

Extrait du School forging new paths

<https://www.ecolechangerdecap.net/spip.php?article192>

Edgar Morin

# Seven complex lessons in education for the future

- English - Human and Educative aims -

Date de mise en ligne : Wednesday 16 March 2011

---

School forging new paths

---

# CHAPTER I : DETECTING ERROR AND ILLUSION

Everything we know is subject to error and illusion. The education of the future should confront this double-faced problem of error and illusion. The greatest error would be to underestimate the problem of error, the greatest illusion to underestimate the problem of illusion. Recognition of error and illusion is all the more difficult in that error and illusion are not recognized as such. Error and illusion have been parasitizing the human mind from the first days of homo sapiens. When we consider the past, including the recent past, it seems to us that people were blinded by countless errors and illusions. In German Ideology, Marx and Engels observed that men have always had misconceptions about themselves, about what they are doing and what they ought to do, and about the world in which they live. But neither Marx nor Engels was able to avoid the same kind of errors.

## 1. THE ACHILLES HEEL OF KNOWLEDGE

Education should show that there is no learning which is not to some extent vulnerable to error and illusion. Information theory shows that the risk of error from random perturbations or "noise" is inherent in all transmission of information, all communication of messages. Knowledge is not a mirror of things or of the outside world. All perceptions are cerebral translations and reconstructions of stimuli and signs captured and coded by the senses. As we well know this entails countless errors of perception, though these perceptions come from vision, our most reliable sense. Intellectual error combines with perceptual errors. Knowledge in the form of words, ideas and theories is the fruit of translation/reconstruction by way of language and thought and, as such, subject to error. This knowledge, being translation and reconstruction, involves interpretation, introducing the risk of error within the subjectivity of the knower, his world view, his principles of knowledge. This causes countless errors of conception and ideas that occur despite our rational controls. Projection of our fears and desires and mental perturbation from our emotions multiply the risk of errors. One might then suppose that the risk of error could be eliminated by suppressing emotion. Sentiments, hatred, love, friendship may blind us but in fact intellectual and emotional development are inseparable in all mammals, and particularly human beings, whose curiosity and passion are the wellsprings of scientific and philosophic research. Affectivity may stifle knowledge, but it may also enrich it. Intelligence and affectivity are closely related: the ability to reason can be diminished or destroyed by an emotional deficit, and impaired ability to react emotionally may cause irrational behavior. There is no superior stage of reason dominating emotion, there is an intellect f+ emotion loop; in some respects emotional capacity is an absolute necessity for the functioning of rational behavior.

Advances in scientific knowledge provide powerful means of error detection and combat against illusion. However, the paradigms that control science can also develop illusions, and no scientific theory is forever immune to error. Moreover, scientific knowledge alone can not treat ethical, philosophical, or epistemological questions. Education should strive to develop the ability to detect sources of error, illusion, and blindness.

### 1.1 Mental errors

No cerebral system gives us the power to distinguish hallucination from perception, dream from waking, the imaginary from the real, the subjective from the objective. Human beings have an extraordinary capacity for fantasy

and imagination. Entry and exit routes connecting the organism to the outside world make up only 2% of the entire neurocerebral system; the remaining 98% is devoted to inner functions.

The brain constructs a quite independent psychic world where fantasies, needs, images, ideas, desires, and dreams ferment, and this world infiltrates our vision or conception of the outside world. Further, the mind of every human being is subject to self-deception, a permanent source of errors and illusions. Egocentricity, the need for self-justification, the tendency to project the cause of evil onto others, make people lie to themselves without detecting their own lies. Our memory itself is subject to many types of error. Memories that are not regenerated by remembrance tend to degenerate, but each remembrance may enhance or darken the memory. Our mind unconsciously tends to select memories that are advantageous to us and suppress or erase unfavorable memories; we give ourselves a flattering role. We tend to deform memories by unconscious projections or confusions. Sometimes false memories convince us we have experienced things that never happened to us, and suppressed memories deny things we did experience. So memory, an indispensable source of truth, is subject to error and illusion.

### 1.2 Intellectual errors

Our systems of ideas (theories, doctrines, ideologies) are subject to error and, in addition, they protect errors and illusions contained in themselves. Resistance to unsuitable or indigestible information is inherent to the organizational logic of all systems of ideas. Theories resist attack from adverse theories and arguments; even scientific theories, which are the only ones that accept the possibility of refutation, tend to manifest this resistance. Doctrines are self-enclosed theories absolutely convinced of their truth and invulnerable to all criticism that shows up their errors.

### 1.3 Errors of reason

The rational activity of the mind is what allows us to distinguish dream and waking, real and imaginary, subjective and objective. Rationality draws on various means of control: the environment (physical resistance to desire and imagination from the surroundings), practice (verifying activity), culture (reference to common knowledge), other people (do you see the same thing as me?), the cortex (memory, logical operations). In other words, rationality is corrective, Rationality is the best safeguard against error and illusion. There is a constructive rationality that develops coherent theories and verifies the logic of theoretical organization in terms of compatibility between various ideas composing the theory, and agreement between assertions and the empirical data to which it applies. This rationality must remain open to everything that disputes it; otherwise it closes itself into a doctrine and becomes rationalization. And there is a critical rationality which is exercised particularly on error and illusion in beliefs, doctrines, and theories. But rationality itself is subject to error and illusion when, as just indicated, it is perverted into rationalization. Rationalization believes itself to be rational because it constructs a perfectly logical system based on deduction or induction. However, rationalization is based on false or mutilated foundations, and remains closed to dispute from contradictory arguments and empirical verification.

Rationalization is closed, rationality is open. Though rationalization draws on the same sources as rationality, it is one of the most powerful sources of error and illusion. A doctrine that obeys a mechanical, determinist model to consider the world is not rational but rationalized. True rationality is by nature open and engaged in dialogue with the real, which resists it. It constantly goes back and forth between the logical instance and the empirical instance; it is the fruit of debate of ideas, and not the property of a system of ideas. Rationalism that ignores subjectivity, affectivity, life, and beings, is irrational. Rationality must recognize the contribution of emotions, love, repentance. True rationality knows the limits of logic, determinism, mechanics; it knows that the human mind cannot be omniscient, that mystery is part of reality. It negotiates with the obscure, the irrationalized, the irrationalizable. It is not only critical but self-critical. True rationality can be recognized by its capacity to recognize its own shortcomings. Rationality is not an exclusive prerogative of scientific and technical minds, denied to others. Learned atomists, rational under laboratory constraints

and in their sphere of competence, may be completely irrational in politics or private life. Similarly, Western civilization does not have a monopoly on rationality. Long considering itself proprietor of rationality, Western Europe judged all cultures in terms of technological performance and saw nothing but error, illusion, and backwardness in other cultures. We should know that every society has rationality-including archaic societies with their rationality in tool-making, hunting strategy, and knowledge of plants, animals and terrain-and all societies have myth, magic, and religion. In our Western societies we have myth, magic, and religion, including the myth of providential reason and the religion of progress. We start to become truly rational when we recognize the rationalization included in our rationality, and recognize our own myths, including the myths of our almighty reason and guaranteed progress. This is why, in educating for the future, we must recognize the principle of rational uncertainty; if rationality does not maintain constant self-critical vigilance it can turn into rationalizing illusion. Which is to say that true rationality is not only theoretical, not only critical, but also self critical.

### 1.4 Blinding paradigms

The play of truth and error not only functions in the empirical verification and logical coherence of theories. It also functions profoundly in the invisible depths of paradigms. This is why education must learn to examine them.

A paradigm can be defined as:

The promotion/selection of master concepts of intelligibility. Order in determinist concepts, Matter in materialistic concepts, Mind in spiritual concepts, Structure in structuralist concepts are the master selected/selecting concepts that exclude or subordinate antinomical concepts (disorder, mind, matter, event). Thus, the paradigmatic level is the level of the principle of selection of ideas to be integrated into the discourse or theory, or refused and rejected.

Determination of master logical operations. The paradigm, hidden beneath the logic, selects the logical operations that become preponderant, pertinent, and evident under its dominion (exclusion-inclusion, disjunction-conjunction, implication-negation).

The paradigm grants privilege to certain logical operations to the detriment of others, such as disjunction to the detriment of conjunction; and grants validity and universality to its chosen logic. Thereby it gives the qualities of necessity and truth to the discourse and theory it controls. By prescription and proscription the paradigm founds the axiom and expresses itself in the axiom ("every natural phenomenon obeys determinism," "every properly human phenomenon is defined by opposition to nature"... > .

Thus the paradigm selects and determines conceptualization and logical operations. It designates the fundamental categories of intelligibility and controls their use. Individuals know, think, and act according to interiorized culturally inscribed paradigms. For example, there are two opposite paradigms concerning the man 0 nature relation. The first paradigm includes the human in nature; all discourse under its dominion makes man a natural being and recognizes "human nature." The second paradigm prescribes disjunction between these two terms, and determines man's specificities by exclusion of the idea of nature. These two contrary paradigms share a common obedience to an even deeper paradigm, the paradigm of simplification which, in the face of any conceptual complexity, prescribes either reduction (here, of the human to the natural) or disjunction (here, between the human and the natural). Both of these paradigms preclude conception of the uniduality (natural fâ€™f cultural, cerebral i---b psychic) of human reality, and also preclude conception of both implication and separation in the relation between man and nature. Only a complex paradigm of implication/distinction/conjunction would allow such a conception. But it is not yet inscribed in scientific culture.

The paradigm is both underground and sovereign in all theories, doctrines, and ideologies. The paradigm is

unconscious but it irrigates and controls conscious thought, making it also Super-conscious, In short, the paradigm institutes primordial relations that form axioms, determine concepts, command discourse and/or theories. It organizes their organization and generates their generation or regeneration. The "great Western paradigm," formulated by Descartes and imposed by developments in European history since the 17th century, should be mentioned here. The Cartesian paradigm disconnects subject and object, each in its own sphere: philosophy and reflective research here, science and objective research there. This dissociation goes right through the universe: Subject / Object Soul / Body -Mind / Matter-Quality / Quantity-Finality / Causality-Sentiment / Reason-Liberty / Determinism-Existence / Essence

It is indeed a paradigm. It determines the Sovereign concepts and prescribes the logical relation of disconnection. Disobedience to this disconnection is necessarily clandestine, marginal, deviant. This paradigm determines a double vision of the world, in fact a doubling of the world. One is a world of objects that can be observed, experimented, manipulated. The other is a world of subjects that raise problems of existence, communication, conscience, destiny. A paradigm may elucidate and blind, reveal and obscure. There, deeply ensconced inside the paradigm, lies a crucial factor in the game of truth and error.

## 2. IMPRINTING AND NORMALIZATION

The determinism of paradigms and explanatory models combines with the determinism of convictions and beliefs which, when they rule over a society, impose on one and all the imperative force of the sacred, the normalizing force of dogma, the prohibitive force of taboo. Dominant doctrines and ideologies also dispose of the imperative force that brings evidence to those who are already convinced, and coercive force that instills inhibitory fear in those who might have doubted.

The prohibitive and imperative powers of paradigms, official beliefs, sovereign doctrines, and established truths combine to determine cognitive stereotypes, unquestioned received ideas, uncontested stupid beliefs, triumphant absurdities, and rejections of evidence in the name of evidence to expand their reign of intellectual and cognitive conformism in all latitudes.

All the truly social-economic-political determinations (power, hierarchy, class divisions, specialization and, in our modern times, technobureaucratization of work) converge and synergize with all the truly cultural determinations to imprison knowledge in a multideterminism of imperatives, standards, prohibitions, rigidities, deadlocks. Cognitive conformism is much more than conformism. It is cultural imprinting, a template imprint that inscribes conformism in depth, a normalization that eliminates anything that might dispute it. Imprinting is the term used by Konrad Lorentz to describe the indelible mark imposed by the first experiences of a young animal, such as the newly hatched chick who follows the first living creature that goes by, making it its mother. H. C. Anderson already told his version of the story in *The Ugly Duckling*. Cultural imprinting marks human beings from birth with the seal of family culture, followed by school culture, and then university and professional culture. Cultural and sociological selection of ideas rarely obeys their truth; on the contrary, it may be pitiless for the search for truth.

## 3. NOOLOGY: POSSESSION

According to Marx "the products of the human mind appear as independent beings, endowed with individual bodies, in communication with humans and among themselves."

Taking this one step further, we can say that beliefs and ideas are not only products of the mind, they are also states

of mind that have life and power. That is why they can possess us. We should be aware that a noosphere arose in the very dawn of humanity, a sphere of things of the mind with its parade of myths and gods, and the extraordinary upsurge of these spiritual beings pushed and dragged homo sapiens into exaltation, adoration, ecstasies, massacres, cruelties, and sublimities unknown in the animal kingdom. Ever since that dawning we live in the depths of a forest of myths that enrich our cultures.

The noosphere, pure creation of our souls and minds, is in us and we are in the noosphere. Myths took shape, consistence, reality from fantasies formed in our dreams and imaginations. Ideas took shape, consistence, reality from symbols and thoughts of our intelligence. Myths and Ideas came back to us, invaded us, gave us emotion, love, hate, ecstasy, fury. Possessed humans can die or kill for a god, for an idea. Still today at the dawn of the third millennium, our "ideal" demons, like the Greek Daemons and sometimes like the demons of the Gospel, submerge our consciousness, make us unconscious while giving us the illusion of being hyper conscious. Societies domesticate individuals by myths and ideas which in turn domesticate societies and individuals, but individuals could reciprocally domesticate their ideas just as they could control their society which controls them. In the complex (complementary-antagonisticuncertain) game of mutual servitude-exploitation-parasitism between the three instances (individual +-+ society - noosphere) there may be room to seek symbiosis. Which does not mean making an ideal of the reduction of ideas to pure instruments and turning them into things. Ideas exist by and for man, but man also exists by and for ideas. We cannot make good use of ideas unless -we also know how to be useful to them. Shouldn't we realize that we are possessed, so we can dialogue with our ideas, control them as much as they control us, and submit them to tests of truth and error?

All idea or a theory should not be purely and simply instrumentalized, nor should it tyrannically impose its verdicts; it should be relativized and domesticated. A theory should assist and orient the cognitive strategies adopted by human subjects. It is hard for us to distinguish the moment of separation and opposition between things that come from the same source: Idea/i& a mode of existence required for the Idea to convey the real, and Idealism, the real possessed by the idea; rationality, a system of dialogue between the idea and the real, and rationalization, which blocks such dialogue. Similarly, it is very hard to recognize the myth hidden under the label of science or reason. Again we see that the major intellectual obstacle to learning lies in our intellectual means of learning. Lenin said that the facts are stubborn. He did not realize that fixed ideas and driving ideas-his very own ideas are even more stubborn. Myth and ideology destroy and devour facts. And yet it is by ideas that we can perceive the shortcomings and dangers of the idea. Whence the inescapable paradox: we have to lead a crucial battle against ideas but we cannot do it without the help of ideas. We should always remember to keep our ideas in their place as mediators and not identify them with reality. The only ideas we should trust are ideas that include the idea that the real resists the idea. This is an indispensable task in the fight against illusion.

## 4. THE UNEXPECTED...

The unexpected surprises us. Because we are too safely ensconced in our theories and ideas, and they are not structured to receive novelty. But novelty constantly arises. There is no way we can predict it exactly as it will occur, but we should always expect it, expect the unexpected (cf., Chapter V Confronting uncertainties). And once the unexpected has happened, we must be able to revise our theories and ideas instead of pushing and shoving the new fact in an attempt to stuff it into a theory that really can't accommodate it.

## 5. UNCERTAIN KNOWLEDGE

So many sources, so many causes of error and illusion endlessly renewed in all our learning! This is why, in all

## Seven complex lessons in education for the future

---

stages of education, we must bring out major questions on the possibility of true knowledge. Just as oxygen killed primitive forms of life until living beings were able to use this toxin as a detoxicator, so uncertainty, which kills simplistic learning, is the detoxicator of complex knowledge. Nonetheless, learning will always be an adventure for which education should supply the indispensable travel kit. Learning about learning, which includes integrating the learner into his knowledge, should be recognized by educators as a basic principle and permanent necessity. We should understand that there are bioanthropological conditions (aptitudes of the human brain and mind), sociocultural conditions (culture open to dialogue and exchange of ideas), and neurological conditions (open theories) that permit "true" questioning, meaning fundamental questioning of the world, man, and knowledge itself.

We should understand that in the search for truth self-observation is inseparable from observation, self-criticism inseparable from criticism, processes of reflection inseparable from processes of objectivation. We should learn that the search for truth requires seeking and developing meta-viewpoints allowing for reflectivity, particularly integration of the observer-conceiver in the observation-conception, and ecologizing the observation-conception in its own mental, cultural context. We can even make use of the faculty of ideas to possess us, and let ourselves be possessed by ideas of criticism, self-criticism, openness, complexity. The ideas I defend here are not so much ideas I possess as ideas that possess me. More generally, we should try to play on these double possessions of ideas by our mind and our mind by ideas, to reach forms where mutual servitude would become conviviality. Because this is a key problem: how can we establish conviviality with our ideas as with our myths? The human mind should beware of its ideal products which are at the same time a vital necessity. We must exert constant control in order to avoid idealism and rationalization. We need mutual negotiations and controls between our minds and our ideas. We need exchange and communication between the different regions of our minds. We must be aware of the *qa* [that] and the *on* [one] that speak through the *je*, and we must be constantly alert to detect self-deception. We need to civilize our theories, we need a new generation of open, rational, critical, reflective, self-critical theories that can reform themselves. We have to find meta-viewpoints on the noosphere that can only be found with the help of complex ideas, in cooperation with our minds, themselves seeking meta-viewpoints for self-observation and selfconception. We need a paradigm compatible with complex knowledge to crystallize and take root. Possibilities of error and illusion are multiple and permanent: they come from the social and cultural exterior to inhibit the mind's autonomy and prohibit the search for truth; they come from within, sometimes ensconced in our best means of knowing, and cause the mind to make mistakes itself and about itself. Such terrible suffering and aberrations have been caused by errors and illusions down through human history, culminating in the most horrifying suffering and aberrations in our 20th century!

The cognitive problem has great historical, social, political, and anthropological importance. If we can hope for basic progress in the 21st century it would be that men and women could stop being the unconscious toys of their ideas and not only their ideas but their own selfdeception. The major responsibility of education is to arm every single person for the vital combat for lucidity.