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“The Educational Ecosystem”

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It is my pleasure to be here today to share with you some thoughts about education and social values in the present situation of the world. Let me thank North East Normal University for their invitation to participate in this important forum. If I were to define the world today with only one word, I would choose the word Globalization. Certainly, the process of globalization is not new, it began thousands of years ago with the first human beings on Earth. Globalization is nothing but the permanent expansion of social systems, from millions of small independent human communities, to only one world interdependent community.

The Social Ecosystem

Human beings, like all living beings, need to survive based on resources that exist on their environment. All living beings must adapt to their environment, and humans are no exception. Trees, plants, and flowers must adapt to their environment to survive, and the same is true for all animals, including humans. But that is about all that humans share with other living beings. Because, while plants and animals can survive in their environment from the very first moment that they are born, humans are incapable of surviving on their own. Human beings need other human beings to survive, until they can do it by themselves. In other words, the adaptation of plants and animals is mechanical and genetic, while the adaptation of humans is always through interaction with other humans and their own individual capacity to reason, to use their brain. Human adaptation is always done through culture, because humans are the only living beings that can create, store and disseminate culture, in the broad sense that this concept has in the social sciences.

For heuristic purposes one can differentiate between material and non-material culture. The former we call “technology”, and it is the result of how humans learn to use and combine elements they find in their natural environment. First, humans learnt to obtain resources from their nearby environment, later they were able to travel longer distances to obtain them. Nomads became sedentary when they learnt to cultivate natural resources through agriculture, to raise, train and use animals for their daily needs, and to use non-

living resources, that is, minerals, stones and iron. But most importantly, they learnt to combine the products they were developing from Nature to create new products that are not present in Nature. The more material elements humans produced, the more possibilities they had to combine them and produce new material elements.

The non-material culture may be defined as the social organizations humans created to better adapt to their environment. First, they created some kind of organization to establish what resources they needed, how to obtain or produce them, and how to distribute them among all individuals in their human community. We may call this type of organization “economic organization”. But immediately, humans developed another kind of organization, “political organization”, that cared for enforcing the goals established by the economic organization. This was achieved through norms, rewards and penalties, that is, using power. We find these two types of social organizations in any human community, no matter how developed it is. There has been a huge variety of economic and political organizations through space and time. Besides, human communities have developed many other types of social organizations: trade, education, health, religion, security, transportation, etc., as division of labour has increased because of the growth of the population, the expansion of the environment from which to obtain or produce resources, and cumulative

technological change, especially through innovations in transportation and communication.

Non-material culture includes, in addition to social organizations, ideas, beliefs, and values that are also very varied and characteristic of each human community. Humans have produced many different answers to the same problems in different societies and times. Social organizations, ideas, belief systems and value systems, are instrumental to accomplish the adaptation of each human community to their natural (and more and more social) environment. This is what may be called the social ecosystem, where population, environment, technology and social organizations plus values systems, interact with each other continuously, so that a change in any of the four elements has repercussions on the other three. Nevertheless, technological change is the one that has greater importance in producing change in the other three elements. To summarize, culture is not transmitted through our genes. Material and non-material culture are specifically human, and both are the result of the individual capacity to reason, and interaction with other individuals to create, store and disseminate the tools, ideas and values that are instrumental to achieve survival through adaptation.

The relationship between the economic and the political organization seems to have been the most important one in all societies, because it affects all other institutions. This relationship

has historically varied greatly, sometimes showing competition and others cooperation, depending on space and time, but there has always been some equilibrium in their relationship. The problem, at present, seems to be that the equilibrium has broken, because the economic organization has globalized, while the political organization continues to be attached to the nation-state. The globalized economic and financial organization complains about the obstacles of operating in more than 200 nation- states, each one with their individual norms. The globalized financial-economic organization would certainly prefer one global political organization. The disequilibrium between economic-financial and political organizations is the origin of many of the problems and conflicts in the present world order, leading to conflict between the globalized financial-economic organization and the traditional national one, and consequently to conflict with the nation-state or any non-globalized political unit able to impose many different norms and regulations in which the globalized financial-economic organization operates.

The Educational Ecosystem

The model of the social ecosystem can easily be applied to the educational organization, which has also expanded through centuries. In the educational ecosystem we find the same four elements: population, environment, plus material and non-material culture. Just as in the social ecosystem, the main characteristic is

the exponential rate of social change, produced by the exponential rate of technological change, mainly through innovations in communication and transportation.

In the social ecosystem, population has grown exponentially. Starting in the year 0, the world population took about sixteen and a half centuries to double, from approximately 250 to 500 million. Cultural innovations made it possible to double again in 200 years, again in 100 years, and double once more in 50 years. At the beginning of the 21st century the population of the world was about 4 thousand million inhabitants, and only in 24 years it is 8,5 thousand millions.

Consequently, the population in the educational ecosystem in all countries has also experienced an exponential growth, both in the number of students and educators. Most countries have adopted compulsory (and free) education for all from 4 till 14 or 18 years of age (because of political decisions that derive from values), and this growth has required a similar growth in the number of educators, which in turn has required more resources to train them, as well as more schools and training organizations in every country. The expansion of education in all countries is a product of changes in their social values.

The growth of population in the educational ecosystem has implied an increase in the production of resources, not only because of a larger population, but also because everyone consumes many more

resources in 2024 than in the year 0 (since values have also changed, leading individuals to increase their “needs” and expectations). Most resources require a sufficient budget in whatever unit we use, monetary or other.

As culture is instrumental for adaptation of the population to the resources in the environment, we may acknowledge that material culture (technology) has produced new tools for education, to help teachers and students. Blackboards and books, notebooks and pencils or ball points, have been substituted by mobiles, computers and tablets. The Internet makes it possible to store lectures in a web address so that students can easily read and hear the same lecture as many times as they wish. Besides, students and teachers can consult the web to obtain information on anything, not to mention the possibilities opened by AI. Once again it is technological innovations, mainly in communication and transportation, that have produced the biggest social change in education. Distance is not a barrier to education anymore, as one can study and get degrees online in any educational centre on earth without moving from the place in which they live.

The consequences of these changes for Humanity are, at this time, only indeterminate, because we cannot even establish their number. We know that there are now millions of people all over the world studying, researching, gaining knowledge in all realms of life. Knowledge is not limited to the elites, it is now accessible to huge

masses of people all over the world, and that means that technological change will keep growing at a more and more accelerated pace. Traditional social organizations in education, like schools, universities, etc. are changing and must change, to adapt to the new technological innovations and to the new needs of societies, and the new desires and expectations of individuals.

And last, but not least, social values are also changing. Education and knowledge have become accessible to masses of people, they are not accessible only to the elites. We then come to the final and most important conclusion. Education has the function of preparing citizens to perform different activities which supposedly will be needed by society. But social change is exponential, so that it is difficult to know what those needs will be, what jobs will disappear, what new jobs will be required, in 15 or 20 years. Consequently, how can we design the educational curricula for youngsters when we ignore the needs of future society, and consequently the skills that will be required? That is our real and important challenge.

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