

# E. Morin's Complexity Paradigm in the Context of Informational Challenges to Education

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**Abstract:** The network nature of informational society is analyzed for understanding the challenges to contemporary education. Becoming of this society actualizes the need for lifelong learning, self-study, the reorientation of thinking style. The author attempts to explicate the methodological potential of E. Morin's complexity paradigm for comprehension of informational challenges to education. Morin's anthropo-ethics is investigated as a conceptual demonstration of the new paradigm in humanities. From the complexity paradigm perspective the education is viewed as transphenomenal by its nature with the transdisciplinary character of cognition, and the transdiscursive essence of educational thoughts. The education has to redefine its main didactic principles from a controlled and controlling discipline-based education, predicted targets towards a discovered, transdisciplinary, developing curriculum. The author underlines that the complexity-based curriculum should be oriented to multidimensional nature of a human being, because education is declared to stimulate the inner potential of a human and create the educational conditions for complexity thinking.

**Keywords:** Informational society; informationalism; complex thinking; education; anthropo-ethics; humanism; multidimensionality; knowledge; transdisciplinary; Homo Complexus

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## 1 Introduction

One of the most important changes in the late 20th century was the increasing role of information in the life of humankind. Researchers proclaimed the beginning of the information age, the transition to a new society. They propose a set of concepts describing it as knowledge, information, network, informational, or postindustrial society etc. It shows that there is a vivid discussion in social science on the character of contemporary society and the role of technologies, information, and communication in it. In this paper I will focus on clarifying the nature of the changes that have affected all spheres of human life and formed social and cultural context of contemporary education. The aim of the given paper is explication of the methodological potential of E. Morin's complexity paradigm for comprehension of informational challenges to education.

## 2 Socio-cultural context of educational changes

American professor M. Castells, one of the first well-known philosophers of cyberspace and the most influential theorists on this subject, introduces the concept "*informationalism*" for understanding the essence of the changes in the new society, which he calls "*informational society*". The processing and dissemination of information initially through newspapers, over time through radio and television have taken place in previous societies. But information technology was not the main material for the development of industrial economy. The informational economy depends on the capacity of networks that is provided by the new technologies. M. Castells underlines that the new economy would not be able to operate, as the industrial society could not fully expand without electricity (Castells, 2004). Its sources of productivity and competitiveness for firms, regions, countries depend, more than ever, on knowledge and information. The peculiarity of the informational way of development is the knowledge self-influence as the main source of productivity. It depends first on the ability to process and use effectively the information, which is based on knowledge. Knowledge and human thought have become the principle force of production. This new quality of the contemporary civilization is explicated by M. Castells in the concept of *informationalism*. According to him, *informationalism* is "a technological paradigm based on the augmentation of the human capacity of information processing and communication made possible by the revolutions in microelectronics, software, and genetic engineering" (Castells, 2004).

Applying this term, M. Castells calls our attention to the network nature of arising society. He examines how the informational way of development leads to emergence of a new social structure (the network society), a new economic structure (global informational economy), and a new culture (a culture of 'real virtuality'). The key point of the new form of society's communicative organization, to his opinion, is "*the networking logic of its basic structure*" (Castells, 1996, p. 21).

M. Castells in his books *The rise of the network society* (1996), *End of Millennium* (2000) suggests that the network is organized around new forms of time and space: timeless time and the space of flows. The new technologies and communication networks break down logical sequences of time (for example, the new biological reproductive technologies). Space of flow means that our imagination about the space has changed by reducing the physical distance between objects, the possibility of its design in the network (for example, the hyperlink on webpage). M. Castells states:



*“Space and Time, the material foundations of human experience, have been transformed, as the space of flows dominates the space of places, and timeless time supersedes clock time of the industrial era” (Castells, 2000, p. 1).*

He writes that networks became the most efficient organizational forms as a result of their three major features: flexibility, scalability, and survivability. Flexibility means the ability to change network configuration according to changing environments. Scalability means that networks can expand or shrink in size with little disruption. Other networks' feature is survivability. This ability of networks can be realized because they have no center, can operate in a wide range of configurations and find new ways to perform (Castells, 2004).

Let us underline some characteristics of network, which are necessary for understanding the challenges to education. At first, the network has no boundaries, so the network society is a global one with a dynamic and multidimensional social structure. The informational technology and network logic *“can achieve extreme flexibility, as a result of which the processes, organizations and institutions can easily change under constant emergence of new forms” (Abercrombie, Hill & Turner, 2004, p. 172).* The network is capable of continuously attracting new actors and new meaning in processes of social organization. As M.Castells mentions, there is no definite answer to the old question *“what is value?”* in such society: *“Value is what is processed in every dominant network at every time in every space according to the hierarchy programmed in the network by the actors acting upon the network” (Castells, 2004).*

To some extent informational society has changed the existential situation of humankind. The world is characterized by unprecedented growth of complexity, instability, dynamism and unpredictability. New areas of risks and uncertainty are created in the space of the human being existence. As U. Beck in his theory of world risk society notes, dangers are *“produced by civilization which cannot be socially delimited in either space or time” (Beck, 2001, p. 267).* No doubt, living conditions were changed before, but the situation which takes place today by its pace, scope, depth and diversity cannot be compared with pictures of the recent past. Uncertainty may be considered not only as one of the feature of contemporaneity, but also as a formative factor that mainly determines the structure and mechanisms of all kind of contemporary culture and civilization. The last ones strictly come up to the state that could be called society of ultimate uncertainty, which is a very peculiar phenomenon. Experts try to draw the pictures and predict its consequences. The perspectives are attractive. But at the same time they are alarming and set us thinking. The new society is also a great danger along with the unheard possibilities.

One of these risk areas is derived from the problem of the change of knowledge status in the informational society. J.-F. Lyotard argues that this change is connected with the emergence of the new type of rationality, which more fully meets the trends of informational society. In his book *Postmodern Condition* (1979) he asserts that knowledge loses its *“use-value”* apart from its narrowly instrumental outcomes – process. J.-F. Lyotard terms it as *performativity*. Technological developments in the field of knowledge will perform, according to his hypothesis, two functions: research and information transfer. Therefore, the knowledge and the direction of new research include such requirements as the ability to be translated into the language of machines in the amount of information and to be an operational and transported through the channels. All information, which is untranslatable into the language of the machines will be discarded. In this regard, by all appearance, the traditional principle, according to which the acquisition of knowledge is inseparable from the formation of the mind and personality will come out of the use. The attitude of providers and



consumers to knowledge itself will tend to take the form of the relationship of producer and consumer of goods. It means that knowledge acquires the value form.

Commercialization of knowledge leads, on the one hand, to the fact that in the education knowledge is no longer an end in itself; on the other hand, knowledge, entered into circulation on the same networks as the currency, becomes knowledge as exchangeable one in the maintenance of everyday life. Knowledge turns into the informational product. Commercialization of knowledge leads to the deprivation of the educational and motivational attractiveness of knowledge in education. Contemporary scientific knowledge is accompanied by a process of exteriorization and alienation from their users. In this regard American philosophers of education, Michael Peters and Nicholas Burbules, assert:

*“The transformation wrought by new knowledge technologies and market also changes the way in which learning is acquired and classified. Knowledge becomes exteriorized with respect to the knower. The status of the teacher and learner relation is transformed into a commodity relation of “supplier” and “consumer” (Peters & Burbules, 2004, p. 49).*

In addition to this it is necessary to underline that J.-F. Lyotard by such way shows how the understanding of the essence of accomplishment changed. Under “*mercantilisation of knowledge*” the accomplishment does not have to mean the involvement in the traditional academic sciences. It presupposes interdisciplinary orientation; synthesis of knowledge not rooted in the types of academic education rationalities. So, according to French philosopher, the essence of accomplishment depends on a person’s ability to construct her/his own self-competence through reconstruction of the procedures of cognition and activity.

Thus, the socio-cultural context determines the process of radical changes in education, and, accordingly, the revision of the basic principles of educational policy. As the final targets of educational activity, they will inevitably have to coincide with the strategic guidelines of the society. Since the education sphere fulfills the role of transmission of a humankind socio-cultural experience and in a such a way ensures the possibilities of entering of new generation to an active social life, it has its direct reproduction function of the social organism, namely its basic values, spiritual guidance and strategic interests.

The influence of modern social tendencies on the education system may be manifested in:

- 1) Strengthening its role as a source of ideas, new knowledge, technology and information.
- 2) Awareness of the imperative of survival and global responsibility of humans for their actions, which are determined by the level of value orientations, development of every person.
- 3) Diversifying the social order of society that leads to the need for flexibility in thinking and perception of the world from the position of the dialogue of cultures.
- 4) Complication of cognitive structures and cognitive processes.

So, as it follows from socio-cultural context, there is obvious need for lifelong learning, self-learning, reorientation of thinking style and its ability to switch over accordance with the conditions (choosing adequate solutions, perceiving and understanding the other, reconsidering the human being place and role in the modern world etc.) L. Gorbunova in



*Nomadism as a way of Thinking and Educational Strategy. Epistemological Position* proposes such image of contemporary education:

*"Education, that fixed a student on a concrete place, topos (territory, country, culture, school, occupation, profession, discipline, paradigm), loses its value. Anyone who wants to receive contemporary education sets out on a journey by endless landscapes of informative and communicative networks with short stops that regulate the gain knowledge. Further journey, which is rich in event-meeting, inevitably destroys these orders, requires the new ideas, next redefining and renewal of movement"* (Gorbunova, 2011, p. 18).

### 3 E. Morin's complex paradigm: its roots and main ideas

The complication of cognitive structures challenges to relatively stable cognitive capabilities, supported by contemporary education, and requires the new approaches to the cognitive process. The French researcher E. Morin (one of the authors of complexity paradigm) pays attention to the fact that the problems become *"more global, transnational, multidimensional, transversal, polydisciplinary, and planetary"* (Morin, 1999, p. 13). The cognition of the world as a holistic phenomenon in condition of its complication becomes a vital necessity. He proposes the complexity paradigm as a response to the challenges to education. E. Morin began his trip in "complexity" after staying in California, in 1969, where he elaborated his concept, based on combining general theory of systems, cybernetics, theory of information and neurophysiology of autopoiesis of the living.

The origin of Morin's complexity paradigm is based at least on two preconditions. The socio-cultural one is connected with cultural social movements of the late 1960s and early 1970s. As M. Castells points out, they contributed to the transformation of the values of society:

*"And the key values ... created a new culture around the world, were three: the value of freedom and individual autonomy vis a vis the institutions of society and the power of corporations; the value of cultural diversity and the affirmation of the rights of minorities, ultimately expressed in terms of human rights; and the value of ecological solidarity, that is the reunification of the interest of the human species as a common good, in opposition to the industrial values of material growth and consumption at all costs"* (Castells, 2004).

The theoretical precondition of origin of Morin complex paradigm is related to changes in contemporary intellectual situation, namely emergence of the ideas of post-structuralism (C. Levi-Strauss), dialogism (M. Buber, M. Bakhtin), the concept of Otherness (E. Levinas). The complexity paradigm is also based on the ideas of postmodernism (J. Derrida, G. Deleuze, J.-F. Lyotard), such as: absolutization of differences; critique of centrism as a principle of European culture; proclamation of the multitude of local cultural contexts that make it possible and attach it a sense. For J.-F. Lyotard destruction of universalist and rationalist dominants of Modern means that *"the grand narrative has lost its credibility..."* (Lyotard, 2001, p. 167).

A complexity turn in social sciences began in the late 1990s. The increasing complexity of products, processes and organizations is determined by globalization, the



increase of social dynamism, proliferation of computerized networks that are self-produced around the globe, forming and reforming themselves in new ways, connecting and presenting all parts of the world as a whole.

The complexity theory, enriched by the works of E. Morin, is perceived today as a paradigm in the field of philosophy of education. The concept "complexity" in general is used for: a) explication of systems with many elements and parameters of order, self-organization; b) definition of social systems, formed in the age of informationalism (M. Castells); and c) marking a new approach to cognitive processes as a system factor development of modern science (in particular, the convergence of Natural Sciences and Social Sciences, the correlation between an object and a subject in the cognitive process); d) marking the complex thinking (E. Morin introduces the concept of *complex thinking*).

To Morin's mind, education will be faced with two problems in the future: errors and illusions. There are mental, intellectual errors, errors of reason, blinding paradigm. He postulates the main educational problem:

*"The purpose of education is to transmit knowledge, and yet education is blind to the realities of human knowledge, its systems, infirmities, difficulties, and its propensity to error and illusion. Education does not bother to teach what knowledge is" (Morin, 1999, p. 1).*

Analyzing the causes, nature, the manifestation of these phenomena in education the E. Morin comes to the idea of changing the mode of thinking through education. It is faced with the universal problems as the complex ones, so it is necessary:

*"To articulate and organize and thereby recognize and understand the problems of the world, we need a reform in thinking. And this reform is paradigmatic, not programmatic. It is the fundamental question for education because it concerns our ability to organize knowledge" (Morin, 1999, p. 13).*

The main ideas concerning the education were presented in E. Morin's work *Seven Complex Lessons in Education for the Future* (1999). This work was published as UNESCO's document dedicated to the modernization of education at all levels, and translated into different languages. F. Mayor, the Director-General of UNESCO, in the preface to this edition underlined the significant role of education in the contemporary world:

*"Education is the "force for the future" because it is one of the most powerful instruments of change. One of the greatest problems we face is how to adjust our way of thinking to meet the challenge of an increasingly complex, rapidly changing, unpredictable world. We must rethink our way of organizing knowledge. This means breaking down the traditional barriers between disciplines and conceiving new ways to reconnect that which has been torn apart. We have to redesign our educational policies and programs" (Morin, 1999, p. 1).*

Morin's appeal to education as a way of changing the world originates in Plato tradition. Ancient Greek philosopher was one of the first to see the education as the key in constructing a society. Plato believed that an appropriate education would be one of the most important ways to produce virtuous, harmonious, well-balanced, and "fair" people. According to Plato, education was not just formal schooling but an upbringing as well, i.e. including all the social influences on individual development, as according to his theory of human nature, human individuals are social creatures.



Thinking back about the problem of redesigning our educational practice, several questions arise. How is it possible? Is contemporary education ready for this change? It is worth pointing out here at G. Bateson's conception of levels of learning. Famous English anthropologist and social scientist proposes the following three steps of learning, which characterizes the different senses of learning. The first one has to support the transfer of the sum of knowledge. The second level presupposes to learn learning process, focused on the formation of some mode of thinking, skills, abilities, which are necessary for everyday life. The third level has to create the educational conditions for a learning to be retrained. G. Bateson explains the peculiarity of third level of learning in such a way:

*"If Learning II is a learning of the contexts of Learning I, then Learning III should be a learning of the contexts of those contexts" (Bateson, 1972, p. 309).*

As a result of this learning the students will acquire the ability to change their own style of thinking, retarget it by going beyond the acquired knowledge and skills, enhancing the creative component in their activities and providing flexibility in thinking. The personality learns to change her/his mode of thinking, reconstruct its paradigmatic foundations, to develop the cognitive ability for dealing with chance, unexpected situation and uncertainty. Such approach to education is similar to Lyotard's understanding of the essence of accomplishment and Morin's concept of complex thinking, according to which:

*"Thought should be armed and battle-ready to confront uncertainty. Everything that involves chance involves risk, and thought should recognize the chance of risks as the risk of chances" (Morin, 1999, p. 48).*

Complex thinking is one of the main concepts in Morin's complexity paradigm. Russian researcher and translator of Morin's first volume of *Method H*. Knyazeva considers that French thinker in his new book *Towards the Abyss? ("Vers l'abyme?" 2007)* made some new important accents in understanding of complex thinking:

*"According to Morin, the complex thinking is a) radical thinking which gets at the root of problems; b) multidimensional thinking, c) organizational or system thinking which analyzes the correlation of the whole and parts; d) ecological thinking which doesn't isolate an object under study but considers its interrelations and its self-regulating ecological connections with the cultural, social, economic, political, natural environment; d) thinking which creates ecology of action and dialectics of action, i.e. thinking which is able to build a strategy which allows to modify or even to cancel the action undertaken by a subject; e) thinking which recognizes its own imperfection, carries on negotiations with doubt, but namely in action because there is no action without doubt" (Knyazeva, 2012, p. 48).*

Ukrainian researcher of complex thinking L. Gorbunova underlines that this concept as a transversal one has a considerable heuristic potential in the present conditions of existence of different positions. It helps to avoid despotism, repression of thought, and anarchy, as thinking in the mode of transversality overcomes the positions of absolute heterogeneity and incommensurability. The complex thinking helps to overcome the closed limits, ensuring the transition from one system to another, the simultaneous consideration of multidirectional efforts, the ability to look across the paradigmatic walls (Gorbunova, 2012, p. 45-46).

A set of scholars actively use complexity paradigm in their educational researches; for example: M. Mason (Complexity Theory and the Philosophy of Education), K. Morrison (Educational Philosophy and the Challenge of Complexity Theory) J. Horn (Human



Research and Complexity Theory), M. Alnadeff-Jones (Revisiting Educational Research through Morin's Paradigm of Complexity) and others.

## 4 Philosophical and educational potential of E. Morin's anthropo-ethics

My next task is analyzing the methodological possibilities of complexity paradigm for understanding of contemporary education. Its basic ideas can be used for rethinking the anthropological, epistemological foundations of the contemporary education. In my opinion, methodological reorientation is an important precondition of educational changes. To focus my analysis methodologically and epistemologically, I will follow such research logic. Firstly, I will try to concentrate on searching of an answer to the question of how do we "*have to redesign our educational policies and programs?*" Secondly, I will focus my attention mostly on E. Morin's anthropo-ethics as the certain philosophical and anthropological position, which determines his complexity theory in general, including his views on education. And finally, I will apply the complexity paradigm for rethinking the current curriculum as a concrete example of solving the stated problem.

Any educational paradigm is primarily based on a certain understanding of human nature and its construction presupposes the definition of philosophical and anthropological research priorities. One of E. Morin's philosophical and anthropological landmarks is the new humanities paradigm (Gomilko, Gorbunova & Proleyev, 2011), aimed at redefining the concept of humanism and role of personality in the light of contemporary socio-cultural, and geopolitical context. The new understanding of contemporary human/nature dualism means the rejection from the mechanical concept of nature and abstract humanism created by philosophers of Enlightenment. From this point of view, human/nature dualism proclaimed by them does not exist any more. The new concept of humanism is more holistic. It implies harmony with every living thing, the environment we live in, as the natural world is a subtle balance of complex inter-relationships in which the existence of organisms depends on the existence of others within ecosystems. So it embraces a human and nature, presenting a man as a member of them.

The new humanities paradigm aims against anthropocentrism as the idea according to which the humans are the crown of creation, the source of all value, the measure of all things. This approach to understanding of the attitude of a human to nature is deeply embedded in our culture and consciousness. Australian thinker John Seed uses the notion "*human chauvinism*". He considers that it is similar to sexism, but substitute "*human race*" for "*man*" and "*all other species*" for "*woman*" (Seed, 2001). This approach resonates with the basic ideas of ecofeminism, which also can be considered as one of components of a new humanities paradigm.

Another feature of it is rejection of an activism, which is closely connected with anthropocentrism as its derivative. In this context an activism is understood as the sum of efforts directed to satisfaction of human needs constantly growing, which is accompanied by human interference or destruction of the natural world. Such human activity poses a threat therefore not only to humans but to all organisms constituting the natural order. So, the degradation of the natural world is caused by human activities.

In evaluating the new humanities paradigm, it is necessary to notice that its main positions correlate with the ideas of E. Morin's anthropo-ethics. It gives reasons to assert that his theory is a conceptual expression of this paradigm as "*a real human ethics*," which is

considered in the interaction of *"individual-society-species"*, and *"in which our truly human mind and consciousness arise"* (Morin, 1999, p. 57). The French thinker believes that this anthropo-ethics has become the basis for the teaching the ethics in the future. E. Morin's anthropo-ethics is a response to a situation characterized by the "death of modernity" (Morin, 1999, p.35). E. Morin explains in his *Towards the Abyss?* that the *"crisis of modernity"*, a catastrophic future are the result of implementation of the idea of progress:

*"Any idea of human power over the universe collapses" (Morin, 2007, p. 28); "the crisis has affected our major myths: progress, happiness, mastery of the world... Now, the future itself is in crisis: there is no possibility to predict, only assumptions, and scenarios"(Morin, 2007, p. 27), "the antagonism of modernity has reached a paroxysmal degree. Everything happens as if there was an agony, in the original sense of the word; that is to say, a struggle between the forces of life and the forces of death" (Morin, 2007, p. 30).*

The crisis of modernity is discovered itself as the crisis of culture, the crisis of science, the crisis of reason, the crisis of the soul, mind, and even mode of life. This unprecedented crisis in the West is reflected in consciousness the idea that progress, inevitable law of history, guided by reason, can no longer be seen as a step towards better: *"Anyway, progress as certainty is dead. One can even say that we are facing a big uncertainty"* (Morin, 2007, p.42). E. Morin in *Seven Complex Lessons in Education for the Future* emphasizes: *"If modernity is defined as unconditional faith in progress, technology, science, and economic development, then that modernity is dead"* (Morin, 1999, p. 36). It is obviously that the crisis of modernity is connected with an ambivalence of progress results: from one side, progress is a source of freedom and undeniable physical and intellectual, technological emancipation of a man. But from the other side, progress is practical servitude of an ethical man. Therefore anthropological mission of anthropo-ethics is to humanize humanity, to accomplish planetary unity in its diversity, to develop ethics of solidarity and understanding in support of the human person and in the formation of *"individual conscience beyond individuality"* (Morin, 1999, p. 57).

This Morin's methodological position resonates with the anti-rationalistic tradition in the history of philosophy. Since Descartes nature was understood as a realm that cannot be observed by our own sense but can only be known through the power of reason, i.e. rational thinking. In this way the nature is reduced to a tool that can be used to benefit human society. Science was equal to human progress; it was an instrument to improve human material conditions. The theme of criticism of 'historic mind', rational thinking began attract general attention at the end of the 19th century (F. Nietzsche, W. Dilthey, G. Simmel and others). But criticism of rationalism reached its culmination in western Marxism, especially in the works of the Frankfurt School representatives (T. Adorno and F. Horkheimer 'Dialektik der Aufklärung'). The process of enlightenment and increasing of world rationalization level according to Adorno and Horkheimer are connected with suppressing of vital basics of human existence. Concept of Ratio from their point of view leads to an excessive apologia of total control over the civilization and appears to be a part of the domination problem. The main ideas of the above mentioned work were accepted by G. Marcuse, A. Glucksmann, B.-H. Levy and at others. The idea of *"repressive mind"* made them think about the *"pathology of the power"*. The human history from this position does not provide the progressive development of society, because progress is considered as the increasing evil.

Under this crisis of modernity's values Morin proposes involution as an alternative, i.e. metamorphic regeneration as a *"return to potential of generic human..."* (Morin, 2007, p. 157). Basing on these ideas he formulates the tasks of contemporary education. It must take

into consideration the planetary situation of the 21st century that means to develop an earth identity, “to show how all human beings now face the same life and death problems and share the same fate” (Morin, 1999, p. 2). The point is that modern education should develop the person’s responsibility for her/his actions. So, Morin’s anthropo-ethics “calls for world citizenship in the 21st century” (Morin, 1999, p. 3).

The next Morin’s anthropo-ethics ground is derived from rejecting the abstract idea of humanity that is in humanism, since it reduces the human nature to one of its dimensions (Homo Sapiens, Homo Faber, Homo Economicus etc.). E. Morin argues that a human being may be simultaneously sapiens and faber, economicus and ludens, prosaic and poetic, natural and metanatural (Morin, 2007, p. 45), that humans, by nature, are Homo Complexus, that embraces physical, biological, psychological, cultural, social, historical, and other dimensions.

His concept of Homo Complexus based on the idea of human trinity (individual-society-species) places a person in a situation which allows at the same time vast diversity and yet specificity. Humans are complex; they represent unity and diversity at the same time. Unity and diversity are understood as the notions that complete each other. At the same time they are not devoid of the diversity that contains the elements of antagonisticity. Human identity is carried in the form of plural and polymorphic human conditions. This Morin’s philosophical and anthropological position deepens our understanding of humanity, helps to rethink the human place and role in the modern world, and therefore, formulates certain tasks of education.

The complexity paradigm without denying universality adopts the complementary principle that the individual and the local features are intelligible. It integrates elements into their ensembles, searches for principles of causal interrelations, places the object back into interaction with its environment or context, considers autonomy in terms of self-organization and self-production, self-reflection, thinks dialogically and so relates contrary concepts in a complementary manner (Horn, 2008, p. 132). According to this E. Morin’s conception, a person develops himself/herself in a dialogue with others, as well as in a dialogue with himself/herself. Ecological conscience that must be developed by educational means, to his view, will form the openness “to inter-criticism, self-criticism, and inter-understanding” (Morin, 1999, p. 38).

Another position of Morin’s anthropo-ethics is connected with the notion “multidimensionality”. Why should multidimensionality be considered as a key notion in Morin’s paradigm? First of all, I would like to discuss interpretations of this concept that have been developed by scholars in the social science. The given notion is widespread in contemporary social philosophy. Reference is also made to the human dimension, the humanitarian and cultural dimensions, and dimension of historical processes. The notion “multidimensionality” by its nature is not an economic or sociological term. It is considered as general characteristic of systems that not only indicates certain aspects of the phenomenon but describes it as a whole. Human intuition, as a rule, deals with certain broad views of the social and cultural world by means of the notion “multidimensionality”. This concept is based on the fundamental idea of an autonomisation of separate dimensions. If this given tendency is ignored, we get, so to say, simplified pictures of multidimensionality phenomena. Such outcomes should be regarded as profound deformations in theory and practice. The phenomenon of dimensions collapse indicates the society’s growing instability. It is logical that a “society without alternative” (H. Marcuse terms one-dimensional society) doesn’t have much chance to continue its activity in comparison with the “society with an alternative”.



The complexity of a human being could be perceived in the context of the society's multidimensionality. A human being as well as the society is viewed as a multidimensional phenomenon. According to the E. Morin's concept, the human nature is multidimensional and multileveled, so education *"must recognize this multidimensionality and insert its data within it. Not only should a part not be isolated from the whole, the parts should not be isolated from each other. The economic dimension, for example, is in permanent interretroaction with all other human dimensions; moreover, human passions, needs, and desires that go beyond solely economic interests are carried hologrammatically within the economic"* (Morin, 1999, p.14). The absolutization of only one human dimension leads to a misrepresented view of a human. For example, the understanding of humans as Homo sapiens has contributed to the dissemination of rationalism in anthropological researches and assertion of the concept of anthropocentrism, which I have mentioned above.

Thus, E. Morin's anthropological guideline is a person who is open to *Others*, able to understand them, ready to retarget his/her thinking, and has the developed responsibility for Earth as common Homeland. Just basing on this anthropological position, French philosopher and sociologist sees the possibility of new educational projects implementation in future.

Morin's anthropological position has led him to a very important conclusion, which can be regarded as his seven lessons for education. The first one is *"to prepare the mind to confront the constant threat of error and illusion that parasitize the human mind"* (Morin, 1999, p. 1). The second lesson is to learn the mind to grasp *"subjects within their context, their complex, their totality... mutual relations... between parts and whole."* (Morin, 1999, p. 1-2). The third educational task is to organize knowledge, dispersed in the natural sciences, social sciences according to complex human nature and complex world. The next one is to develop the anthropological conscience that recognizes our unity in diversity (Morin, 1999, p. 38). The fifth lesson of education is *"to prepare our minds to expect the unexpected and confront it"* (Morin, 1999, p. 3). The sixth one aims to teach mutual understanding among human being on all educational levels, which will require a reform of mentalities. The last lesson orients us to develop in our minds *"awareness that human being is at the same time an individual, a member of a society, a member of a species... and help this awareness find expression in the will to realize our earth citizenship"* (Morin, 1999, p. 3-4).

## 5 Educational projections of complexity paradigm

Education is declared to facilitate the adaptation of an individual to the conditions of multidimensional, changing world, searching for new strategies, models of behavior and new outlook of contemporary person etc. E. Morin tells us about necessity to overcome the dispersion of knowledge, which hinders to clarify the complexity and diversity of the person and the world in which she/he lives and works. From one side, this problem is a result of the development of contemporary scientific knowledge. J.-F. Lyotard remarks:

*"The classical dividing lines between the various fields of science are thus called into question – disciplines, disappear, overlapping occur at the borders between sciences, and from these new territories are born"* (Lyotard, 2001, p. 168).

He has in mind the emergence of the preconditions at the end of 20th century for the formation of a new synthesis of natural and human sciences. A contemporary human as a



representative of scientific and technological epoch finds the synchronicity of the development of universe, society, and human. Today a person naturally tends to universalize knowledge in search of answers to questions about his/her place in the world that is, overcoming the fragmentation of current scientific knowledge. The restoration of the unity of the fragmented knowledge, overcoming the fragmentation of knowledge in natural sciences and humanities, combining the parts into a whole will cause the creation of knowledge with new qualities, properties and characteristics in the educational sphere (the creation of the certain gestalt-image, which is in the process of becoming and changing).

The knowledge arises in the educational process, but is not previously given. It is a part of the inner world of those, who study, of their interests, values and goals. The nature of knowledge is subjective. Education should form the vital competencies of a contemporary person, that's why it is closely connected with her/his living world (the practice of everyday life should be involved). The ideas about the methods of acquiring knowledge are in the process of change. The method is considered not as the way defined a priori, but as the laying of this way. The configuration of the knowledge is considered as a cycle, a union, which is not reduced to a single meaning, but induces to a new reflection. Education is declared to stimulate the inner potential of a human. That is why we should use the methods, which are connected with the internal nature of the human – the play method, the dialogue, the research practice etc. Thus, we expand the space of human possibilities by exploring the inner multidimensional nature of Homo Complexus.

To develop the complex thinking, to my view, it is necessary to redefine education main didactic principles from a controlled and controlling discipline-based education, predicted targets towards a discovered, transdisciplinary, emergent curriculum as the sum of proposed courses of study, as a core of the educational process. The complexity-based curriculum would be dynamic, relational, autocatalytic, self-organized, open, existentially realized by the participants, connected and recursive. As E. Morin marks, education “*should learn to navigate on a sea of uncertainties, sailing in and around islands of certainty*” (Morin, 1999, p. 3).

The Canadian scholar Brent Davis analyzes how complexity theory might be appropriate to the concerns of educators and educational researchers. He addresses this question by exploring several ‘simultaneities’ offered by complexity thinking:

*“Knower and Knowledge, Transphenomenality, Transdisciplinarity, Interdiscursivity, Descriptive and Pragmatic Insights, Representation and Presentation, Affect and Effect, and Education and Research” (Brent, 2008, p. 47).*

Following his ideas I consider that the curriculum could be presented as a multidimensional space of possible educational interactions and meta-communications, based on such concepts as:

- transphenomenality as an attribute of an educational space and human being that offers through the lens of the complexity paradigm such approach to cognitive activity that can be possible only due to the simultaneous consideration of the factors, events associated with quite different phenomenal levels of explanation;
- transdisciplinarity as a mean of the scientific cognition that presupposes the simultaneous consideration of the facts connected with quite different disciplinary perspectives;
- transdiscursivity as a communicative and cognitive practice that presupposes the simultaneous consideration of the facts connected with quite different discursive perspectives;
- transculturality as a situation in the present-day culture (including the process of unification and differentiation) that offers in the context of the complexity paradigm insights that can be possible only due to the simultaneous consideration of the facts belonged to quite different cultural traditions and value orientations.



Thus, from the complexity paradigm perspective the education is transphenomenal by its nature with the transdisciplinary character of cognition, and the transdiscursive essence of educational thoughts. The education strategies based on the transphenomenality, transdisciplinarity, transdiscursivity, transculturality are sine qua non, in which students and teachers become border crossers, and knowledge is understood as the result of their transgression. Students and teachers create borderlands in which all diversities are perceived as parts and a whole; socially, historically and culturally constructed limitations are destroyed.

The complexity paradigm regards knowledge as a social construct, created by participants of educational process at a particular socio-historical-geographical context. E. Morin writes:

*“Knowledge of isolated information or data is not enough. To have meaning, information and data must be placed in their context. To have meaning, a word needs a text which is its own context and the text needs a context within which it is stated” (Morin, 1999, p. 13).*

Such education project presupposes that students and teachers create together, share and shape themselves. The teacher, on the one hand, moves from the role as an expert and transmitter of knowledge to a facilitator, co-learner and co-constructor of meaning, co-creator of a new knowledge. Students, on the other hand, have to be prepared to exercise autonomy, responsibility, self-direction and self-reflection. The complexity-based curriculum conceptualizes difference, context, processes, multi-factor causality, presupposes the different ways of thinking about context. The present-day curriculum would create the educational conditions for complexity thinking becoming.

E. Morin's anthropo-ethics is interdisciplinary concept, main positions of which are congruent to synergetic concepts. As Morin's theory, synergetics also contains considerable humanistic potential. The main point of it is a new understanding of the role and place of a person in the context of cognitive and practical activity. In this case such outlook approach emerges: a personality has to create himself/herself according to a world he/she lives in. It means that he has not to change the world but to accommodate himself to the existing world. Hence we can observe natural inclination of synergetics to philosophical understanding and search of universal points for individual and social being of contemporary person. Its object is the mechanisms of creation and destruction of structure that is the mechanisms of self-organization. Synergetics pays attention to the coherent coordinated character of self-organization processes in complex systems, rises the question about a new mode of thinking, based on the assumptions of nonlinearity, discontinuity, etc. Comparing these two theories we can see that Morin's complex thinking is nonlinear and open. It orients us to readiness of appearance and acceptance of something new, adequate estimate of changing society.

E. Morin's inclusion in the contemporary intellectual context is determined by his double anthropological imperative: *“save human unity and save human diversity. Develop our identities which are both concentric and plural; our ethnic, homeland, community of civilization identity, and our citizens of the earth identity” (Morin, 1999, p. 39).* This imposes his critical attitude to the rationalist tradition in the history of philosophy, the denial of any centrisms in the construction human relation in society (including egocentrism, ethnocentrism, sociocentrism, different kinds of xenophobia's expression), adherence to the transhumanitarian ideas and post-classical science ideals.

E. Morin's anthropo-ethics is the sum of the moral principles for the global world. A communication is based on ethics. Today communication becomes more global, intensive



and expresses the essence of contemporary civilization. Ethics provides a moral symmetry in communication. Brazil researcher Luiz Martins da Silva marks: *"If asymmetries were to prevail, humanity would regress to the teleological-strategic-perlocutionary stage and consequently would search for success centered on the ego (egocenter) or the corporate we (corpocenter) (Silva, 2009, p. 6).* A means and end of human communication, to Morin's view, should be the result of education.

Education based of his anthropo-ethics is oriented on the rejection from cultivation of the old dualisms and creation of the new ones; *"teaching the opposition between a universal and the homeland" (Morin, 1999, p. 38)*; respect of different cultures and ethical choice of Other contributes the assertion of tolerance and reach of consensus in the society. Even if J.-F. Lyotard considers that *"consensus is horizon that is never reached" (Lyotard, 2001, p. 170)*, to tend to it is the moral duty of contemporary education, which looks forward.

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