

# The Controlling Self and Self-Control

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In their book *The Self and Its Brain* (1983), Karl Popper, a leading philosopher of science, and John Eccles, a Nobel Prize-winning brain researcher, have given to the self a new central place in the universe. In their unusual book of daring logical analysis, they carefully construct and define the self as central to personal reality. In capturing the new status that they give to the self, Popper says that every time a man dies, a whole universe is destroyed. What he means literally is that the universe exists primarily inside man's mind and not in some outside location. This is a radical departure from classic science that said that *matter* was ultimate and existed in its own right, totally independent of man's mind. Matter was an essence or substance, neither capable of nor in need of further explanation. It was *the* principle, in terms of which everything else had to be, and could be, explained. So ingrained was this thinking in the classic scientific belief system that it was not subject to question. It was a revered and sacred tenet of science. In a radical departure from this position, Popper and Eccles (1983) use impeccable reasoning, "hard" brain research, and the new physics to arrive at the human self, or the self-conscious mind, as having a preeminent status in our existence.

## A Revolution

Popper and Eccles are joining a revolution in physical science that has been taking place quietly but dramatically throughout this century (Einstein, 1951; Bohr, 1968; Bohm, 1982; Heisenberg, 1962; Wigner, 1967; Schrodinger, 1958; Born, 1957). In this changing scientific paradigm, the self (the mind, consciousness) is gaining ascendancy as a major explanation for the existence of the *physical* universe. Mind has become the first principle in nature (Elvee, 1982). Popper (1983) says that the title of his book *The Self and Its Brain* suggests that the physical brain is owned by the self and not the other way around. According to Popper, the self-conscious mind is the active director of the self's universe.

The activity of the selves is, I suggest, the only genuine activity we know. . . . The active psycho-physical self is the

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active programmer to the brain (which is the computer). (p. 120)

He tells us that the self is the executive whose instrument is the brain. It is the pilot, and, like a pilot, it observes and takes action at the same time. It is acting and suffering, recalling the past and planning and programming the future, expecting and disposing. It contains, in quick succession or all at once, wishes, plans, hopes, decisions to act, and a vivid consciousness of being a center of action, an acting self.

### Self and Education

The intellectual sciences, including education, psychology, and psychiatry, in spite of their interest in the self, have not yet been strongly influenced by this revolutionary changing paradigm. Unwittingly, however, as these fields have turned to the unifying principles of cognitive studies, such as those of Jean Piaget (1975, 1983, 1986) or Lev Vygotsky (1962, 1978), they have joined the revolution. They are not guilty of the scientific lag in the classic thinking of psychology and psychiatry pointed out by Fred Allen Wolf (1986), a quantum physicist, whose accusation is that:

Even psychiatrists and psychologists believe that there is a fundamental material basis for mental phenomena—there is simply no hope for such psychology today. Why? Because this sacred tenet of science is plain nonsense. There is not the slightest shred of evidence that proves the existence of a physical world acting independently of human thought. (p. 185)

Cognitive theorists, unlike classic theorists, generally do not see the physical world as acting independently of human thought. The unifying principle of cognitive studies and cognitive-affective curricula, such as that of Reuven Feuerstein (1979, 1980), brings mind and matter together into the wholeness of an acting self. This cognitive principle shows that there could not be the sound of a tree falling in the forest without the mind attending to and acting on it. In cognitive theory, the mind is a generator and not simply a passive receiver of information vis-à-vis reality.

In Piaget's (1986) studies of child development, the growth of the child's self is blended with the growth of the child's skills in *constructing* physical reality.

Piaget (1971)—in his study of how the child learns to construct time, which was suggested to him by Einstein—believes that time and space are “modes of thought” and not “conditions in the universe” (p. viii). Thus, modes of thought and thinking skills have a new urgency in the educational endeavor when it takes on the task of cognitive-affective development, or, more precisely, the development of the self and its universe.

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### Schemes, Images, Affective-Volitional Tendencies

From Piaget's (1986) point of view, education would consist of the development of “schemes” of thought in the child. In the view of W. Pauli (1974, pp. 30–38), the Nobel Prize winner in quantum physics, education would be the development of the “emotionally charged images” with which the child is born. From Lev Vygotsky's (1962, 1978) perspective, it would be the development of “affective-volitional tendencies” in the child. Whether we think of our task as developing schemes of thought, or modes of thought, or emotionally charged images, or affective-volitional tendencies, we are teaching the child how to help generate or construct his or her own reality with the self as the central referent and director of that reality. Too often, classic education teaches the child that he has little or no control over a *physical* reality that exists “out there,” independent of his own predispositions, past experiences, wants, and skills. This is simply not true. This practice alienates the child from his reality, from his world. It inculcates learned helplessness and powerlessness, which are frequently involved in depression and suicide and which make the child a victim of an environment whose imputed power overwhelms him. It plays into the hands of both the proponents

of inherited inadequacy and those of inevitable environmental determination of human characteristics.

### Construction of Reality

All of Piaget's studies of child development have dealt with how the child learns to construct his or her reality, most particularly in his extensive (1986) study of how the child learns the skills of constructing object, space, time, and causality, which comprise the environment for the child's self. In that particular work, Piaget demonstrates very clearly that the development of self and environmental construction are interdependent and blended skills rather than separate components of the child's universe. The skill of environmental and self-construction is a composite whole. If there are environmental construction delays, there are self-construction delays and vice versa. In either case, the child is learning the skills of constructing his or her own *reality*, which is a composite of self and environment. He is learning to use the self to act upon reality.

Unfortunately, by the time the child reaches adolescence, because of the influence of education's strong beliefs in both physically determined and environmentally determined characteristics, he conceives of himself as powerless in the face of the combined control of his physical substratum and his “external” environment. He feels doubly helpless and believes that he can exert very little personal control over either self or environment.

Whether or not you can accept the revolutionary data of quantum and relativity theories (Zukav, 1980; Wolf, 1982, 1986; Pagels, 1983; Herbert, 1985), the seminal work of Popper and Eccles (1983), *The Self and Its Brain*, is a very freeing and catalytic book for educators. It suggests new approaches to teaching, particularly the teaching of children who have been marginalized in the self-fulfilling prophecy of our unshakable faith in theories of genetic, physical, and environmental determination. The emerging new paradigm suggests the possibility of teaching children the skills uncovered by Piaget's (1986) studies that are necessary for the child to “construct reality” and become an active “participant” rather than an

“observer” in the making of his or her own existence.

### A Supplemental Curriculum

Taking as our departure the point of view of Popper and Eccles (1983) developed in *The Self and Its Brain*, a group of us in the university and the school system in South Florida are attempting to design and test an experimental curriculum as a supplement to the regular curriculum. We are trying to help pre-adolescents and adolescents who have become marginalized in the school system to develop the self and its personal skills as active constructors of their own reality. We want to strengthen the child's *self-conscious* skills in self-control of his or her own environment and in actively generating (rather than simply passively receiving) information vis-à-vis reality. We want to develop in the child a vivid consciousness of being a center of action, as an acting self that can use aggression as a constructive as well as a destructive instrument. We want to help the child make the self a “pilot” and, like a pilot, observe and take action at the same time. We want to strengthen the child's self against the inroads of socially accelerated frustration-aggression associated with self-abuse and abuse of other selves, alcoholism and suicide, and the frenzy of aborted self-expression. We want to enhance the child's effective control over his own reality with the self as his referent center. We want to help him realize the possibility of his own choices in his life. We are certainly aware that these are very ambitious goals, but we believe that the changing paradigm in science opens up new possibilities for their realization.

Therefore, our experimental curriculum is couched within the new paradigm, and we have chosen educational exercises and strategies that more logically fit within this paradigm than within the classic one. That is, they are not concerned with directly remediating neurophysiological deficiencies or directly intervening in the child's larger, culturally “deprived” environment. Rather, the curriculum methodology assumes, as Popper and Eccles do, or as other theorists within the new paradigm tradition do, that the self, the mind, or the human consciousness is the action

center of the child's reality. The assumption is that the self owns the human brain and not the other way around, the self participates in the control of the environment, and so-called physical “realities” do not actually control the self.

We have drawn heavily upon cognitive-affective and personal construct psychology as a way of implementing the new paradigm. We have been influenced by the instrumental learning curriculum of Reuven Feuerstein (1979, 1980) in Israel and the personal construct psychology of George Kelly and his followers (Kelly, 1955, 1963; Landfield & Leitner, 1980) in this country, Canada, and England.

Our experimental and supplemental curriculum attempts to enhance the mental skills of environmental self-construction involving “mental schemes,” “modes of thought,” “personal constructs,” “emotionally charged images,” or “affective-volitional tendencies.” By designing educational exercises and strategies to expand the child's reservoir of such schemes, modes of thought, constructs, images, and affective-volitional tendencies revolving around his self, we attempt to increase the child's self-conscious control over his own reality.

There are cognitive, affective, and metacognitive elements in the design of the exercises and strategies in this new paradigm curriculum constructed to supplement the regular curriculum in the child's school experience. We want to develop in the child not only the skills of what Piaget calls “reality construction,” but a *self-conscious* awareness of the use of these skills. This deals with a level of teaching that is newly emerging in the schools—that is, “metacognitive” skills teaching. These are being called “reality testing skills” (de Bettencourt, 1987), which involve self-prediction and self-awareness functioning in the cognitive-affective arena. Therefore, some of our exercises and strategies give more attention to the dimension of self-awareness of environmental self-control. Others focus more specifically on straight affective-constructive cognitive skills or “affective-volitional tendencies” similar to Piaget's (1986) demonstrations and Reuven Feuerstein's (1979, 1980) instrumental curriculum

for teaching the environmental construction skills of object, time, space, causality, movement, number, and sequencing.

### Examples

#### *Timelines*

To teach the child Einstein's discovery of time as a mode of thought rather than a condition in the universe, we have the child construct his own personal timeline, based on his own critical life events. We teach him that “yesterday and tomorrow,” “past and present,” “before and after,” and “now and then” have a historical self-center. In the personal timeline, the child is obviously the personal center of such historical time.

We also teach the child to compare time differences in various parts of the world and on other planets and to “transpose himself through space,” changing his wristwatch as he goes. This is another time exercise that also teaches the transposition of time into space and space into time, relative to his personal movement in the cosmos.

#### *Conflicts*

To teach him the individualized nature of personal-environmental reality, we ask him to use his own personal conflicts in the classroom as learning material. As in the case of witnesses or antagonists in a courtroom, an impartial hearing is given to each conflicting version of what really happened in an emotionally charged situation. In a variety of procedures, the child learns to shift from one perspective to another in terms of what really happened, to weigh alternative views and experiences, and to arrive at a more comprehensive judgment of his own. This can help him see the many facets and nuances of reality.

The procedures include, but are not limited to the following. Each participant in the conflict is given the opportunity (by the teacher, teacher's aid, or behavioral specialist) to independently state his or her own version of the conflict. This can be verbal, written, or tape recorded. Each participant is then provided with the record of the opposing version of the reality of the conflict. If there are ripple effects throughout an entire class, there are several procedures

for handling these alternative views of the reality involved. When things have quieted, each participant in the conflict gives his or her view of what happened. Any witnesses provide other versions. There is then a general discussion of alternative views of that particular reality event. There is no attempt to arrive at who is right. The aim is to discuss alternative realities. A role play repeating the events is acted out before the class, with the participants switching roles and points of view. This is followed by a nonemotional review of how experiences of reality can differ.

### *Personal Projections*

To teach the child how realities differ according to what each individual contributes to his own unique world, we show him how he literally helps *make* his world. We use both overhead projections and individual sheets with optical illusions, embedded figures, and figure-ground reversal pictures in which he can concretely see how his own unique contribution creates or constructs the reality in the picture. For instance, in a single picture, one person may legitimately see an Indian's head, but another may, also legitimately, project an Eskimo standing at the entrance to a cave. In another picture, one may project an old hag; another may legitimately project a beautiful young girl. In an embedded figure picture, the child may look at what seems to be a chaotic presentation of black blotches on a white sheet of paper. Gradually, however, through the exercise of mental projective powers, a dog—a Dalmatian—gradually emerges. This is followed with a classroom discussion of the different personal projections of the specific reality constructions.

### *Descriptors*

To give the student a better grasp of his own self-construction, we show him how to uncover the limited range of his own unique, repetitious vocabulary of terms or words he uses to try to encompass and describe the vast complexity of the essence of himself and other people. Each of us may use a very constricted set of personal constructs to think about and act out our personality and act upon other personalities in our everyday

settings. We are not aware of how distinctly this limited repertoire of "self-other" vocabulary stamps our personal behavior toward others and ourselves in our own little world. By helping the child surface his own personal descriptors, according to personal-construct psychology research, we give the child greater metacognitive control over his own construction of his self-world relationships. We also encourage him to uncover latent personal descriptors that he can try out in his everyday life to expand his personal-behavioral repertoire.

We have developed specific instruments for this exercise in the "personal construction" of the self as an actor in the real world. Some are original, and some have been adapted from the vast research literature in personal construct psychology. The child uses these instruments not only to learn about his personal constructs but also to keep a record, in personal journal and self-observational data form, that he can use in predicting his behavior from day to day and week to week, based on his own personal constructs. These record forms also provide him with the knowledge of how he is doing in trying out additional constructs or descriptors in his self-conscious daily behavior.

### *Mental Operations*

To teach the child to relate himself more effectively to his "physical" environment, we teach him some of the skills of constructive mental operations or modes of thought such as those uncovered in Piaget's studies of how the child learns to construct reality. This is more familiar in standard curricula. We teach the mental operations involved in constructing objects, space, time, causality, volume, number, movement, and distance.

We use many of the typical educational exercises and materials such as volume beakers and discriminate items dealing with size, shape, color, and space, including those found on intelligence tests, such as block design, coding, bead stringing, and assembly of jigsaw objects.

To teach them how to tap in on their reality construction capacities, we give children old, nonworking appliances and ask them to take the gadgets apart

and do what they want with them, including repairing, adding relays, and designing robots. We have found this exercise to be particularly intriguing to children. They want more and more time for the exercise and want to carry it on outside class time. In some cases, this develops into major, long-term projects for individuals and frequently becomes a stimulus to the child using the project to teach other children things connected to the reality they have created.

### **Teaching Metacognitive Knowledge of Self-Constructive Skills**

So far, we know that the children have been involved, cooperative, and even excited by most of the exercises and strategies in our curriculum. Not only do we hold their attention, but many times they try out the exercises on other children or continue working on some of them outside the classroom. We have had instances in which they wanted to prolong the class time and have had requests from other children to be admitted to the closed class.

Now they are beginning to ask the crucial questions: "Why are we doing these things?" "Why are we learning this?" "What are we learning?" This gives us the ideal opportunity for what we consider the most important metacognitive exercises in our curriculum. We offer new versions of some of the skill-training materials and exercises presented earlier, with the explanation of what they have been all about. We try to give the children self-conscious knowledge of what we are trying to help them build in their minds—the personal constructs, affective images, schemes, modes of thought, and affective-volitional tendencies with which to construct themselves and their world. We let them in on, and try to encourage them to participate in, our mutual constructive endeavor. We have tried to show them, through this added metacognitive awareness of earlier exercises, how much of their own reality they generate themselves.

### **Goals and Objectives**

All of these exercises and strategies are designed to teach the child to expand and deepen the schemes, constructs, affective-volitional tendencies,

or modes of thought involved in reality construction, with self as its referent center. We are trying to teach the child to use his own mind, his self, his consciousness, as his pilot. We are trying to teach him that, as a pilot, his self both observes and takes action at the same time—that it is acting and suffering, recalling the past, planning and programming the future, expecting, and disposing. We are trying to teach him to put self and world together in his reality rather than taking them apart. We want the child to learn to control the self as it exerts influence on his own reality. We want him to learn that his self-conscious mind is the referent point that contains in quick succession, or all at once, wishes, hopes, plans, decisions to act, and a vivid awareness of being a center of action—an acting self in a dynamically self-related world. We try to show him that he can exert considerable influence, control, and responsibility over the reality that he previously believed to be totally under the control of the external environment and inherited or deviant characteristics in his brain and physiology. We are trying to teach him that the self is real, substantive, educable, and under his own control and that he is in control, to a major extent, of his own world. We are trying to free him in increasing degrees from the attributed overwhelming power over himself of inheritance and environment. We are trying to teach him the skills to take command of his world largely as a product of himself.

In our curriculum, self-conscious awareness of the skills of reality construction is a sine qua non of the changing paradigm in science. The previously passive “observer” of classic thought now becomes the acting, self-conscious “participator” (Wheeler, 1982) in the reality process into which self enters as a principal dynamic.

We feel that the combined forces of emerging cognitive-affective theory, emerging brain theory such as that of Popper and Eccles (1983), relativity theory, and quantum theory are all parts of a new paradigm that opens the way to added power in the educative process. At the very least, it suggests supplemental methods and strategies for childhood development.

## The Population of Children

At the present time, we are testing, refining, and measuring the influence of this curriculum on a specific population of preadolescent and adolescent children, diagnosed as severely emotionally disturbed, most of whom come out of a social-economic background of neglect, abuse, deprivation, and multiagency involvement. They are all receiving special education service through a public

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## We hope to introduce “the element of consciousness into the material world.”

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school system. They are in self-contained classes in an almost totally restrictive living and learning environment.

These children are only a single cohort of children on whom we want to test and refine the curriculum. We would like to add other cohorts of preadolescents and adolescents who are very difficult to work with because of their marginalized status. We are exploring with specific educators the feasibility of testing this curriculum with a “hard-core” minority, an “alternative education” cohort, an Indian cohort, and an Eskimo cohort. All of these are populations in which negative social-environmental factors loom very large and in which many negative physical or physiological conditions are diagnosed or presumed to be involved. They are also populations with high alcoholic or drug abuse, a high suicide rate, and a high rate of rejection by regular education.

## Methodology

Our methodology is heavily influenced by Piaget’s naturalistic research approach with careful observation and anecdotal records plus experimental procedures. In addition, we are also using self-concept scales and various special education and psychological tests.

However, at this point, we see our curriculum research as only exploratory. At the present time, our primary effort is to translate the logic of the new scientific paradigm into concrete human intervention procedures. Our goal is to provide supplemental curricula that may be effective with “marginalized” children in various educational environments. We see our research not as a specific time-limited project but as part of a long-term program of intellectual science studies within the emerging new scientific paradigm.

## Materials

We use materials in the curriculum that are inexpensive and easy to construct or obtain, that can be kept by the children, and that are relatively easy to understand and use. We do not include complicated gadgets or technically difficult ones. We want the materials to be easy to duplicate and comfortable for the teacher to use in any classroom.

## Teacher- and School-Friendly

Borrowing computer language, Eleanor Guetzloe (1987) has talked about the importance of making a curriculum that is “teacher-friendly” and “school-friendly.” Although admittedly the changing new scientific paradigm in which our curricula efforts are couched is difficult for many to accept because of its departure from classic thinking, we nevertheless are struggling to make these child interventions as teacher-friendly and school-friendly as possible. That is why we tie the necessary self-construct teaching to more familiar environmental construct or environmental concept teaching. That is also why we try to align the newer metacognitive teaching, which is beginning to emerge in the schools, with the more classic cognitive-affective teaching in “thinking skills” curricula. Educators have come a long way, in the last few years, in teaching underlying learning skills and in incorporating affective and social learning material into their general curricula, particularly in special education. Therefore, we feel there is a body of knowledge and an attitudinal readiness to experiment with a holistic type of supplemental curriculum that addresses the possibility of teaching the

critical skills of self-world relationships. We know that special educators see the teaching of self-concepts, self-understanding, and self-knowledge of reality as very important. We do not think we are stretching this interest too far by trying to involve a few of them in teaching reality-construction skills with the child's self as the referent.

### Funding

At the present time, we have no special funding and are not seeking any for this program of exploratory studies in the new paradigm curricula. Although for practical reasons special funding may be necessary in the future, at the present time we try to negotiate "in-kind" collaborations in the program. So far, we have been successful.

### Curriculum Publication

We do not feel we are ready to publish our curriculum. All of our exercises are carefully written out, described on paper, and placed on transparencies. We will not be distributing these very widely in the near future. Various people in our research group are presenting our work at national and regional conferences because we want to make others aware of what we are trying to do and to get fresh input from fellow travelers in the field. The same is true of journal publications such as these. We hope to stimulate interest, provide a forum for exchange, and keep people abreast of what we are discovering. We want to share, but we want to be cautious about what we are sharing. Until it is better developed and tested, we do not want to see our curriculum widely dispersed.

What we are trying to do is to loosen the stranglehold of both biophysical (or bioneurological) and environmental determinism on our thinking and that of our students and give the educational process or learning process its just due. We want to capture the vision of the new world view emerging out of the changing scientific paradigm that is influencing logic, philosophy, theory, and research. We hope to introduce what Fred Allen Wolf (1986) describes as "the element of consciousness into the material world." He writes:

This consciousness will not arise from the molecule itself, as seen as a material unit, but will arise as a "risk-taking" psyche—that is, one that chooses. (p. 18)

We want our students to have choices, not to be locked in by the tyrannical power of an "external" environment or an "internal" neurophysiology. Our own faith in these two dominant powers has, in the past, rendered us impotent to provide choices for our students. Perhaps our future might be able to change this.

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