

The Year Of The Child

Knowing: Epistemology Or Psychology?



Educational Solutions Worldwide Inc.

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For this last issue of our Newsletter within The Year of the Child, we have chosen a theme that overlaps all ages and may interest those students of education who are curious about how we acquire knowledge. In a previous issue (Vol. V No. 5) devoted to knowledge we already raised some questions which are relevant to this theme. By preferring to consider the concept of knowing rather than that of knowledge we open the door to epistemology, or the science of how we know. Still, in the empirical sense it was psychologists (now known as cognitive psychologists) who studied that field. What we shall attempt in the articles of this issue is to find out which of these sciences has most to tell us that can help us as educators working with any student population. For many years our research and our practice have forced us to lean more and more heavily on knowing, and to develop the approaches which give it a greater place in the classroom. The steady confirmations that indeed we should go with the shift from knowledge to knowing were experienced by all those who went that same way, and they have let us know of it. There are now a large number of educators engaged in bringing forth more and more evidence to help those still hesitating to take the step. We are confident that the discussions on this issue will contribute to the same end.

A review of “Who Cares About Health?” and News Items are also part of this issue.

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1 Epistemology

From this vast subject, which extends over centuries of publications in various civilizations and cultures, we shall extract those tendencies which can serve the purpose of making sense of the shift from knowledge to knowing.

Socrates was clearly aware that knowing produces knowledge, but he was neither understood nor followed by the great majority of scholars. Montaigne, twenty centuries later, became sensitive to the spontaneous learning of humans while his contemporary, Rabelais, stressed the acquisition of knowledge as obtained from those who had it. The success during and after the Renaissance, of the model of the transmission of knowledge, led thinkers like Locke and Berkeley to imagine the mind as only a receptor, and growth in knowledge as an accumulation of retained items pre-existing in a child's environment.

When, a hundred years later, Condillac offered his model of the mind as a wax statue on whose brain the impressions from the outside world left their track, he was received by the public as having found the truth about knowledge: the mind was passive, and the attributes of the outside world were such that they left their mark simply by a person letting them in. The evidence was overwhelming to the onlookers of that time. There was so little questioning about that model, which was compatible with those of Locke and Berkeley, that it still lingers on in our schools all over the world.

Locke's proposed approach to how we know was simple compared to what we can propose today, but adequate for acceptance by his contemporaries who were considering these matters for the first time. If we start with people who do not possess one or another of the sense organs, it is clear that they do not notice the attributes of the world around them which are noticed by those who have the organs. No knowledge of color is available to the blind, no knowledge of sound to the deaf, no knowledge of shape to the blind and limbless.

Hence, it was reasoned, the source of all knowledge must be the impact of the outer world upon healthy and functioning sense organs. Sensations are therefore the most primitive forms of what will become knowledge of reality i.e. outside reality, and Locke used them extensively in his model of the growth of knowledge.

Since, after the Renaissance in the West, the dialogue with the environment (and at first, only with the physical environment) dominated all others, it is easy to find a consensus among the major "philosophers" from Descartes and Francis Bacon to Hume and Kant (to name a few): that to know is to let in through the sense organs those items which we must make sense of through reflection and experimentation.

Descartes' tabula rasa led him to perceive unequivocally that thinking was a universe of its own, in which perception can be focused on, and provides the basis for the work of the mind. He accepted perceptions as remnants in the brain of sensations or impacts from the outside world.

Bacon finds it legitimate that to make sense of anything requires that we act on the overall sources of the impacts concerned. We can, and perhaps must, act upon those sources to bring the aspect we want to know better more into focus. This intervention, or the experimental method, has become so widespread and yielded so many unexpected and useful results that it has been adopted right and left, and by all emerging sciences. To know is thus to question a field, to make it yield what can be perceived now that was not perceived before. Knowledge is the direct outcome of a technology, that which generates the

instruments for knowing. Only the search for new knowledge justifies the steps taken.

Thus, reflection and experimentation established themselves as the procedures which yield knowledge. It was knowledge that was pursued by all: new knowledge in the sciences; established knowledge by students.

The apprenticeship of future scientists became more and more to take in what was known thus far and to try to add to it anything heretofore not known, however insignificant. The stress on knowledge and on the accumulation of knowledge was clearly dominant.

But behind this stress there has always been room, however little consciously acknowledged, for the process that produces knowledge. Descartes could not leave out altogether the role of intuition, Kant, the built-in attributes of the mind that make it perceive space and time as a priori not needing to be analyzed or even not capable of coming to consciousness as such.

The “philosophers” reached their conclusions by reflecting on some aspects of knowing which challenged and fascinated them. The evidence that tallied with their views was collected. That which might have forced them to look for other lightings was ignored. For example, already in the sixteenth century in Spain (and later in Paris) deaf aristocrats learned to speak through “lip reading,” i.e. managed to know through the use of their sight what the ordinary sense of hearing was suppose to be alone capable of channeling to their mind. Sounds still had to be received by the ear in spite of that evidence.

Phenomenologists were also philosophers concerned with how we know, but ready to allow a more flexible relationship between the mind and knowledge, giving the first a place in the generation of what is called phenomena. They were ready also to consider that knowledge is generated by an interaction of the mind and a hypothetical reality outside, progressively known through both what the mind does with itself and through the inputs from outside it.

When Piaget started working on these problems he was at first entirely influenced by the philosophers and in particular by his lecturer at the Sorbonne, Leon Brunschwig, whose sharp mind, looking at science as it developed in history, detected that facts were very much the outcome of the dialogues of minds.

Collective evolution projected itself in the history of thinking, as was recorded in the sciences. Piaget entered a new field with what he labeled “Genetic epistemology” when he asked himself not how eminent scientists worked but how children manage to acquire the outlooks prevalent in their environments on matters studied in the sciences.

Genetic epistemology occupies five decades of this century, starting around 1930. Guided by Piaget’s concepts, it purports to study in detail how each of the key notions of modern science are sketched, then refined and given body, then become second nature and function as the spontaneous ways of looking at reality which are found in the working, adult scientists.

For these epistemologists the reality to be apprehended is that which scientists talk and write about. When one reaches it, one knows. The way in which we develop to acquire the ability to own these notions with the dynamics that go with them, needs to be studied by them as specialists of that domain. Methods of study are offered in the literature that can possibly be dated as having started in the mid-thirties when Piaget published his first volumes on “The child’s conception of” series. The final words of these titles are space or time, or causality, or probability, or reality, or number etc. (and not necessarily in that order).

Not only does Piaget begin by finding that very young children don’t have these notions as he has them, but he also finds that to own them is to reach, in one’s evolution over a dozen years, a mental organization which brings on the articulation of operations (abstract) so as to form a system resembling algebraic structures isolated by mathematicians in their effort to find the foundations of their science. What that school of epistemologists is finding, therefore, is not how we know, which is the

ordinary definition of their science, but how a certain method of research yields items that can be observed, written up, coordinated and looked at in terms of an existing model.

Piaget's model has a biological origin and a mathematical garment. From biology he drew the dual functioning of assimilation and accommodation which permits him to consider the impact from the outside as well as the mental work within. From mathematics he selected an algebraic lighting which lets him say that a notion is owned (or known fully) when it reaches the stage of being workable in propositions through a logic equivalent to a "Booleian algebra." He personally believes he understands the evolution of a notion when he sees it as the merging of separate abstract structures into an entity that can be handled as it is by mathematicians.

Although space, time, numbers etc. are concepts that are either beyond our reach in their complexity or only knowable in part and for some of their features, genetic epistemologists think they have grasped them fully when they coincide with their own preconceptions of what these are.

Of course, epistemology will continue to develop and to take turns that no one can suspect today.

In what I called "a new epistemology" in a number of articles published since 1952, I offered methods for approaching the same problems which have been investigated by Homosapiens for millennia. This Newsletter has served, in the last eight years, as a vehicle for some of these.

2 Psychology

As a collective occupation, psychology is a newcomer to the scene. In retrospect, we can observe that “know thyself” was already testimony to the preoccupation with matters hidden in oneself and further, that the great importance given by Hindu thinkers to awareness and self discipline are signs of a profound involvement of a whole civilization with the inner life. But it remains that a neutral science, concerned with facts rather than ideas and the good life, only came into being during the mid-nineteenth century in Western Europe.

This does not constitute a claim to any superiority, only one that certain people, without any special qualification, pointed at the existence of an aspect of reality around them which had not been pointed at before, and one that could be noticed by anyone by going through certain motions. In fact, Fechner and Weber in Germany, around the middle of the nineteenth century, only spoke of the laws of physical-psychology when they studied the threshold of sensations through laboratory instruments. They discovered, for instance, that the eye can perceive the print of a text only if it is lit for a duration longer than a certain time (called the threshold) even when that duration is made up of the accumulation of fractions thereof separated by successive short periods without any light.

Such experiments are clearly part of physics, but since they specifically concern sensations they are attributed to the psyche. The main concern

of the scientists was to quantify, for, as Poincare said later: “There is only science of what is measurable.”

At the same time, another study of the psyche began to demand attention, this time that of the physicians, and the facts gathered as a consequence went to constitute psychopathology, which soon led to psychiatry, psychoanalysis, and the various psycho-therapies. Psychology as such took longer to be given the rank of a science. Between 70 and 80 years ago, Theodule Ribot in France, William James in the U.S., Galton in England and in other parts of the world, founded the societies and the associations, indicative of a wide interest in the facts which had newly been made perceptible, which formed the clientele for the new science called psychology and that gave it social status.

Binet in France and Pavlov in Russia had no doubt that there were objective methods of reaching the facts of psychology, and they generated the fields of educational psychology and of behaviorism. The axioms in those two fields, although different, stated the unequivocal reality of psychological facts for whose study the science of psychology was created. These facts were reachable, like those of physics, from the outside. Behaviors for instance were objective because they could be photographed. Pavlov’s experiments were laboratory experiments to the same extent as those of Claude Bernard or Pasteur in biology. Behaviorism seemed to behaviorists the only scientific psychology. But to the many other psychologists this claim seemed both excessive and unjustified.

Outsiders simply said that there were either many psychologies or that none was really scientific yet. The old introspective way of studying the mind was discredited by the accusation that it was the work of novelists not scientists. The impact of William James did not fade away although his book preceded that period. This was because James managed to seriously study aspects of life which no one knew where to situate except in psychology; and which everyone nonetheless found inescapably to be facts: habits, for example.

The neurological basis of the psyche was another way in which those who wanted to give a scientific basis to psychology attempted to reduce to tangible evidence the intangible mind. But for a long time the brain seemed so much more difficult to understand than the mind (considered to be one of its secretions). Only a strong adherence to materialism gave matter a higher status than was given to the illusive mind.

Psychologists had the ear of those in the public who were interested in themselves more than they had that of the others. Psychology created its own clientele and managed to make it reach large numbers in less than 60 years. In fact, there were several psychologies, perhaps many, each of which suited groups with special needs who did not understand each others' preoccupations and fought fiercely for their own domination of the field. As a result, psychology is not yet universally acknowledged as a science although it can show many instances of serious and protracted investigation of things of the mind. In some universities psychology remains a field classified as of the humanities, like literature and history. In others it is classified as a human science, along with anthropology, sociology and others.

A science is born when a set of impressions become acknowledged as facts, in the way the impacts on the senses are. If enough people speak of some impacts as facts, they give themselves the status of scientists. Today most educated people say that there are psychological facts as surely accessible as colors or sounds, which later became part of physics when it was shown that they had an existence of their own as vibrations of certain frequencies propagated in the environment at certain speeds.

Colors are those things that now exist per se whether or not there are people to study them. At one stage behaviors appeared to be as well defined as colors were, and behaviorism appeared to become the real psychology. Unfortunately behaviors in humans could be affected, altered, made to vanish, under the impact of items called will, inspiration, conversion, etc. which could not be easily grasped and were classified as mystical or even mythical, as outside science.

Behaviors were studied by many people who considered themselves first as psychologists, studying something wider than those behaviors that could be photographed, and only secondly as behaviorists, or members of an important school of psychology, perhaps the most important.

In psychology as in all other sciences, what is studied is a model of reality which for a while stands for all reality.

It follows that psychology as a science owes a great deal to the psychologists who can determine what is the content of their model. Freud was one of them. It is therefore easy to see whether such or such a psychology has something to say about knowledge and knowing.

Behaviorism can reach all behaviors that are indicative that one owns some knowledge — like being able to jump or to spell well — but it is not concerned with how one gets to mastery, being unable to make the necessary assumptions within the terms of its model. In behaviorism, consciousness is not a fact and there is no place for an active, creative and autonomous self. What happens in one's sleep is also of no concern, unless one discovers Rapid Eye Movements (REM) and uses them as instruments of study.

Among the psychologists who give prominence to the unconscious, the self and the will are not entities that can serve to understand how people manage their inner lives and consequently their outer lives. Knowing is mainly emotional knowing, and knowing feelings; thus the vast area of apprenticeships is deliberately ignored.

Cognitive psychologists do not give themselves this label because they are concerned with understanding how we know, i.e. what we actually do with ourselves to master know-hows, but because they deliberately don't allow themselves to invoke affectivity in learning as a help or a hindrance, because their techniques for finding answers to their questions are intellectual and verbal, and sometimes social.

It must be clear that since the questions posed by those workers who call themselves psychologists are their own questions, and we can only reap what is sown, we must be careful and not identify the state of affairs today with all that could be found, especially if we alter our viewpoints and allow other factors to shed their light on the arena.

In my own work (which I located within psychology) I studied learning as a conscious act of a self endowed with many attributes such as awareness, will, intelligence, discrimination, retention, perception, imaging and so on. I became convinced that psychology could be defined as the science of time, the time we consume for experiencing. Looking at what we did with our time from conception on helped me shed new light on several phenomena which either had been poorly understood until then or had been left out altogether. In particular, my studies of learning yielded not only what Cognitive psychologists hoped to find in their own studies but allowed me to offer a technology for education that proved me closer to knowing what knowing is than was possible in the existing laboratories.

The next article will mainly concern itself with this matter. To close this short review of ideas about psychology, let me say that if we have not yet been able to find which are uniquely the facts of psychology, in order to create that science, it may be because men are unique individuals who use themselves uniquely also and generate variable constellations of behaviors, unpredictable and variably constituted. Perhaps the complications resulting from this state of affairs is generating a new kind of science where generalizations can only be made within variable limits and where models are cybernetic, i.e. correct themselves as new facts make their appearance. Most of the established psychologies do not claim they own such a model.

3 Knowing: The Instrument

What we want to indicate in this article is that we can get a greater mileage out of accepting knowing as an instrument than out of trying to explain knowing in terms of epistemology or psychology. Indeed, I can become directly aware of myself knowing and find that knowing takes various forms when awareness is applied to various fields, including the two named earlier as epistemology and psychology.

It will be very difficult to provide strict boundaries between the contents of the awarenesses that are generally labeled “knowing,” “epistemology” and “psychology,” but once we immerse ourselves in their deeper study we cannot fail to form criteria that tell us which is which.

Since knowing follows awareness, and adds to it a retention of some sort, we can follow its functioning from early childhood to today. We must begin our description of the “thing” we are studying by stating that the self, endowed with awareness and will, engages itself in a dialogue with its awareness to uncover its contents and make it explicit. It then reapplies awareness to that content which thus gains the label of “knowing” and, when retained, of “knowledge.” We can therefore say that knowing generates knowledge.

The advantage found in knowing, in contrast to knowledge, is that the first evokes an activity while the second evokes a quantifiable “thing.” One is a verb and the other a noun, and years of thinking verbally has

associated labile energy with the first and, locked up energy with the second. Because knowing is an activity it can be found at all levels, and has the potential of yielding knowledges of different kinds (rather than different kinds of knowledge). Examples are the somatic knowledge of handling what is placed in the digestive track — sometimes ingested, sometimes thrown up — and the knowledge that one is now awake or that one is in love or that one can repair a car or take oneself from home to a given airport, etc.

When knowing is used as the instrument, it specializes the awareness so that it remains in contact with the “thing” to be known for as long as is necessary. This produces the further awareness that that “thing” is now part of oneself, has been retained by one, or has been understood and has become an integral part of one’s outlook on the field.

Since knowing has awareness in it, it can be present from the inception of life and can be acknowledged by anyone who has awareness of the awareness. Thus babies, even when they do not yet speak, can convey to themselves that they can look in order to see, focus in order to see more, listen in order to hear and be more present in their ear to hear more. There is a universe for the baby to know, and each of us managed to do so with ease and certainty, leading us to a knowledge of the universe of perception which still today works automatically for us and serves us well. There is a universe for boys and girls about which they say nothing — although most of them can speak by then — but can definitely be labeled the world of action, actual and virtual. How much each of us knows at the age of 10 requires volumes to be accurately described. It is rarely counted as knowledge and rarely used to place us where we are on scholastic tests. But it certainly is counted as know-hows by every speaker doing it for oneself or for others and upon others. The list is endless: I can throw, I can grasp, I can hold, I can slide, I can turn, push, pull and so on. I have given myself each of the skills assumed by each of these labels by becoming aware of something and by practice, both of which are part of knowing but do not necessarily lead to verbal knowledge.

Each of us has so much experience by the age of ten in the vast fields of perception and action, but neither epistemologists nor psychologists

want to count it as knowledge. Still, they are ready to include special activities, like counting, adding, penmanship, spelling, in their study of what we know. This is so because the testers, as well as those who run society, live intensely in the social absolute and can process useful knowledge socially when they cannot see any use for the fine tuning of muscle tones and the spontaneous powers of concentration and of discrimination.

As soon as we transcend the social absolute, in which most adults consciously live their conscious lives today, we find the many manifestations of the gift of the self to the universes that need to be as well integrated as possible in order to permit a creative and free life in the complex universe of today's mature adulthood.

Knowing that I must give myself fully, passionately, to knowing the content and the dynamics of each of the successive absolutes is the result of human evolution where awareness is the main and distinctive light. Today, legions of humans can attempt it because of their having consciously lived the successive phases of knowing at the perceptive, the active, the affective, the intellectual and the social levels.

Today we can develop the science of knowing all that, in detail, so as to turn it into the science of education by simply adding to it the technologies that force awareness of reality where until now we were content with awareness of appearances.

Knowing goes beyond the classical epistemology which attempted only intellectual study of intellectual knowledge. Whenever the stress shifted to intellectual knowing, classical epistemology proposed what could be integrated into the new epistemology, the science of knowing. But what classical epistemology found about knowing was too meager to serve the science of education and indeed almost no progress in public education can be cited thus far, as caused by epistemological studies.

Knowing goes also beyond the psychologies that call themselves cognitive, since they have no room either for the spontaneous learning that takes place at the embryonic and fetal stages, at the stage of birth

and soon after, at the period where one has to give one's perception its maximal extent and significance, at the period where active involvement in action is all that matters to the subject. Since affectivity must be known per se before it can be used deliberately to maintain one in contact with the constant challenges met in the intellectual field and later in the social field, affectivity has to be a component of epistemology and psychology as they attempt to comprehend how we know. Both ignore it. By so doing they cripple themselves and force us to investigate how we can form a new science — that of knowing — and how we can use it in our own education.

When we look into how we know intellectually — the proper field of epistemology — we face difficulties resulting from the fact that we must become aware of the minute amounts of energy which activate ideas and thoughts. Earlier in life we met, in the work of affectivity, substantial amounts which could be perceptible with ease. Now we face mental dynamics per se, and knowing is a new activity. While awareness of what we do with the content — called “reflection” — has been known for a long time, what the self actually does has not been adequately apprehended or described. The role of imagery in convincing us of the value of our mental work, the energy mobilized in those images, the way assimilated material becomes second nature and is immediately available to alter courses of thinking and to supply new needed inputs, the structures formed around main ideas and the dynamics present, and much more that now forms part of the studies of the new epistemology, will occupy workers for decades to come.

Psychology could have decided to consider that field as its own. It did not, preferring instead to go on gathering data from outside, or to create conditions via chemical and physical interventions on the brain, in itself too complex and too little known for these to produce a breakthrough in these matters at present. The instruments used by the psychologies currently being worked on seem too blunt for the subtle and delicate matters involved.

Classical epistemology, and even genetic epistemology, are bound by a historic approach and by laboratory techniques that cannot permit the

fine analyses needed to make headway in the field they choose for themselves.

The fact that humans have created the electronic technologies of this half century that operate at great speeds because they use extremely small amounts of energy, has not yet permeated the sciences of the mind that is responsible for such creations. The new epistemology, which is the science of knowing by considering the progress made by babies and very young children in surveying their environment and giving themselves means which, in very short periods of time, provide them with ways of knowing which they can rely on and which can be used throughout their life, this new epistemology is contributing the guidance needed to grasp the workings of the self in the field of the intellect and from that grasp, to its use in an improved intellectual education.

Knowing, in early childhood, is effortless and to the point. Hence babies and young children learn well, swiftly and for good. Seeing that effortlessness is possible (and resembles what calculators do in solving arithmetical problems) opens up a new era in our studies of what we can do with the mind as a director of the brain. Remembering is only a small aspect of knowing, although it seemed almost everything to the students of knowledge. Dynamic linkings of items stored in the mind and also of those created by it, form a larger field of work for the self studying itself knowing intellectually. These links are already used, for example, in understanding the brain better. They can be examined by the mind for what they are in it and to throw new lights on how we know, how we remember, how we create new intellectual structures, new ideas and find them valid or even true. We have always known thoughts as fleeting, today we can come closer to them and endow them with such minute amounts of energy (but still finite) that they produce changes in the mind and in the brain to make them recognizable and sui generis.

Conversely, it is possible to provide mental exercises in which one's awareness of recognition opens up a generalization which it is impossible to attain when the tools are those used in cognitive psychology or classical or genetic epistemology.

Indeed, when a social convention is understood as such it becomes possible to grasp its field of validity intellectually. For instance, in a three figure numeral each “place value” alters the meaning of the digit, even when they are all the same. It then becomes possible to exemplify the dynamics of reading all numerals of, say, nine figures by grasping how to read one and transferring the dynamics to all others labeled similarly.

It is in the universe of knowing that such exercises present themselves and are to be used to convey, in minutes, awarenesses and practices which have not only been postponed so far in school curriculums for no valid reason, but which leave us shaken when we see them managed swiftly and effortlessly by 6 year olds.

We have dulled our horizons, and missed a lot we could have found, by adhering in an irrational fashion to the retention of knowledge discovered historically by someone else, presented to learners as only available through memorization. We have not taken initiatives — which are now open to those who use knowing instead of knowledge — to take young children where their experience entitles them to go. We have generated in them false perceptions of what it is to grow in experience of the fields we reserve to teaching in schools. Such false perceptions may generate psychic blocks which last all through life and falsify what it is to be a learner, to the point that we give up trying to know. Our schools are full of competent learners falsely labeled disabled or retarded or simply not trying.

Knowing and its science can make a distinctive difference in the whole fabric of education if only more educators accept to look at them in their own case and begin to entertain the reality of knowing wherever it is to be found.

A good beginning is already available to whomever is interested.

4 Book Review - Who Cares About Health?

By Caleb Gattegno

In this book Dr. Gattegno analyzes and evaluates some theories of health and disease and then constructs his own model which differs in important ways from what has come before. The model centers around health, which is seen as a natural, positive and dynamic state, while disease is discussed only as something which happens when the means of maintaining health have proved inadequate. The formulations about health are derived from the use of his awareness on Dr. Gattegno's own and other people's condition, and his description carries with it a detailed consideration of the nature of man, his component structures and the means by which they are integrated.

Greatly over-simplified for the purpose of this review, the model may be described thus. It derives from the concept of the "four realms," and the way in which energy present in the human realm can be used by the self to organize and effect functions and structures of the supporting realms; the realm of behaviors in which many of our functions become increasingly automatic or routine as we develop, the cellular realm, and the realm of atoms and molecules. Just as each person is comprised of this pyramidal structure, so the model itself is seen to be a hierarchical one.

At each moment of time the self is able to select from among the possible perceptions and experiences, organize them and objectify them as elements of itself. Whether they are memories for recall or skills for a task, they are from that time on an integral part of us, automatically available so that the self is set free to make the necessary choices in the future. Thus the self is building itself, adding to its potential, with the aim of continuing its own growth and evolution into the future.

However, the self may be faced with something which is far outside its previous experience and ability to understand. If misguidedly it chooses to embrace the experience it may be quite unable to integrate it. The experience and the energy attached to it then remain separate from the rest of the psyche, and yet carried with the person as an element of his past. This undigested fragment will be in conflict with the rest of the psyche and will intrude into the functioning of the self. The self may then be unable to follow the sense of truth, which is the star by which it steers. For this reason, or for others, it can no longer actively move towards the future and has surrendered its role as the executive which keeps life at its apex. This loss of control is the point at which positive good health turns towards dysfunction and disease. Without active direction by the self, the energy flow through the psyche and the soma is no longer protected from invasion and decline. This leads to psychosomatic ailments and then to somatic illness. Often it is only at this late stage that the allopathic (Western) physician will diagnose disease.

This model with its emphasis on health and the role of awareness is then compared with other models. Among these are the ones used by traditional Chinese physicians, both acupuncturists and experts in herbal medicine. As in Dr. Gattegno's model the careful assessment of energy flow, both local and general, is seen as a key to diagnosis and treatment. It differs in that there is no place for the patients' own awareness in the Chinese system and there is no suggestion that the self plays a vital part in forming itself.

The allopathic model, used by most "American Medical Association" physicians lacks Dr. Gattegno's formulation of energy transactions

permeating the soma, the objectified function of the psyche and in fact every aspect of ourselves. Thus it can say nothing of early malfunctions and the ways in which psychosomatic illness might occur. Prevention can only be discussed in terms of measures imposed from without, never as energies which permeate through the whole of our psyche and soma.

This is a book which deals with difficult ideas. However, much of the material is derived by the process of insight through the medium of the author's awareness and therefore is open to confirmation or disagreement in the light of the reader's experience. I found that it rang true and opened for me a new and exciting way to look at health and its breakdown. I urge you to read it.

Nick Pott, M.D.

5 I Learned Hebrew With The Tapes

What was it like for me to learn a language from a video tape machine without a teacher or classmates?

It is now three months since I have completed The Silent Way Hebrew course. During that time I have often thought of writing about the experience and found that I kept postponing it. I now understand why it has been so difficult to write about. Until two days ago no one had seriously asked me to use what I had learned. Since I took the course alone, there was no witness to my learning and I had begun to doubt that I had in fact learned any Hebrew at all. Then two days ago, a friend who speaks Hebrew fluently asked me to tell her what I had learned this summer. Little by little the sounds, words, and sentences returned to me. I was quite surprised to see the delighted smile on my friend's face as she told me how sophisticated my vocabulary was and how closely my accent approached a native sound. As the sounds of Hebrew returned to me, so too the lessons I have learned from this experience have become clearer and I can begin to describe them.

I began my study feeling very hostile, having brought with me an intense dislike for video tape machines from previous negative experiences. As a result, I experienced much anger and frustration in the first few hours. I felt frustrated at not always seeing exactly what was being pointed to, at not knowing all the colors, at going too slowly, and at going too quickly. After a few lessons, I was given the Hebrew Fidel and a set of the Hebrew Word Charts, which were left on the wall

throughout the remainder of my lessons. This made it possible for me to review the lesson at the end of each tape. From that moment on my energy level drastically altered. I realized that I had been passively listening to the students on the tape. Now I began to make the sounds myself. As my own involvement increased, the lessons seemed easier and more fun. I realize now that my desire to see the Fidel at the end of the tape was in fact a desire for some personal contact with the language, and that this desire had translated itself into an annoyance with mechanical imperfections and was keeping me from being present with the lessons.

As I look back over the experience I find myself comparing this way of learning to times when I learned with a Silent Way teacher and a class. One of my reservations about not having a teacher was the lack of personal contact. There would be no one to help me when I was confused, no one to keep me on my toes when I became passive. On the other hand, there was also no one to blame if I felt that I was not progressing quickly enough or that whatever I was doing was not exactly right for me at that moment. I began to notice how many internal interferences I had blamed on a teacher or a class.

I came to see that I was always aware of the moments when I felt confused and that I was able to choose from several options for dealing with that confusion. They were often options that I would not have had with a teacher and a class. Sometimes I stopped the tape and took a short break, letting go of the tension and returned when I felt more relaxed. Sometimes I rewound the tape and began again, realizing that I had not paid close enough attention the first time and had missed several important clues. And sometimes, I lost belief in the process and found myself feeling depressed, not trusting that I would understand the meaning in time. At such times I would go home and return the next morning when I felt calmer and ready to try again. It always seemed easier the next morning than I had thought the day before because my own attitude had changed. I realized that the control over my ability to help myself was also the control over my ability to restructure and facilitate my own learning.

In order to facilitate my learning I needed to become aware of how I was learning. I became acutely aware of my pace: I could work without stopping for 3-4 hours because I had become so involved. I understood for the first time what it meant to “be with the language.” There were no outside distractions, no thoughts of time, food, or other activities. I saw that what I had thought was laziness was actually frustration and/or confusion. When I gave up, I gave myself to those feelings, became less involved with the language and the lesson, forgot the cause of those feelings, and saw myself as passive and lazy. This insight has been very helpful in watching my own students. At times when they don’t appear to be trying, it may be that they are experiencing these feelings.

Not having a teacher also meant that I had no one to monitor my learning process, no one to ask me for feedback. I noticed that I did not want to think about feedback when I was feeling frustrated or unsure that the meaning would come to me in time. But I also noticed that I felt a surge of pride when I wrote out my feedback without being asked to by anyone. I was doing it for myself, and realize now that taking my learning process seriously has been the source of many insights for me.

Working alone, I experimented with many different ways of learning and discovered that some impeded my progress. I had always wanted to write down the sounds soon after I had heard an utterance in a new language. (I often see my students experiencing the same desire.) Since I was alone, I tried this out for awhile, figuring that at least I would have something concrete to study from in the future even if I understood nothing in the present. What I discovered is that the writing interfered with my internalizing the new forms. Sometimes I wasn’t able to find the meaning because I was so preoccupied with writing down the sounds. Sometimes I forgot to work aloud on making the sounds smoothly and had gotten the meaning but had not gotten the fluency. I know now that I needed to learn this lesson for myself. Writing was an important form of practice in which I recreated what I had learned and saw where I needed additional practice. I decided to take notes after the lesson and that was helpful. I realized that it was the timing of the writing that was crucial and helped me to either reinforce or lose the fluency.

There are a few meanings that I still do not have. Perhaps if I had had a teacher and/or classmates, someone else might have created another situation which would have been clearer to me. I did have the teacher's manual at my disposal, so at times I would look up the lesson and find the meaning. Unfortunately most of those meanings are still not with me because I did not discover them through a situation. I was very frustrated for a long time with the thought that there were words whose use and meaning I still have not understood until I reminded myself of the ongoing nature of the learning process. How arrogant of me to think that I would learn the entire language flawlessly in 20 hours. Now I am ready to continue that process because I have relearned patience with myself.

I have also learned that I cannot consciously work on too many parts of a language at once. When I tried to work simultaneously on the intonation, the meaning, and the structure, I lost them all until I isolated one and watched carefully for the clues that would help me discover it. I noticed though that when I made a choice to work on one frustrating element, the other parts often fell into place.

Although I expected myself to find each new lesson as easy as the last, that was not always the case. I learned to accept that sometimes I could say a sentence well but could not figure out its meaning and vice versa. I could not predict what would come with ease and what would not. And I realized that this is a fact of life for me: that some understandings will come with ease and others with great difficulty. Although it may seem very elementary, the awareness and acceptance of this fact has had far reaching implications in all aspects of my life. Also the awareness of when I was expecting a lesson to be easy or difficult has taught me a great deal about how I have enhanced or blocked my own learning. The greater the expectations I place on myself the more interferences I have to keep me from being in the present moment and from concentrating.

I cannot compare my speed in learning this way with learning in a class and with a teacher. My own experiments often slowed down my pace but they taught me other lessons that I needed to learn about how I

learn best. At other times I went faster than the students on the tape, and at those times, I would fast-forward the lesson and move on.

In retrospect I look upon this experience as another step in my own learning process. As I discovered meanings, structure, and correct pronunciation, I felt the same excited burst of energy I have felt when I have worked with a class and a teacher. Throughout this experience I have felt the joys, doubts, frustrations, insights, and the intense involvement with learning that I have had in all of The Silent Way classes I have taken. Perhaps the most exciting aspect of this experience for me is that I have noticed I now feel more comfortable with my energy and my pace, that I have come to respect myself as a learner, and that I didn't need a teacher or a class for all of that to happen.

Susan J. Ackerman

News Items

1 A new computer-made mathematics film was completed at the end of October: a 16 3/4 min. film on “The Foundations of Geometry.” It was shown in France and Switzerland in November and was found to do its job surprisingly well. Indeed, never before has anyone attempted to put on film a succession of situations conveying axioms and definitions which, together, give viewers a direct insight into the foundations of geometry. The procedure generally followed in presenting mathematics is to introduce some axioms at the beginning of a course to permit the investigation of certain properties, judged by mathematicians to be the ones needed to forge ahead. Definitions are also introduced to allow a development.

In this film an outline, which had been prepared by Gustave Choquet, a member of the French Academy of Sciences and Professor of Analysis at the University of Paris, as the framework for the reform of the teaching of mathematics at the Junior High School level in France, was used by Dr. Gattegno to propose a visualization of what is every year aimed at 600, 000 teenagers. The actual computer animation was done in Montreal by Serge Chicoine and Andre Fourrier, animators also of the seven films of the new Animated Geometry series.

The qualities of the film are therefore 1) that it forms a consistent presentation of axioms and definitions which is capable of giving a solid foundation to an important branch of mathematics, 2) that it makes possible an almost immediate grasp of such subtle matters as

are rarely encompassed in toto by students of Junior High School age, and 3) that it is a lovely, smooth and evocative sequence of images capable of drawing viewers into a closer study of the matter.

The international team that put a number of competencies at the service of mathematical education is another attribute of this unique work of art.

Choquet wrote his notes as part of a proposal made by three members of the Academy to the French Ministry of Education; Dr. Gattegno in New York produced his scenario from these notes and used his experience with the two computer graphic specialists at the University of Montreal to create the needed transfer from words to an animated film.

When the film was viewed at a meeting of the Paris IREM (the organization entrusted with the study of mathematics education as well as with secondary teachers' preparation in teaching the subject) on November 14th, there was unanimous agreement that pedagogical progress had been made by the creation of this film. The audience, usually very critical of anything that might remotely smack of gimmicks or debase the lofty subject of mathematics, admitted that the visual unfolding of the argument could only be helpful in maintaining the viewers' respect for rigor and consistency, and in giving them mathematical insight. One after another, the members of the audience found things to say that praised the film and what it could do for mathematics education. At once, minds went to work on finding means of bringing access to this valuable instrument to everyone.

Although the first group of people to satisfy had to be the working mathematicians, and in particular those who had proposed the latest reform, there were other people who needed to be sounded out. Also several showings of the film, in Lyon, Geneva, London (England), produced valuable feedback from persons who teach mathematics at various levels, including at college, and from others who only study it. We can safely say that each viewing (for those who looked at the film up to five times) increases the penetration of its message and makes one appreciate more what it brings and how it should be used.

The film is a teaching instrument that can take months to be fully exploited. Segments lasting a few second may be sufficient to spark a one-hour discussion of its message in which students and teachers may find a new freedom in expressing what they perceive. 16 3/4 minutes is a long time on film and not one of those saw it once stated that it had been fully understood, not even M. Choquet and the other French mathematicians present. Even after seeing it twice they wished they had a copy so as to look at it again.

The team of two computer specialists in Montreal has developed a sensitivity to their instrument at the service of this kind of presentation of geometry, from which we can expect a great deal in the future. Almost 50 minutes of computer filming for Animated Geometry and Foundations of Geometry have given them what is needed to ensure lasting recognition for their contribution to mathematics education. Already many grateful viewers have sent them, through the ether, their delighted appreciation of their fine work.

For the first time this century mathematics films (already proposed for teaching before World War I) are attracting wide attention, evidenced by purchases of units by individuals who use them for repeated viewings in their own home or in their primary classrooms. The aesthetic aspect of these new films is to be considered a very strong element in promoting sales, although one's imagery very quickly goes to work to propose intellectual challenges in the field of mathematics arising out of the viewing.

2 During his European tour in November, Dr. Gattegno met with a number of groups of people, both in conferences and in seminars. In London, at the Commonwealth Science Council, the Secretary, Mr. Christian de Laet, expressed personal as well as institutional interest in the subordination of teaching to learning and in the technology developed for its implementation with students from all sorts of backgrounds. The clients of that institution are all over the world, and are counted in numbers of nine digits. What attracts the administrators most is the existence of an approach that can deliver results whatever the influences on the curriculum of the various communities may be.

Any further development in those contacts will be reported in these columns.

Also in London, a one-day seminar on mathematics films, to which people who came from up to 200 miles away (a really long distance in the British Isles) were attracted, took place at Digby Stuart College. Most of the time was taken up by the viewing of the new series of Animated Geometry films and of the Foundations of Geometry. The feedback sessions confirmed that there was an enthusiastic appreciation of both the quality of the production and of the contents of the various films. A number of those present expressed their intention of working with these films in their own universities and in the teacher education program with which they were associated. We shall report here on their findings as soon as we are informed about them.

3 Of the four seminars in France, two were in Lyon (l'Enseignement Silencieux, 2 days, and La Lecture en Couleurs, 2 days) and two in Paris (On Writing, a 20-hour weekend, and l'Affectivite et les Apprentissages, 20 hours on four evenings from 5 to 10 p. m.). The only one in English, On Writing, was particularly valued by the participants (some of whom had come from Madrid and Barcelona) because the work done was mainly on the false inhibitions most people have. The audiotaped seminar may one day be available either in transcript form or as audio cassettes.

The three French seminars will most likely be published, two of them in Lyon and one in Paris, as the participants felt that there is not enough written in French on The Silent Way, reading with colors, and on awareness of learning.

The fifth seminar, a weekend in Geneva, on "Une theorie generale de la relativite humaine," attracted over one hundred participants. This is now an annual event and leads to a publication by one of the associations involved. This year about 40 of the participants were people who had never come before. Normally not more than 20% to 25% have been new recruits. They had to adjust to the way of working in these seminars which at first seems so unusual. The importance of

the topic helped many find the patience needed to learn to work like the others.

The main feedback consisted in a clear statement of having found a) that such a theory was needed to put some order into the enormous complexity of one's life, and that of others around oneself, and 2) that the theory as it had been presented and had been examined with care made sense and could be of immediate applicability.

We should mention here that at our headquarters in New York City the same theme is being studied over a 90-hour period, 15 hours every first weekend the months October '79 to March '80.

4 Shelley Kuo and Patricia Perez each gave a 60-hour course in Paris, on Mandarin and Spanish respectively over the Thanksgiving weekend and the week that followed it. Charlotte Balfour will be teaching English in Paris between December 18 and January 4th. All these workshops are part of our presence in Europe where Cecilia Bartoli in Paris (and Allen Rozelle before her) has to meet a great need for expert Silent Way teaching. There is more work there than those who have reached a good competence in working with us can take on. Barbara Villez and Laura Hamilton who are sensitive and knowledgeable people are now giving a hand in serving a constantly increasing constituency, and others are moving forward to fill the space left for them.

5 On November 16-18, Steve Shuller conducted a 3-day workshop on Gattegno Mathematics for approximately 35 adult education teachers and supervisors from several communities in Arizona. The workshop was organized and hosted by Pima County Adult Education in Tucson under the auspices of The Arizona Department of Education.

For many of the participants, this workshop represented a first exposure to the subordination of teaching to learning. Others came to recharge themselves by studying with us a new curriculum area. In feedback sessions, the participants expressed that they knew themselves better as mathematicians and were in touch with powerful

tools to help their students do the same. Written feedback, collected each day by the workshop organizer, was overwhelmingly positive.

Seven or eight participants came with self-diagnosed “acute math anxiety.” By engaging in the activities of the workshop, all had an opportunity to dissolve this anxiety by finding the mathematician in him or her self. All reported progress, and some achieved major breakthroughs in this work.

6 This Fall, Educational Solutions entered into a cooperative agreement with Teachers College, Columbia University, to offer workshops in ESL, The Silent Way for graduate credit, During the Fall, 1979, semester, 49 Teachers College students registered for this workshop, which is offered as a section of the Teachers College course, Specialized TESOL Methodology.

Teachers College also offers in their MA program a Silent Way Practicum, supervised by Steve Shuller of our staff. In its initial year, 1978-79, 21 Teachers College students participated in this 6-week 36 teaching hour practicum, which will be offered again this Spring. The practicum has acquired a reputation as demanding, but extremely valuable in helping teachers to work on what is fundamental in their teaching. Recognizing the value of the practicum experience for those interested in becoming Silent Way teachers, Educational Solutions instituted a similar non-credit practicum at our offices in New York. Practicum seminars took place last July, and will be offered again both in July and in August, 1980. The practicum at Educational Solutions carries graduate credit for participants in the MAT program at The School for International Training, Brattleboro, Vermont.

Both The Silent Way practicum and our ESL workshops are now recognized for independent study credit for students in the TESOL MA Program at Hunter College of the City University of New York (CU NY).

For further information about either Silent Way workshops or the practicum, contact Steve Shuller.



About Caleb Gattegno

Caleb Gattegno is the teacher every student dreams of; he doesn't require his students to memorize anything, he doesn't shout or at times even say a word, and his students learn at an accelerated rate because they are truly interested. In a world where memorization, recitation, and standardized tests are still the norm, Gattegno was truly ahead of his time.

Born in Alexandria, Egypt in 1911, Gattegno was a scholar of many fields. He held a doctorate of mathematics, a doctorate of arts in psychology, a master of arts in education, and a bachelor of science in physics and chemistry. He held a scientific view of education, and believed illiteracy was a problem that could be solved. He questioned the role of time and algebra in the process of learning to read, and, most importantly, questioned the role of the teacher. The focus in all subjects, he insisted, should always be placed on learning, not on teaching. He called this principle the Subordination of Teaching to Learning.

Gattegno travelled around the world 10 times conducting seminars on his teaching methods, and had himself learned about 40 languages. He wrote more than 120 books during his career, and from 1971 until his death in 1988 he published the Educational Solutions newsletter five times a year. He was survived by his second wife Shakti Gattegno and his four children.