as an individual, believes to be right."

Shortly after completing *Intuitive Thinking: A Philosophy of Freedom* in 1894, Steiner's activities were increasingly diverted away from academic life. He admitted to being profoundly disappointed that neither his philosophical nor his scientific contemporaries really understood what he was saying or, if they did, that they did not see it as having any great significance. While continuing to avail himself of

those opportunities life offered him to enter the general scientific and cultural debates of his day, he found a more understanding audience in the Theosophical Society. He collaborated with them from the turn of the century till 1913, when he ended this association because his views regarding the nature of Christianity differed fundamentally from those of the Theosophists. From the beginning, Steiner's association with Theosophy had been something of an uneasy alliance, but it was an important part of his destiny, through which he found the platform and support he needed to continue his work as a lecturer and writer. During this period (1901-1913), he concentrated on the elaboration of the results of his own spiritual research,⁷ whereas previously he had committed himself primarily to describing its methodological basis.

From 1902 onward, Steiner began to use the term Anthroposophy to describe both the results of his spiritual research and the methods by which it was achieved. As time went on he increasingly distinguished the meaning of this term from that of Theosophy, as he elaborates in the first chapter of *Anthroposophy (A Fragment)*.

Steiner's sojourn in the Theosophical movement meant of necessity that initially he adopted Eastern terminology to describe the results of his own research. He saw Anthroposophy, however, as essentially growing from a Western tradition. He hoped to be able to show how it could be developed directly from the stream of Western thinking that had, in his view, reached its pinnacle in Goethe's scientific work. For he was convinced that a true science of the sense world could lead naturally to a science of the spiritual world. Throughout his life, he maintained that spiritual research in its methodology was not fundamentally different from scientific research, provided that the latter did not exclude the observer from the field of inquiry—that is, that the research was not reductionist. It was particularly with this aim that Steiner began writing this *Fragment*.

Despite his commitment to this goal, he was not able to complete the task. In the publisher's foreword to the 1970 German edition, which is included in this translation, the editors have printed extracts from two of Steiner's lectures, in which he describes in a remarkably frank and detailed way some of the difficulties that presented themselves while he was working on this book, and why they obstructed its progress, preventing its final completion. He frequently refers to the fact "that the language needed to give his thoughts clear expression was not available at that time."

It would not impose too narrow an interpretation on this remark to say that it suggests the neurosciences had not yet progressed sufficiently for his purpose. In reading the *Fragment* one can clearly recognize Steiner's commitment to linking his own insights with the findings already made in this field. If his success in achieving this only appears to have been partial, we may perhaps recognize this as inevitable, when viewed in the context of the extremely limited scientific knowledge at his disposal. After all, only the most elementary experiments on the nervous system had been performed when this *Fragment* was being written. Nevertheless, the conclusions drawn from them were so powerful that they still form the foundations of contemporary physiology.

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These experiments take as their starting point the investigation of reflex movement and are usually

carried out on the limb of a frog from which the cerebrum has been removed. An external stimulus is applied, usually in the form of an electric current, and one is able to observe the response in the form of a jerk in the limb. Dissection and histological study of the tissues show that reflex movements of this kind are sustained in their most simple form through the presence of essentially two nerve cells, with a junction (synapse) between them within the central nervous system. One cell conveys the stimulus toward the nervous system, and the other away from it in the form of a trigger reaction.

The concept of the spinal reflex arc has evolved from this simple and easily repeatable experiment. The afferent nerve conveying the stimulus from the outside world has been denoted as sensory, and its partner or efferent nerve has been denoted as motor. This model has paved the way for the development of a theory of brain function based on cause and effect. Although the complexities of neuro-anatomy now describe an almost infinite number of ways in which this basic spinal reflex can be modified, reinforced, or inhibited by stimuli coming from higher centers in the brain, the basic notion that the nervous system is explicable in terms of this simple input/output model has prevailed.

One can easily appreciate why it is that this attractive hypothesis has had such a compellingly powerful influence on the interpretation of the neurological basis of both movement and cognition. Whether the last word has been spoken on the subject—even in such a narrowly defined area as that of the spinal reflex arc—is still questionable. What is clear, however, is that the gulf between the subject of reflex movement on the one hand, and the science of cognition and sense-perception on the other, is an enormous one by any standard. Despite the obvious dangers of applying the basic principles of the former field of study to the latter, most authors continue to attempt just this. However understandable this may be—for to propose alternative explanations would require radical thinking which, with its attendant absence of traditional boundaries, demands considerable inner courage—to be misled at this very point has far-reaching consequences for an understanding of the physiological basis of consciousness and all of its attendant implications.

The development of computer science and technology has successfully reinforced the instructionist model of the nervous system, which is based on the concept of data processing. The argument goes that computers can be explained using the same "building-block" principles that apparently exist in the reflex arc. They also share the need for external stimulation to generate meaningful activity—both require "instruction." Whereas the entire working of even the most sophisticated computer can be shown to conform to this model, a similar mechanism operating in the human brain is merely assumed.⁸

Because this instructionist model is externally determined and driven, a compatible psychology of the mind would in turn need to identify the source of any apparent sense of subjective meaning or motivation outside the human being. The behavioral school of psychology originally founded early in this century by J. B. Watson and I. P. Pavlov, and reaching the height of its influence with B. F. Skinner and others in the 1960s and 1970s⁹—met these requirements perfectly. Perhaps behaviorism's greatest single effect has been to undermine the assumption that each one of us has some access to an independent conscience and thereby to free moral choice. According to behavioral paradigm, ultimately we are not answerable to anyone, because we are all subject to a behavioristic program. Based on experiments with pigeons and rats and their response to rewards—usually in the form of food—this

school of thought ultimately demotes personal views, attitudes, and convictions to the level of complex conditioned reflexes, which arise as a consequence of information processing. Here, the computer analogy is at work again. The one basic drive we are still allowed to own is the desire for the gratification of basic bodily instincts, and even this drive is presumed to have been programmed into us for some survivalist purpose.

Behavioristic interpretations allow little or no place for notion of individual freedom or morality, which do not, it is said, fall within the scope of scientific inquiry. Science is, after all, concerned with the objective world; experiences such as conscience, being merely subjective, are, in the final analysis, illusory! Reductionism thereby reveals its devious strategy. First, it undermines confidence in the inner power of judgment, and then it replaces this with the assumption that the human being is simply an animal endowed with a particularly advanced form of computer program.

Naturally, this shift of fundamental orientation has had—and is still having—far-reaching consequences, both for how people view their relationships to one another and the consequent effects on general attitudes in society. On the one hand, we have experienced a loss of respect for traditional values, as witnessed by increased cynicism, opportunism, and crime; on the other hand, there is the loss of a sense of meaning and motivation, leading to lethargy and detachment. Its impact on educational philosophy and psychology, and the resulting influences on methods of teaching and examinations, both among children and adults, is beyond estimation, as is the effect of these very methods on the physiological and psychological integrity of developing human beings. Its consequences for medical practice have been at least as monumental.

During the course of the twentieth century, and especially since the Second World War, humanistic and existentialist schools of psychology have emerged. These have an orientation fundamentally different from behaviorism. One of the first to gain ground was Gestalt psychology, founded in the 1930s by M. Wertheimer, W. Kohler, and K. Koffka and subsequently developed by Fritz Perls in the 1960s as Gestalt therapy.¹⁰ Gestalt psychology began by studying the way in which perception is influenced by the context or configuration of the elements perceived—that is, the content of the world does not meet us in a readymade form. As a therapy, this approach stresses that a person's own needs form an integral part of the needs of the world and vice versa; furthermore, the relationship of the individual to the world requires the will to confront unpleasant experiences as well as ones which offer immediate gratification. If the path of pain-avoidance is taken, the individual thereby breaks the "Gestalt" in his or her unique relationship to the world. This approach emphasizes the importance of cultivating the ability to live in the present moment, through which the individual may realize his or her unique potential for self-determination. A closely related approach is Psychosynthesis, founded by Italian psychologist Roberto Assagioli, author of the book *The Human Will*.¹¹

These therapies blazed a new trail in the 1950s and onward, providing a welcome alternative to behaviorism, which was championed by B. F. Skinner at that time and a little later, by the zoologist Desmond Morris, author of *Naked Ape*; they are well remembered for their keen enthusiasm for rats and chimpanzees, respectively.

In the last decade, largely through his two books, *The Road Less Traveled* and *People of the Lie*, M.

Scott Peck found a very wide general readership, presenting a convincing case for the examination of the principles of Good and Evil as primary entities in the disciplines of psychology and psychiatry.¹² He argues that for too long these subjects have been dismissed, simply because they belong to the seemingly subjective realm. In fact, this fundamental challenge to one of science's most entrenched tenets was prefigured in the 1960s by the psychologist Rollo May. May achieved considerable influence, particularly through his comprehensive book *Love and Will*, in which he substantiates the proposition that love has more to do with integrity than the pursuit of the pleasure principle—a counterblow to behaviorism.¹³

In fact, much of what emerged in existentialist and humanistic psychology was in some respects prefigured in the development of the Viennese school of psychoanalytic psychiatry, particularly in the work of Carl Gustav Jung. This was elaborated and further developed by Viktor Frankl, the founder of Logotherapy, who was strongly influenced by his experiences while working with Jewish prisoners in concentration camps. Logotherapy challenges the client to create value as a free inner act amidst a sea of otherwise potential meaningless experiences.¹⁴

The cumulative effect of the humanistic and existentialist schools has been to open up new and "future-oriented" forms of personal counseling and psychotherapy. (Earlier psychoanalytic practice, largely under the influence of its founder, Sigmund Freud, tended to concentrate more on the past through the interpretation of experiences and traumas of early life. However, these two approaches are by no means mutually exclusive.) Based on the recognition of the potential for growth and development, these schools challenge the individual to develop, as an inner act of free will, latent faculties of self-awareness and thus to assume his or her place within the evolving body of world consciousness. In this way, they stand in sharp contrast to behaviorism, which sees consciousness in terms of biological conditioning.

Notwithstanding their widespread recognition, counseling and psychology have remained rather poorly represented in mainstream psychiatric medicine—at least in Great Britain. Mainly, the latter still tries to uphold the classical basis of biological psychiatry, which seeks to bridge or block key metabolic processes by administering the appropriate drug. Until now, behaviorism has largely held sway in this field, because its instructionism merges conveniently with the heritage of classical neurology, which then goes hand-in-hand with the reductionist approach in biological psychiatry.

One of the relatively few people to have publicly wrestled with the limitations of classical neurology in recent decades is Oliver Sacks, himself a neurologist and neuro-psychiatrist. Through his brilliant clinical observations, combined with extraordinary human interest and literary ability, he has been able to make the mysterious workings of the senses and the brain accessible to his readers, without imposing on them any personal interpretations. His writings are remarkable in that they engage the interest of both the general readership and the relatively narrow band of professionals researching this field. Anyone who has not already read his works is encouraged to do so—for example: *A Leg to Stand on*; *The Man who Mistook his Wife for a Hat*; *Seeing Voices*; *Awakenings*; and *An Anthropologist on Mars*. Combining an experience of sheer joy with a wider scientific value, they also assume a special significance in the light of Steiner's writings and lectures on the senses and cognitive science, generally, and, in particular, this Fragment.

For decades, existentialist and humanistic psychologies have been seeking for a model of the nervous system as an alternative to that of classical neurology. Without being able to point to sound physiological foundations, they are vulnerable to being "tarred" with the brush of mysticism and, consequently, marginalized by mainstream academic science. Deserving of special attention for the attempt to seek an alternative model is *The Self and Its Brain*, by Carl Popper and Sir John Eccles. This book presents a very different case, based on thorough knowledge, and displaying masterly argumentation. Although it found its way onto the bookshelves of serious students, it did not make the decisive impact in general academics that many felt it warranted; hence, the current excitement around further research, which once again calls into question the instructionist model of the nervous system—this time in a very concise and decisive way.

This most recent revolution is being led by Gerald Edelman, a Nobel Prize-winning biologist. A full exposition of his ideas appeared in his book, *Bright Air and Brilliant Fire*.¹⁵ In fact, Edelman and his colleagues had been developing their ideas since the mid-1970s. Moreover, serious students of developmental neurology have witnessed for some time a gulf appearing between neurological theory and cognitive psychology. It must be acknowledged that the neurophysiology of sensory and cognitive psychology has become one of the most specialized branches of the biological sciences, comparable to immunology. The field simply does not lend itself readily to the kind of experimental methods using Ringer's solution and petri dishes, through which the model of the reflex arc was devised in the last century. It is hardly surprising, therefore, to find that Edelman's theory requires more effort to grasp than its forerunners in the field—although, for those with a background in Steiner's theories of cognitive science and developmental psychology, it has a remarkable ring of familiarity.

An entirely new theory is needed, Edelman argues, to explain the origin of individual diversity of perceptions and thoughts; moreover, such a theory could not be based on a mechanistic or computer model but only on a science corresponding to the nature of the living world. He is referring to the processes of natural selection as ascribed by Darwin and also to his own discoveries concerning the immune system (for which he received a Nobel Prize in 1972), which have challenged and superseded the idea that the molecular structure of an antigen determines the structure of its corresponding antibody by a simple process analogous to instruction.

He points out that the greatest single flaw in instructionism is that it (unconsciously) presupposes that somewhere out there in the world all manner of objects and interrelationships exist in a neatly labeled fashion, just waiting to be incorporated into the brain. He maintains that the world is, in fact, in its primary state, totally amorphous and chaotic—at least in any functional or cognitive sense—and just doesn't contain neatly organized modules of information. He emphasizes that it is the brain itself that must first generate its own categories before it can begin to process sensory information in terms of concepts, mental images, or judgments. In other words, the way we perceive the outside world depends mainly on the organism which is doing the perceiving, namely, ourselves!

This theory of cognition comes remarkably close to Steiner's. Compare it, for example, with the following quotation from the preface to his book *Truth and Knowledge*:

. . . The outcome of what follows is that truth is not, as is usually assumed, an ideal reflection of something real, but a product of the human spirit, created by an activity which is free and independent; this product would exist nowhere if we did not create it ourselves. The object of gaining perceptive insight is not to repeat in conceptual form something which already exists, but rather to "create" a completely new sphere which only offers complete reality if seen in conjunction with the world we perceive through the senses. The highest human activity, creative activity of the human mind and spirit, is an organic part of the general progress of the world. Without it, the progress of the world could not be conceived as a whole complete in itself. Human beings are not idle onlookers observing the progress of the world, merely recapitulating in their minds images of events that take place in the cosmos and in which they are not involved. They take an active part in the creation of the world's progress. Perceptive insight is the most perfect thing in the organism of the universe.

The approaches of both Steiner and Edelman emphasize that our experience of the outer world does not reach us in a readymade or predetermined form and that therefore our understanding of the brain ultimately cannot be reduced to the notion of a programmed computer mechanism. They also shed light on some questions in the field of neurophysiology, which the instructionists have generally preferred to avoid. It is estimated for instance that there are approximately 100 billion nerve cells in the central nervous system with some million billion possible interconnections in the brain itself. The number of possible patterns that this ground structure allows for is certainly well beyond the possibility of anything numerically definable; that is to say, it approaches infinity. A key question is, how are these to become defined and channeled? It is difficult from an instructionist viewpoint to visualize a program of sensory input which would, of itself, do anything more than produce a state of sheer cerebral confusion.

In Edelman's theory, this infinite possibility of patterns corresponds to the infinite possibilities of movement and of thought inherent in the brain. According to him, the key to how these are selected lies in the structures located in the brain stem, which he has called "value systems." These have diffuse ramifications throughout the entire cerebral cortex. These are apparently among the most ancient structures in the entire nervous system. Quoting Edelman directly from a BBC "Horizon" documentary, broadcast on January 29, 1994:

The main idea is that these are ascending diffuse systems that go all over your brain—particularly your cortex—in such a way as to fire when something is salient, when something might have value. They aren't the systems that recognize the difference between a square and a cube, but if particular patterns come up that signal that system, then when that system fires, neurons that happen to be firing do make the discrimination, and get strengthened rather than weakened; and so, value gets imposed in the brain by the brain. These value systems would seem to retain a primordial imprint of some kind, whereby a specific firing pattern, when standing in a relationship to a sense perception, is somehow recognized as good or appropriate. In such a way this

particular firing pattern is strengthened, and in the long run other connections which have not been reinforced retire from active service, and possibly atrophy.

In order to test his theory, Edelman, as Steiner done before him, carefully studied how children build cognitive and functional relationship with their environment. Babies display a broad repertoire of undefined possibilities of movement that evolve through different patterns called primitive reflexes, and eventually narrow down to those enabling the growing child to deal more effectively with its immediate environment. That is say, the baby has a universal potentiality for spontaneous activity, which becomes increasingly confined and defined through its meeting, via the senses, the initially chaotic and amorphous impressions of the environment. Only gradually does the character of these sense impressions become intelligible to the child's developing cognitive understanding.

Edelman postulates that just those patterns of movement proving most helpful to the child are unconsciously selected—hence the parallel with Darwin's theory of natural selection which states that from the multiplicity of possible forms or mutations, only those will emerge that confer some survival advantage on the particular species. However, rather than being survival-oriented, the guiding principle at work in the developing child is her or his evolving interest and motivation. The difference between its theory and that of instructionism will not require further elaboration.

A serious student of Steiner will probably be reminded of his description of how movement, as an expression of the life of will, as such does not originate in the nervous system—the task of which is to provide it with its boundaries—but rather in what he terms the metabolic system. This is elaborated in his book *Von Seelenrätseln* (The Riddles of the Soul):

The fact remains that unprejudiced contemplation of the psyche obliges us to recognize the existential independence of the will; and accurate insight into the findings of physiology compels the conclusion that the will as such must be linked not with neural but with metabolic processes. If one wants to form clear concepts in this field, then one must look at the findings of physiology and psychology in the light of the facts themselves and not, as so often happens in the present-day practice of those sciences, in the light of preconceived opinions and definitions, not to mention theoretical sympathies and antipathies.

Most important of all one must be able to discern very clearly the mutual interrelation of neural function, breathing rhythm and metabolic activity respectively. . . . Only materialistic presupposition can relate the element of metabolism in the nerves with the process of ideation. Observation with its roots in reality reports quite differently. It is compelled to recognize that metabolism is present in the nerve to the extent that the will is permeating it.

But in the nerves something else goes on that is quite distinct from metabolism and rhythm. The somatic processes in the nervous system which provide the foundation for representation and ideation are physiologically difficult to grasp.

That is because wherever there is neural function, it is accompanied by the ideation which is ordinary consciousness. But the converse of this is also true. Where there is no ideation, there it is never specifically neural function we discern, but only metabolic activity in the nerve, or rhythmic occurrence in it, as the case may be. Neurology will never arrive at concepts that measure up to the facts, so long as it fails to see that the specifically neural activity of the nerve cannot possibly be an object of physiological empirical observation. Anatomy and physiology must bring themselves to recognize that neural function can be located only by a method of exclusion. The activity of the nerves is precisely that in them which is not perceptible to the senses, though the fact that it must be there can be inferred from what is so perceptible, and so can the specific nature of their activity. The only way of representing neural function to ourselves is to see in it those material events, by means of which the purely psycho-spiritual reality of the living content of ideation is subdued and devitalized (herabgeldhmt) to the lifeless representations and ideas which we recognize as our ordinary consciousness. Unless this concept finds its way somehow into physiology, physiology can have no hope of explicating neural activity.

At present physiology has committed itself to methods that conceal rather than reveal this concept.¹⁶

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The perspectives that emerge from both Steiner and Edelman offer much more than a new explanation of how complex motor skills are acquired. They allow the thought that inherent within human physiology, a deeper form of unconscious wisdom may be at work, which in the course of its encounter with sense impressions, contributes to the way in which concepts, mental images, emotions, and judgments are built up. Thereby, everyone acquires a unique relationship to their sense impressions and develops a totally original constellation of inner possibilities for comprehension and creativity. A careful distinction must be made at this point between the value systems themselves and what arises from their interaction with sense impressions. Value systems do not, of themselves, confer uniqueness to the human being—they are universal. It is their nature to allow infinite diversity of possible forms of expression to arise, when they are fructified in their interface with sense impressions that confront each individual in a unique complex according to life circumstances. Expressed in its most basic form, this means that each individual responds differently to similar types of sensory input—a picture that runs completely counter to instructionist or behavioral model.

It may be argued that Edelman's theory only pushes frontiers of the inquiry one step back, leaving unaddressed how value arose within value systems in the first place. This may indeed be the case. But at this point scientific explanation reaches a certain boundary. As science claims to serve the pursuit of truth, it follows that truth must always be in harmony with the findings of science. From this claim, however, it does not follow that the findings of science can prove something true, though

often it is mistakenly assumed to do so. They can only support or contradict what is, and remains, essentially an act deductive intuition. A hypothesis is a deductive intuition that must either be confirmed or disallowed by the facts. However, the apparent affirmation of the hypothesis by facts does not prove the hypothesis, but only allows it to stand. In the final analysis, all truth is unprovable and can only be intuitively grasped. This is equally true for both simple and complex hypotheses—for example, one plus one makes two. The facts of the outer world support this intuition but can never prove it; its truth is inherent and can only be recognized as an inner cognitive act. The more complex question of whether consciousness, in fact, created the world, or whether consciousness evolved from the atom, must ultimately rest on a similar cognitive act of intuition—albeit, this must also be tested continually against the facts, in so far as they can be investigated.

Steiner was quite clear on this point—from the time of youth, it was central to his cognitive theories. After he became connected to Theosophy, however, he made the consequences of this stance far more explicit; and his work was based, without reservation, on the premise that any inherent unconscious values were originally derived from a form of creative being to which humanity could gradually gain conscious access through a path of spiritual schooling. Along this path described by Steiner, it becomes possible to gradually expand the frontiers of personal freedom, because ultimately one comes into the position of being able to choose how to relate to all aspects of sense impressions—that is, the ultimate potential exists to be free, even in relation to the most basic and immediate sense impressions mediating our contact with so-called outer reality.

Edelman's work clearly begs similar questions of orientation. However, it does not directly challenge us in this way—perhaps wisely so. Instead, the salient issue raised by this work lies in the question as to whether his neuro-scientific research will make a lasting impact on mainstream academic thought; if so, will it then be taken up by the closely related applied sciences of clinical psychology and medicine and, ultimately, encapsulated? Even within such a closely related family of disciplines, it does not necessarily follow that a cross-fertilization of insights will automatically occur. How long it will take for the full implications of Edelman's work to filter through into actual practice—assuming they will be taken up in their own right—therefore remains a matter of conjecture. The argument that there is a paucity of generalists and a surplus of specialists is well-founded in exactly this domain of research.

Owen Barfield referred to the lack of general recognition of Steiner's work as "one of the academic miracles of the twentieth century." The main reason for this lies most likely in the fact that Steiner was perhaps one of the greatest generalists in modern academic history. It did not seem credible—even in his day when specialization was still in its infancy—that a single individual should claim authority in such apparently diverse subjects as philosophy, natural science, education, medicine, agriculture, architecture, as well as others.

Plausible as this explanation is, however, the noetic issues outlined above have almost certainly been more influential. It is not as if it were simply a question of accepting or rejecting isolated academic theory; the undeniable reality is that from the beginning of his life, Steiner was swimming against the tide of the ingrained reductionist dogma, which implicitly nurtured and guarded a

materialistic world-outlook. From the moment that he spoke and wrote openly about the primacy of the creative world of spirit, all materialistically based sciences inevitably assumed their distance from his work, and consequently a kind of conspiracy of silence arose, which is often a more effective form of attack than any argument. Furthermore, when Steiner proceeded to describe the experiences of the human being between death and rebirth—the laws of reincarnation and karma—and the redeeming role of the Christ in Earth evolution, no simple shift of attitude or orientation could ever have changed this tide.

The necessary shift that science would have had to make—at least, in principle—to encompass Steiner's work, would have been of a different magnitude; to use a phrase coined in the New Age movement, it would have required a paradigm shift in the prevailing scientific consciousness. In fact, it had always been Steiner's hope that, in the long run, Anthroposophy would pioneer the emergence of just such a shift of consciousness. His warnings about the consequences for humanity, if this fails, were at least as accurate as they then seemed apocalyptic. This is not to imply that Anthroposophy has completely failed its task. However, it cannot be denied that, so far, its influence has fallen far short of its potential within general culture, especially in the English-speaking world.

Most of Steiner's predictions have in fact been born out in the crises currently manifesting in most fields of our cultural life—medicine, education, agriculture, and so on—not to mention the more obvious and increasingly acknowledged ecological and economic catastrophes now threatening Planet Earth on an unprecedented scale. In short, the practical consequences of applied reductionism are finally coming home to roost. Sadly, the forms of thought needed to make this diagnosis—at least in circles potentially influential to the situation—are also those that reductionism has largely succeeded in eroding. This is probably its greatest single triumph. Meanwhile, human civilization will continue to pay the high price of this deception.

It is beyond the scope of this Introduction to do more than touch upon the effect of reductionism in the areas of practical and cultural life, though Steiner devoted the majority of his work during the last seven years of his life to practice in these areas. What is most remarkable about his advice, in all its applications, is its detail and specificity. Steiner was not content to remain in the sphere of spiritual generalizations, but translated spiritual insights into methods to be taken up in the shop.

One example of this can be found in *Anthroposophy (A Fragment)*, which covers the senses and life-processes. These themes have a central role in Steiner's educational philosophy and the resulting approach to teaching that constitutes the so-called Waldorf Curriculum, named after the first school established with Steiner's help in Stuttgart. They have been equally formative in the education of those with special needs, particularly in the founding of the Camphill Movement by Dr. Karl König and his close collaborators. They developed, through their own research, a diagnostic circle of twelve senses which has provided—and continues to provide—significant insights into many aspects of learning difficulties, developmental disturbances, and congenital syndromes. This work invites much more widespread research and evaluation; however, this is difficult to follow up without the benefits of mainstream academic and financial resources to draw upon. Were this to be undertaken, a new surge of interest in Steiner's insights could develop—even

more so in the work arising from them—and the general relevance of his contributions could at least become the subject of more open discussion than has thus far been the case. It must be remembered that it was never Steiner's intention to build up an alternative culture; he preferred to influence the course of mainstream culture from within. However, so far, anthroposophical endeavors have not succeeded in this to any major degree, despite the commitment of three generations of students of Anthroposophy, actively working in practical life and professional capacities.

Meanwhile, schools report unprecedented increases in learning difficulties, behavioral problems, and impairment of concentration among pupils; and the general standards of literacy and numeracy seem to be falling for no apparent outer reason. Soil vitality and food quality decrease almost in direct relation to increasing dependency on purely chemical methods of agriculture—the notion that organic alternatives are unaffordable is now beginning to wear thin. Also, in medicine, where technological advances have perhaps come to the most positive expression, a slow degeneration in the general health of the population has to be acknowledged—for example, in the increasing number of immunological disorders, degenerative illnesses, and cancer. In fact, attempts to eliminate the external causes of illness have not contributed to an increase in overall health of the population as had been predicted, although they undoubtedly contributed to an epidemiological shift in the prevalence of acute inflammatory illnesses. Along with technological advances, this shift has always been cited to affirm the success of current forms of medical treatment; even this sign of apparent progress has now been seriously called into question with the publication of reports that allergies and chronic inflammatory conditions are on the increase, particularly among children. Medicine's only solution to this problem, it would seem, is to invest even more in vaccination campaigns—merely reinforcing existing trends—and to increasingly use antibiotics, anti-inflammatory drugs, and chemotherapy. As a long-term solution, medicine now offers terminations of medically undesirable pregnancies and the promise of future possibilities for genetic manipulation.

The emerging "Brave New World" of applied medical reductionism harbors more than its share of unforeseen problems, not to say nightmares. It would be a tragedy if individuals were actually forced to swallow these consequences as though there were no other option. Christopher Fry characterized the modern human condition in his play, *The Sleep of Prisoners*: "Affairs are now soul-size—the enterprise is exploration into God." Very much is at stake, and many battles must still be won before the reductionist Goliath may finally fall from his edifice of supremacy.

In introducing this work to readers of English, I do not profess to any feelings of euphoria. I would nevertheless retain the confidence that it may contribute to reinstating some of the main issues of cognitive science—particularly their implications for the neurosciences—to the place they once occupied in serious scientific study; this could be considered, in its own right, a major breakthrough. The developments that have taken place since Steiner's death, and some of which this introduction has attempted briefly to outline, offer considerable sources of hope that the tide may be turning, as the causes of the downward trends in ecology, education, agriculture, and medicine begin to be diagnosed.

In *Anthroposophy (A Fragment)* we see a remarkable juxtaposition of apparent simplicity of imagery and considerable complexity of thought. To penetrate its content demands strength and discipline on the one hand and, on the other, a childlike naïveté. Even to begin to comprehend the work requires that these faculties have, to some extent, already been trained and integrated. The activity of reading this work will, itself, further enhance these faculties. In the absence of the faculties of discipline and openness, the work will certainly appear totally unintelligible. It challenges both the analytical and inductive aspects of cognition to a degree almost unprecedented, even in Steiner's own writings; this synthesis still has a very unusual ring, even for those of us who may profess to be its advocates. Nevertheless, despite the considerable challenges presented by this work, coupled with inherent linguistic problems—inevitably compounded by translation from the German—it is my conviction that sooner or later it will be acknowledged as having pioneered a way forward, for the neurosciences, in general, and their expressions in professional practice, in particular.

In conclusion, it should be mentioned that Steiner also addressed the subject of the senses and life processes in numerous lectures, primarily from 1909 on, and reference to these will further elaborate and clarify the subject matter covered in *Anthroposophy (A Fragment)*. Hopefully, it will also become clear that the full value and significance of this work can only be rightly assessed in the wider context of Steiner's other written works, some of which have already been mentioned.

In wishing such an unusual work an exciting and fruitful voyage as it enters the seas of the English-speaking world, I would commend it into the hands of the guardian spirits of powerlessness, so beautifully evoked in Prospero's words from the Epilogue to Shakespeare's *The Tempest*:

Gentle breath of yours, my sails
must fill, or else my project fails,
which was to please. Now I want
spirits to enforce, art to enchant;
and my ending is despair
unless I be relieved by prayer,
which pierces so that it assaults
mercy itself, and frees all faults.
As you from crimes would pardoned be,
let your indulgence set me free.

DR. JAMES A. DYSON
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Stourbridge, UK
February 1995

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NOTES

- ¹ Trust for Cultural Research, Monograph Series No. 22, 1986 (obtainable P.O. Box 13, Tunbridge Wells, Kent, TN3 OJD). A new, much expanded edition of Bortoff's work will be published as **The Wholeness of Nature**, Lindisfarne Press, Hudson, NY, 1996.
- ² See Bertha Mueller (trans.), **Goethe's Botanical Writings**, Ox Bow, 1989, or Douglas Miller (trans.) **Goethe's Scientific Writings**, Princeton University Press, forthcoming.
- ³ Available as **Goethean Science**, Mercury Press, Spring Valley, NY, 1988. See also John Barnes, **Nature's Open Secret: Rudolf Steiner and Goethe's Participatory Approach to Science**, Anthroposophic Press, Hudson, NY, 1996.
- ⁴ Available as **A Science of Knowing**, Mercury Press, Spring Valley, NY, 1988.
- ⁵ Previously titled **The Philosophy of Freedom** or **The Philosophy of Spiritual Activity**; the new edition is **Intuitive Thinking as a Spiritual Path: A Philosophy of Freedom**, Anthroposophic Press, Hudson, NY, 1995.
- ⁶ Published as **Truth and Knowledge**, Steinerbooks, Blauvelt, NY, 1981. Also titled **Truth and Science**.
- ⁷ See especially **An Outline of Occult Science**, and **Theosophy**, Anthroposophic Press, Hudson, NY.
- ⁸ Philip Laird Johnson's book **The Computer and the Mind** (Fontana, 1988) has been cited as providing the most convincing account to date of this theory.
- ⁹ J. B. Watson (1878-1958) was the author among others of **Animal Education** (1903), **Behavior** (1914), **Behaviorism** (1925); I. P. Pavlov (1849-1936) was the author of **Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex**, (Dover Books); B. F. Skinner is well known for books as such as **Beyond Freedom and Dignity** (1971), **About Behaviorism**, and **Walden Two** (1976).
- ¹⁰ See Wolfgang Kohler, **The Task of Gestalt Psychology**, **Selected Papers**, **Dynamics in Psychology**, and **The Mentality of Apes**; Max Wertheimer, **Productive Thinking**; Kurt Koffka, **The Growth of the Mind**; Fritz Perls, **The Gestalt Approach & Eyewitness to Therapy** and **Don't Push the River**.
- ¹¹ Penguin Books. See also **Psychosynthesis** (Penguin).
- ¹² M. Scott Peck, **The Road Less Traveled: A New Psychology of Love, Traditional Values & Spiritual Growth**, and **People of the Lie: The Hope for Healing Human Evil**. Touchstone Books, 1985.
- ¹³ Rollo May, **Love and Will**, W. W. Norton & Co., NY, 1969.
- ¹⁴ For Jung's own story of his development, see his book **Memories, Dreams and Reflections**. For Viktor Frankl, the best introduction is his books **The Doctor and the Soul: from Psychotherapy to Logotherapy**, **Man's Search for Meaning**, and **The Will to Meaning**.
- ¹⁵ Gerald M. Edelman, **Bright Air, Brilliant Fire: On the Matter of the Mind**, Basic Books, 1993; See also **Neural Darwinism: The Theory of Neuronal Group Selection** (1987) and **The Remembered Present: A Biological Theory of Consciousness** (1989).
- ¹⁶ See Owen Barfield (ed./trans.), **The Case for Anthroposophy**, Rudolf Steiner Press, London, 1970.