
This article is based on a verbal presentation given to the Quality of Childhood Group in the European Parliament. Notes taken during the presentation were formulated into the article below, which has been checked and approved by Professor Steen Hildebrandt.

Multiple intelligences in the knowledge-based society

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SUMMARY

The Knowledge Revolution is comparable to the Industrial Revolution

The point of departure for the points raised in this presentation are closely related to Ken Robinson's three fundamental arguments:

- *We are caught up in a social and economic revolution, which is comparable to the Industrial Revolution of the 19th century. This revolution has hardly begun.*
- *To survive it we need a new understanding of human resources. Current approaches to education and training are hampered by ideas of intelligence and creativity that have wasted untold amounts of talent and ability.*
- *To develop these resources we need radically new strategies. We cannot survive the future simply by doing better what we have done in the past. There is no point in raising standards if they are the wrong standards.*

The Knowledge Revolution has had a profound impact on the role of employees

Many European societies are part of this revolution. The labour markets of this century are changing beyond all recognition. We are talking, for example, about the Y-generation. We experience new values and expectations from what we are used to call employees, but who will have quite a different significance and quite different roles in the future. The nature and our understanding of the organization of tomorrow is changing.

Change is becoming the normal state

Therefore, it is not a revolution in a figurative sense, but a real one comparable in scale and impact to the massive upheavals of the Industrial Revolution. The new revolution is being driven, as the last one was, by developments in technology. Change has always been part of human history but it seems as if we are moving from a situation where change was an exception to a situation where change is the normal state.

The shift from manufacturing to the so-called knowledge-based industries

New technologies, the Internet, advances in neuroscience and genetics, information sciences and so on are transforming the nature of the work we do and the work we will do in the future; how we work, who works, with what, when and for how long a time. Also, new technologies are generating many new social issues and cultural challenges. One of the most significant changes is the shift from manufacturing to the so-called knowledge-based industries.

Individuals and groups of individuals are the most critical elements in the new economies

This change is characterized by the fact that individuals and groups of individuals are the most critical elements in the new economies. The creation of value by modern knowledge-based societies and economies are of course dependent upon many factors but it seems as if the human element is the single most critical factor, i.e. humans as individuals, and more critically, individuals with a diversity of education and backgrounds working together with other individuals in complicated and shifting ways. Therefore we are also talking about network organizations and network societies. The most important factor in these networks is individuals who connect with each other and cooperate with each other in diversified shifting networks.

The school system must adjust to meet the requirements of the knowledge-based society

Therefore, human beings are important in understanding what is contributing to value creation in modern societies. Of course, people have always been important, as has technology, but the specific character of this importance has changed as part of the ongoing transformation of society, as part of the shift from the industrial to the knowledge-based society.

Society is in great need of diversity. The creative and innovative society is in need of creativity. The network society is in need of social intelligence. Experience based society is in need of emotional intelligence. In short, modern societies are in great need of multiple intelligences, and not only the single intelligence which we measure again and again, i.e. the intellectual intelligence. The whole school and education system ought to be changed in accordance with this view. This means that all human intelligences must be appreciated and also measured, at least in the sense that they are accepted, appreciated and evaluated as part of developmental and pedagogical processes in schools and universities as well as in companies.

Our children must take care of the Earth in the future

The children of today are the future. For this reason we have to take care of them. The children will be the leaders, the workers, the managers and the teachers of the future. As the human community, living on the Earth, we are dependent upon our children.

As humans we do not always do very well. The English Professor Ken Robinson, who has been working in the area of creativity in schools, said:

If all insects would disappear from the Earth within 50 years all life on Earth would end. If all human beings were to disappear from earth within 50 years all life on Earth would flourish.

With this quote he is pointing to the fact that we do not treat the Earth or our children in a proper way.

Growth from Knowledge: what growth and what knowledge?

This morning I read an advertisement in a taxi which stated: 'growth from knowledge'. This statement is most interesting, because it raises two questions:

- What is growth?
- What is knowledge?

We normally conceive of growth as a materialistic phenomenon and we strive for industrial, economic and materialistic growth, as if this were the single most important goal in the world. Perhaps this is one of the main challenges we have to face in our time. We have to find answers to the questions:

- Why are we here?
- What are we aiming for?

We have been scripted so that we as human beings should strive for industrial and economic growth. This is the leading philosophy.

When the children of today become adults, they may instead choose to strive for social, emotional and ecological growth. By focusing only on a narrow, materialistic concept of growth we are harming the Earth in a dramatic way. Therefore the Earth is crying, because we are not doing things in the right way. For this reason we have to change our worldview and our view of human beings. In this context we have also to change our view of children.

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Adults have more responsibility than children, because they have the power

We as adults have the final responsibility for all that is done in relation to children. For this reason we have a much bigger responsibility with regards to children in comparison to our responsibility to other grown-ups, because they can oppose us if they do not agree with us.

My fundamental point of departure is therefore:

because the world is becoming smaller and smaller, while the population continues to increase. Young people will be faced with great challenges when they grow up. They will face a very complex world with extreme conflicts and many groups, regions and countries with conflicting interests. The challenges in fifty years time for the leaders, the politicians and the workers will be much more demanding than we, the adults of today, face at this moment. Our world of today is not easy, but their world will be much more complex. I am not saying that it will be catastrophic, but it will be much more complex. It will demand much more from them as

individuals, as decision-makers, as politicians, as stewards of humanity and of democracy in the future. It will be a demanding task to shape new forms of democracy in a highly technological world. Therefore I consider that the most important challenge that we face as a society is to enable our children to gain the ability to navigate through a very complex world. They have to learn to calculate, to speak, to learn physics and so on, but before all these practical things they have to learn to exist in a complex world.'

A rapidly changing world requires a new school system

What is needed for the world of the future is "existential intelligence": the intelligence to exist. By this I mean the ability of young people to find their way forward, to navigate through and within the complexities in their lives, in their families and in the countries where they will live. For our (grand) children the world will be a much smaller place than for us and it will happen much more frequently that people will live in various countries. This fact has consequences for the school system. In my own youth in the 1940's and 1950's in Denmark the world was more stable than it is today. And this trend will continue: the 2050's will be more volatile than the 1990's.

How can we prepare our children today for the tasks and challenges that they will face in 50 years time when they will be the leaders, the managers, the workers and the voters? For them lifelong learning will be the reality. If we take these elements into consideration we cannot escape from the conclusion that we have to reshape our school systems. The school or the university is no longer the place where you convey all the knowledge that somebody may need in his/her life and professional career, but it is just a phase in the life trajectory of somebody who will have jobs where continuous learning will be an integral part of the assignment.

This insight changes the perception of the mission of the school system:

- Not all knowledge of the usual subjects has to be transferred to the students by their 25th birthday, but instead;
- To teach them to be able to learn over their entire life span, to learn to navigate their way within and through many different contexts, to learn to exist, to live, the ability to know who they are, their ability to have relationships with other people, the ability to respect themselves. On the basis of these learnings they could then go on to learn the various subjects (mathematics, language, physics, biology, etc.). But first of all they must learn to live a healthy life in an unhealthy world.
- One of their tasks will be to contribute to building a more healthy world'.

Today's Transformation Process is comparable with that of the Industrial Revolution in the 19th century

We have developed a world in which only a small part of human intelligence is recognized, and valued, namely the intellectual capacity. This tendency to only value intellectual

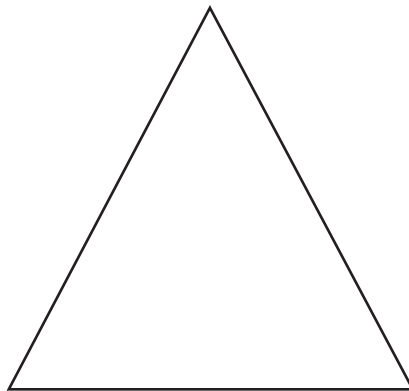
capacity has to do with the industrialised society which was created 100 to 200 years ago. Today we are caught up in a social and economic revolution, which is comparable in scale to the Industrial Revolution. The revolution of today has hardly begun. It will have a myriad of consequences for us all. In order to be able to handle this new revolution we need a new concept of human resources. Current approaches to education and training are hampered by perceptions about intelligence and creativity that have wasted untold amounts of talent and ability, because with the current evaluation mechanisms we only evaluate a small part of a person's intelligence and capabilities.

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The Industrial Society can be depicted as a Triangle

You could say that a triangle best epitomises the relationships in the industrial society. The industrial society is depicted as a hierarchy. The overall idea behind the Industrial Revolution was the division of labour. It brought us a whole range of industrial products, but at the same time our society was changed along the lines of the Industrial Revolution, dividing all parts of life into different segments, including schools and public agencies. There were segments for the various school subjects, for areas of production, and so on and people were trained in accordance with this paradigm:

For example, teachers can choose to train in a wide range of different specialisms. They work mainly alone in large organisations. It is their task to do an effective job, but only in their own area.

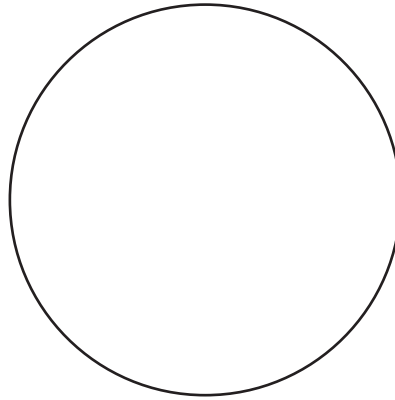


The triangle epitomises the philosophy of the Industrial Society.

The current Social and Economic Revolution is depicted by a Circle of Networking

The current Social and Economic Revolution goes hand in hand with the emergence of other types of relationships:

- There will be much more networking;
- The shape which reflects these new relationships and hierarchies is the circle;
- The division of labour is not the dominant paradigm, but instead the opposite, namely the sharing of knowledge. This knowledge is not the narrow blocs of knowledge of the era of the Industrial Revolution, but it encompasses creativity, social abilities, emotional abilities, and special abilities such as being a good football player, ballet dancer, actor or film producer.



The Circle depicts the Networking Society, which will emerge as a result of the current Social and Economic Revolution.

Europe as a region is moving from an Industrialised Society towards a Knowledge-Based Society, which every day is becoming more dependent upon individuals:

- On industrial facilities, machines, etc. When they were in place, growth was assured and the labour force would do its work.
- In the Knowledge-Based Society value creation will be more and more dependent upon individuals who work together with other individuals in network type structures.

The Knowledge-Based society is based on Multiple Intelligence

When we consider the Knowledge-Based Society and the work being done in network structures, then we begin to understand the importance of the new concept of multiple intelligences. We have always tended to think that there was only one type of intelligence, namely the intellectual intelligence that is measured by IQ-tests. People's intelligence is measured all the time and the school systems have incorporated these tests into their procedures and structures. By integrating this in our school systems we have created lots of 'winners' and lots of 'losers'.

I think, very soon, this testing of intelligence will be forbidden just in the same way as hitting children is now forbidden by law. It is a similar type of violence against children. In this way only a narrow concept of intelligence is measured, ignoring emotional, social, creative, artistic and other types of talents.

In Denmark we are close to a language that speaks of 'strong' and 'weak' children. By using this language we are creating 'losers', and this division of children into segments is based on narrow and faulty intelligence tests. We must strongly criticise this approach for two reasons:

- We are not treating children in a fair way;
- As a society we need all the other types of intelligences, which we now disregard, and do not appreciate.

Howard Gardner developed the concept of multiple intelligences

The concept of multiple intelligences was described in the book by Howard Gardner entitled 'Intelligence Reframed, Multiple Intelligences for the 21st Century' (1999). Professor Gardner studied the subject at Harvard University for twenty years and he distinguishes seven different types of intelligences:

- Linguistic intelligence
- Logical-mathematic intelligence
- Musical intelligence
- Bodily-kinesthetic intelligence
- Spatial intelligence
- Interpersonal intelligence
- Intrapersonal intelligence

This new approach of Howard Gardner is now broadly accepted by scientists.

The concept of Multiple Intelligences must be implemented

The concept of multiple intelligences should really be taken seriously and the various intelligences should be understood, studied, appreciated, stimulated, and perhaps also measured. We need everyone and all of their different intelligences in the Knowledge-Based Society of the 21st century for it to be effective and prosperous. People should also have the ability to work together with others, because in the future the wealth of a society will depend on its ability to create more and more complex solutions for products and services.

Key Characteristics of the New School System: human beings are again treated as human beings

- There is an expression 'you get what you measure'. If you measure children's abilities in physics, mathematics and language you will eventually get what is being measured. If we want to change the school system we should start to measure the abilities of children differently.

- One of my own teachers said to us 'you can't compare yourself with others. You are you.' We are always comparing individuals, schools, communities and societies. The OECD's PISA Study is a good example. The philosophical concept on which the PISA Study is based is that of the industrial society, not the Knowledge-Based society as described above. The PISA Study measures the ability of the students in mathematics, science and language, but because of this these organisations orient themselves towards the PISA criteria, neglecting other domains such as creativity, interpersonal and intrapersonal intelligence and so on'.
- For example, a boy was told by his teacher that he was stupid and a dummy. When a teacher makes such remarks every day to a child, then in the end the child will start to behave in that way. A philosophical and educational mistake is being made here. Everybody is an individual and has the right to be treated as such.
- The heart has been neglected in our school systems and society, and the brain has been given too much preponderance. The heart will become more important again. We must show children how to listen to their own hearts, because your heart cannot lie to you. This is a basic ability that people need to learn to live their lives.

Today many parents are fearful about the future well-being of their children. As parents they wish for a good future for their children. Because of this, parents, also in their role as voters, demand from their governments more of the same 'school system'. This is the wrong demand. One of the fundamental changes of our school system should be that we no longer consider the student as an object, who should be filled with knowledge, but instead as a subject, an individual, who has the right to individual treatment. The teacher and the school should accept the student as he/she is, and not as the teacher would like to see him/her. And the same is true regarding the teacher's perception of how the student should evolve. These wishes of teachers are often based on old models that were valid in the industrial societies of the past but which are not relevant anymore. In twenty years time our society will look completely different from how it is today.

One of the fundamental changes to our school system should be that we no longer consider the student as an object, who should be filled with knowledge, but instead as a subject, an individual, who has the right to individual treatment.

With regard to the shaping of our future societies the following questions should be clarified by the European Parliament:

- What kind of European Union do we want? What should be the role of the European Union in the world of tomorrow? What is our perception of a human being?
- What could be the European Union's specific contribution to the world? Will the EU be the world's school? Can the European Union be the place and the laboratory where we help people to be and to become human beings, who respect each other and who live together in peace, in a democratic context and whose well-being is based on its

innovative and knowledge driven character?

Once these questions have been clarified then the question can be asked: what then does this mean for the school system and the practices and procedures in schools?

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He has written, edited and contributed to more than 200 books on organisations and management and he has written hundreds of articles. He is also a business editor at the Danish newspaper 'Børsen'. Together with a colleague he runs a consultancy firm called Hildebrandt & Brandt A/S.

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