



# The Transcultural Perspective and the Smart Education

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Received 10 January, 2019; Revised 28 February, 2019; Accepted 14 March, 2019

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Available online 15 March, 2019 at [www.atlas-journal.org](http://www.atlas-journal.org), doi: 10.22545/2019/0120

**T**he spectacular evolution of technology in the last decades would not have been possible without the integration of information in the function of products. This has been achieved through the mechatronics that offers a successful model of integrating matter, energy and information. By researching the products it created we were able to draw some important conclusions that allowed a better understanding of man and led to adopting a realistic, integrative and transcultural perspective. It allows the creation of a smart education in complete agreement with the profound nature of man and the learning processes. Starting from it, smart teams, organizations, communities and nations can be built that are aware of themselves and masters of their own development. Inside them the quality of participation, of integration and of things accomplished together grows more and faster than in ordinary conditions, which increases the satisfaction and the concrete gaining.

**Keywords:** System thinking, smart system, self-determination theory, transcultural perspective, smart education, competence, spirituality role, mechatronics era.

## 1 Introduction

The technology has evolved so much in the last decades that now it is under discussion the creation of smart cities. The smart products, especially phones are very accessible and therefore widely spread. The impact of their use is still little evaluated and it is relatively difficult to anticipate the effects on the users, on knowing man and society.

Unfortunately, evolution of discovering man, and the support he gets through education to achieve a fulfilled life is small, tributary to an old perspective on the world. The same thing happens at the level of teams and organizations. Man and the systems that integrate him cannot evolve consciously, efficiently and sustainably in the current approach. To manage the participation a new approach is needed, one that integrates not just the practice developed in technologies but also the most recent information on man.

After some profound transdisciplinary research on the innovative potential of mechatronics in developing a smart education centered on competence, possible developments have been identified, with major implications in this field [1]. Some of the discovered

results are succinctly presented in this paper. Analyzing the mechatronics, the smart products, using a systemic thinking, paying great attention to the design, the control and the integration of the smart systems, surprising things have been discovered that greatly help to better understand the man and the supra-individual systems he participates in.

A new perspective has been identified which helps man come out of the limitations and the control that the culture has over him, that can insure the collaboration and an authentic integration in more and more complex and bigger over-individual systems, beyond the cultures built inside them. Starting from this perspective and in accordance with it, from the new understanding of human nature seen as a smart system, a new approach on education appeared called the smart education.

It respects the integrity of the systems and suggests taking over the control from the inside, just like the smart objects can get. The main instrument at the foundation of the control is the software whose main components have been identified. Improving from the inside the mental software (procedural etc) used by the person, team, organization, community or nation it can consciously evolve to ensure a better management of the system it forms, according to its fundamental needs, and a quality participation in the integrative systems.

## 2 The Functioning of the Smart Systems Short Presentation

The theory of the systems takes into consideration the systems in general but it is less interested in the smart systems, capable of growing in time, and have a participation in accordance to the tasks given or assumed, taking into consideration what is happening around them. The humanities and social sciences have studied the man, but not from a perspective from which he is seen as an intelligent system, well integrated. It is because of this that the man is seen incomplete and incapable of describing in a satisfying way his extraordinary complexity, the learning etc.

A much better analysis of the smart systems is possible now, in the technological era we live in, an era of mechatronics and of smart products. This allows us to see how exactly the systems that are capable of evaluating information, of driving themselves, of learning, of participating and forming very complex

systems together - systems of planetary dimensions like the GPS or the internet – work.

The facility added to the products that determined the evolution to a mechatronics system is the self control. To achieve it, it was necessary to integrate microprocessors in products and to develop the software that they execute. Therefore at the basis of the smart devices function, there are microprocessors capable of executing instructions (the hardware component) and complex programs created from instructions (the software component).

The smart products' activity is controlled through the software they execute. This is a new element that allows us to better understand a new dimension of information, the one that determines the way in which the actions take place. All the system's components are integrated at the software's level, so the demands of the users can be met taking into consideration the internal and external conditions. The basic elements that ensure the function of the smart systems are a platform of information, a system that makes decisions and takes into account the information received from different pathways and the roots of accomplishing the necessary tasks. These elements cannot be understood without the fourth integrated element that gives meaning to the other three, the need the machines answers to - Figure 1. [11]

Nowadays a product can meet many needs, and that is why the means of acquiring data, the decision making programs and the execution routines can be very complex. For example, a Smartphone is no longer a simple phone, but a small computer with many integrated additional functions, from state-of-the-art cameras to internet surfing and travelling with a GPS. Another example, the automatic pilot of a plane is the result of the integrated function of a net of mechatronics devices. They can process data from hundred of thousand of sensors, can make decisions in complex situations and can ensure the safe flight on the most optimized route from one airport to the other.

Until the emergence of the smart products, capable of running programs, the information known to man was *about* how the things worked. With the software, the information is retrieved, processed and well integrated so it *determines* how things evolve, taking into consideration both the purpose followed through the internal programming as well as the environment information.

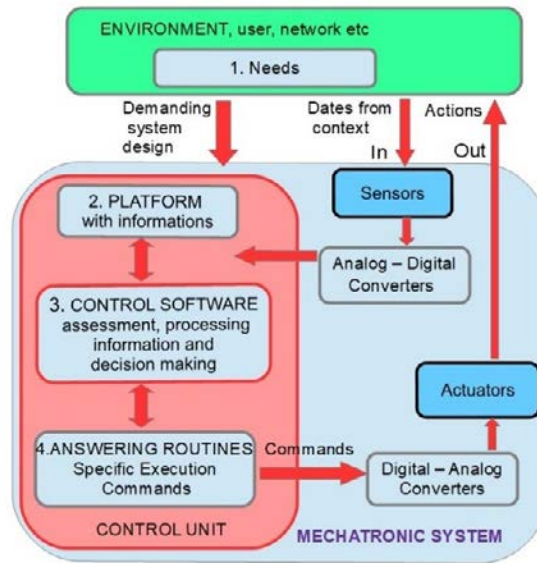


Figure 1: The main components of a mechatronic system.

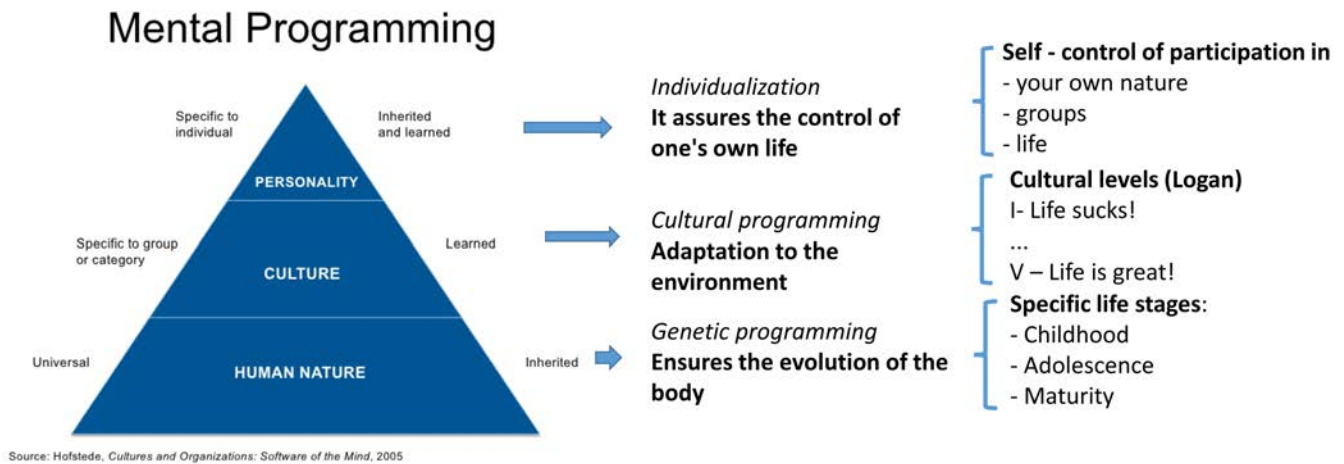


Figure 2: Types of mental programming.

### 3 The Programming of Man

Both smart and living systems integrate all three major components of reality: matter, energy and information. Inside the living systems, through the genetic code both the growth of the organism, its reproduction, its development and the management of the current activity are ensured. They must collaborate, answer in a specific and constructive way to the environment conditions to ensure a stable balance and a concrete evolution towards a good management and integration of the system.

Because of these reasons, programming the living systems is much more complex than programming the smart machines. Hofstede, Hofstede, Minkov

[2] suggest three levels of mental programming, one given by the human nature, one by the culture surrounding the person and a personal one. For these three levels of personal programming acknowledged, there are three levels of programming: genetic, cultural and self programming – Figure 2.

The control can appear in one of the types identified, and it can be achieved totally and ideally only if it is integrated in the personal level. If it is situated at the cultural level, the person is not truly free; they just try and use the software of their own culture that they can complete with some from other cultures. The collaboration of this person with other people from other cultures is very difficult. To manage a good programming of life from a personal

level, humanity has spirituality. Its purpose in the world is that of helping man to successfully integrate and manage the other two more profound levels of programming, so he can say in the end, without reservation that life is beautiful.

The personal programming is a successful one if the person manages both a good maturity and also to achieve the cultural level 5, on which life is beautiful, thus integrating the two levels of programming. The skills, the abilities that man uses to execute most of the tasks are also developed as mental programs, through which different instruments acquired from culture are managed. With the help of some common approaches people can easier achieve things together.

For example, an important instrument developed by societies inside their cultures, is the legislative framework that regulates the road traffic. It presents the regulations that ensure a safe management of the public roads. But the fact that it exists is not enough. The people must respect it, so they must develop the necessary skills to travel correctly, whether as a pedestrian, bicyclist or driver. To do this, people must develop the mental software that allows the handling of their behavior according to the purpose and the rules they must respect. On one hand the driver must be able to drive the vehicle and on the other he must fully respect the law to prevent accidents and injuries to others.

Programming must not be understood as rigid, man can always intervene in the development of an action, but within his own limits. Duhigg[3], Coyle [4], present the way in which learning is evolving, both as an individual and as a team, also mentioning a part of the physical support. Gallwey [5] describes the inner game that leads to achieving the performance, based on the fact that the background activity for the proper development of things takes place mainly in the subconscious.

## 4 Competence – the Need to Have Quality Participation

Two very important things are nominated through competence, the first is connected to the tasks inside a system, the second shows the level, the quality of accomplishing the tasks. Thus, the competence means a quality participation, both through that with the system is aiming for, as well as through what the participant offers, Vlaşin [6].

To establish the source of the competence more

clearly, we will analyze the dynamic integration, the evolution of a person in an integrative system. In Figure 3, Gharajedaghi [7] presents the iterative way in which a system can be researched and can evolve. Upon a quick look, we can observe the correspondence of the three basic components of the system at the level of the psychic in the basic psychological needs -Ryan, Deci [8]. Thus, the functions assumed by a system inside an integrative system are connected to its need of relatedness, the structure of the system demands autonomy to be secured and developed, while successfully managing the processes is connected to competence.

The basic psychological needs ensure both a proper integration of the system in other systems as well as its good development in the science of executing the processes, in complexity and in structure. For these reasons, they ensure the foundation of our motivation. The competence is also a need, and we are rewarded with an inner satisfaction when we manage to succeed in certain things. The authentic joy of a person comes from satisfying the basic psychological needs. This is why they must always be taken into account outside the ordinary behavior and interests.

From a systemic perspective, the best characterization of a man is that he is a participant. He is part of a great number of systems, from family, community, nation, to very general and complex, as is the phenomenon of life. The quality of the participation is determined first of all by the competence connected to the processes' control and by solving certain tasks in the systems in which he is integrated. Through the effort of improving the quality of his participation he can gradually and interactively evolve to a state of higher satisfaction.

The increase of the competence, the improvement of the participation can be achieved in two ways: learning from experience and learning from others. The latter saves more time and effort. This is why the cultures exist and the cultural programming appears when a person is taught by parents and by school which are the necessary elements to survive and to pursue a profession. But this powerful programming is very difficult to counter or to integrate through personal programming, to insure a detachment of the person and a real, responsible competence. This is how a person becomes controlled by the impersonal "it" (it is how it is done, believed, thought), as Heidegger observes, which leads to an unauthentic life [9].

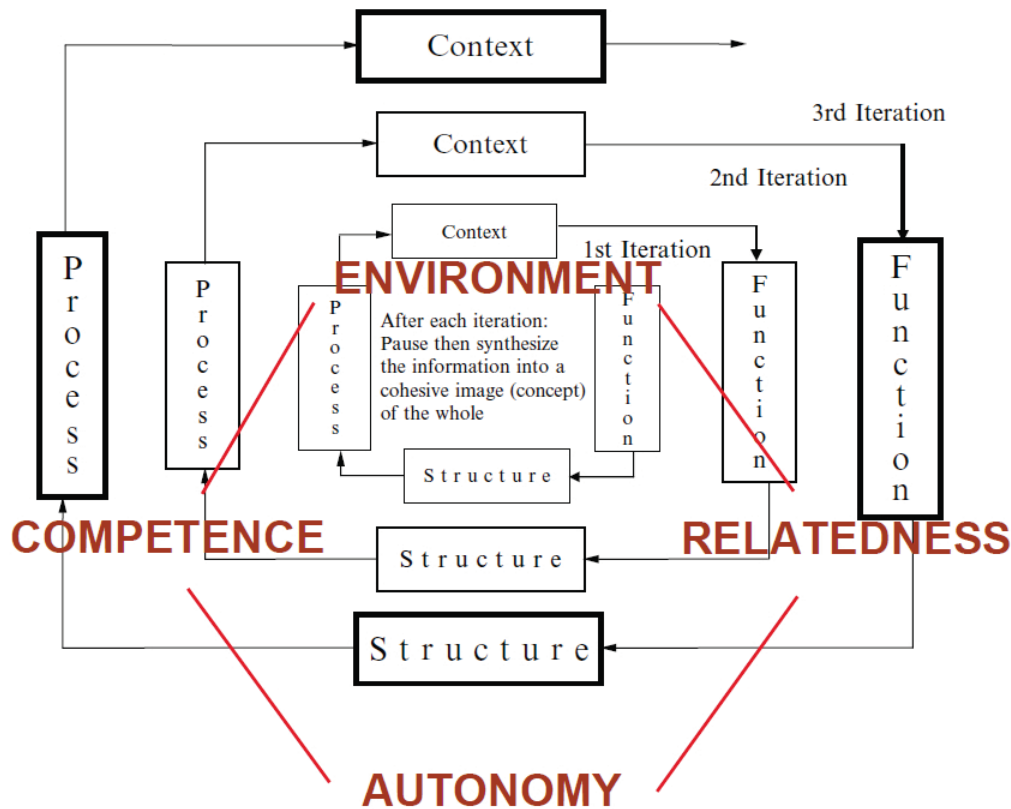


Figure 3: The iterative development of a system and the basic psychological needs.

## 5 The Transcultural Perspective

The cultural perspective can be observed the easiest. Inside a culture we also learn the language it is based on, and thus we can observe the differences and the formative importance of a culture especially when we hit the linguistic barrier, or we do not understand the customs when we go across cultures. The specialists say that the impact of this crossing can be felt quite strongly, Hofstede [2]. To ensure an authentic life and a real collaboration it is necessary to consciously be reported to the cultural programming. It requires adopting a new perspective that we called the transcultural perspective. Inside this perspective, the purpose of the culture in offering the instruments that people learn from one another is acknowledged. By learning to use them, people upload mental software and people can become aware of them if they analyze their purpose and relevance in satisfying the basic psychological needs.

From a transcultural perspective, a person can easily observe that people who grow up in different cultures can use different instruments to satisfy the same needs. The manner to satisfy a need or to

accomplish certain things is no longer as uniquely determined and imperative as it is through cultural perspective. Going beyond the available means and observing the purpose of the actions through the perspective of the need was proposed and verified in solving conflicts by Marshall Rosenberg [10], in an approach called Nonviolent Communication.

To manage his position in a transcultural perspective man must consciously evaluate the mental software he uses, identifying the four elements analogical to the software of the smart machines. This type of main program, through which the personal programming could take over the control by becoming aware is presented in Figure 4, Vlaşin, [1].

We can observe that the main program can travel both ways through its four components to offer an integrated and efficient approach of the action, in respect to the needs. The living experience is evaluated through the 8 senses presented in the wheel of knowledge proposed by Daniel Siegel [11]. What's more, we consider that the information from the experience can be structured, so we have representations of the experience like "his attitude is a flexible one" even though none of the words have a physical

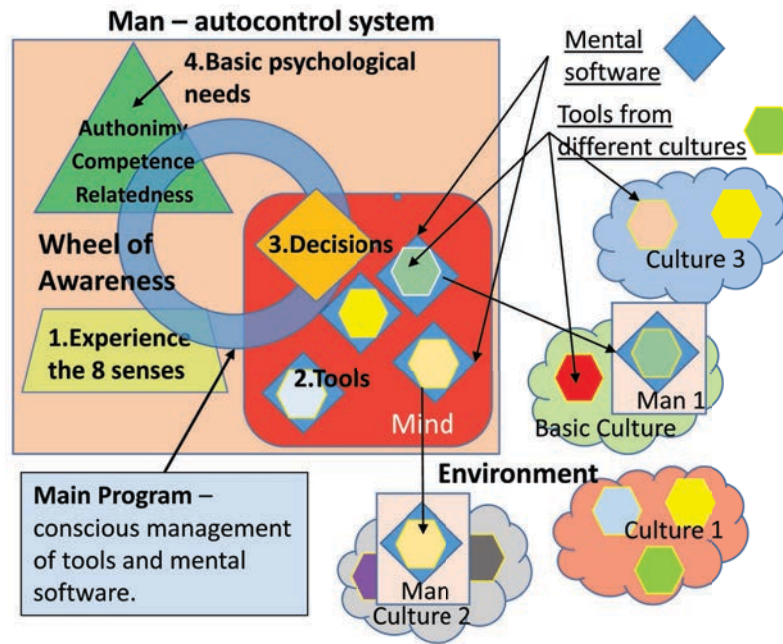


Figure 4: The completion of the main program of personal programming.

consistence, which can be perceived with the senses.

Taking into consideration the complexity of the culture, the multitude of disciplines, their long evolution, the culture programming is very strong. To insure the balance and to support the development of the personal programming, spirituality has developed inside the humanity. It offers man ways to become detached from the cultural programs and from those that limits him, such as the ego or the protector, mentioned by Yousry [12].

Studying the two great spiritualities, the western (the Christianity) and the oriental (the Buddhism) we can observe that the first clarifies the means through which one can most efficiently achieve the objective identified by the latter. Thus, the oriental spirituality tells us that for an authentic development of a person, for a successful individualization beyond the cultural programming one needs: 1. achieving the mental vacuity, 2. achieving the clarity and 3. the love – Rinpoche, Swanson [13]. The mental vacuity implies a glance beyond the processes and the mental software, and awareness that goes past them, through the self as a pure observer. In the Christianity it is obtained by gazing from the perspective of death, from which all the plans, all the petty interests are reconsidered and the mind stops its tireless activity.

The clarity can be obtained through the word, which is quite obvious if we observe that nothing that

is not named can be controlled or acknowledged. Its importance is underlined in the recent psychology by Feldman-Barret: “Everything you perceive around you is represented by concepts in your brain. [...] Without concepts, you’d experience a world of ever-fluctuating noise.” [14, p. 117]. The words, the concepts that we use are in direct connection with responsibility: “So the question of responsibility becomes, Are you responsible for your concepts?” [14, p. 195]

The love also has, like other concepts, many meanings. Many are connected to emotions, but spirituality looks beyond them. “Pure love can be best described as a fundamental state of good that, if well nourished, can transform in kinship with all the living things.” [13, p. 88] The proof of love is the quality participation to integrative systems. In western terms, love means serving the others, in integrative systems. The validity of this approach is confirmed by the theory of systems, in which the system is defined and evolves only as part of an integrative system, through assumed functions.

Feldman-Barret also observes that “The human brain is a cultural artifact. We don’t load culture into a virgin brain like software loading into a computer; rather, culture helps to wire the brain. Brains then become carriers of culture, helping to create and perpetuate it.” [14, p.184], hence the difficulty in adopting a transcultural perspective.

Alongside these difficulties determined by the unconscious formation caused by the adaptation to the cultural environment, the assimilation of the spirituality as part of the culture makes the individualization even more difficult. If the culture is the manifestation of the collective spirit, the spirituality arrives to save the person, and this is why both are necessary, complementary and works differently.

Regarding from a systemic point of view through culture ways of being, doing, tasks and instruments are presented to man to participate to integrative systems; through spirituality he builds the structures and the character capable to sustain these systems. The competence implies first of all the improvement of participation; this is why it depends on both and also influences them.

## 6 The Smart Education

It is obvious that the current education does not yet take into consideration the complexity of the systemic integration, much less of the smart ones. It is now more than anything else a system of transmitting the culture, in which the individualization, taking control of your own life, of its basis programs are neglected. Therefore there cannot be an authentic growth of the competence because the development of the person's autonomy is neglected. Pupils are taught to execute orders, they go through imposed common programs, in the same rhythm, so the adults become people without initiative, either docile or controlling bosses, as Deming says being quoted by Senge [15].

Moreover, another problem that the person must solve is the exploitation of the genetic programming, the management of its manifestation at the level of the man taken as a whole. The childhood, the teenage years and the maturity are manifestations of a person's evolution genetically determined, that expresses in specific ways that cannot be ignored. The basic psychological needs take effect beyond age because they are systemic characteristics. This is way the child seeks autonomy, starting with walking, language and continuing with other activities he sees the adults do. During the teenage years the development of the competence is intuitively sought and also the capacity of autonomous dealing with situations in a group.

The maturity is the period for integration, not only external but also internal of the experiences,

in order to exploit them to reach a wonderful life. Regarding from the perspective of Logan, King, Fischer -Weight's cultural levels [16], we can observe a correspondence between childhood and the cultural level 3, teenage years and level 4, maturity and level 5. Of course we do not talk here just about the development of the physical organism and of physiology, but of the entire being, maturity being the stage of the fulfilled man. By reporting to the basic psychological needs, the stages of the genetically programmed development can be integrated.

This is why an education that takes into account the smart function of the human being, based of software specific to different levels of integration, must have as a basis a transcultural perspective. The learning process must be a complex one that takes into consideration all four elements of the software. These must be followed both inside the main program of individualization as well as in the case of the software used to manage the instruments, evaluate the experiences, the decisions etc.

The current education is mainly one that suggests the usage of different instruments, among which the knowledge, different algorithms to solve problems etc. It does not pay attention to the person's experience, from which the real grasp of reality is born, but imposes him to learn certain things. It does not respect his freedom; this is why other suggestions have appeared like the experiential learning – Kolb, [16] or the learning for freedom – Freire [17].

We call the education based on the discoveries connected to the functioning of the smart systems on understanding man, the cultural environment and spirituality from this transcultural perspective, "Smart Education". It integrates not only the current education but also the other types of educations / types of learning suggested by different authors, the experiential one and the one for freedom.

The integrated learning process from its basis completes the learning evolution proposed by Roger [18] with the needs, and closes it to transform it in a transcultural endeavor, which we can observe in Figure 5. One can go over it in two ways, one indicated by the big circle, of direct learning that starts from experience to meet the needs and the one in the middle is the way of the reverse connection, from the needs to selecting the attitudes, the instruments and the experiences that can determine a better meeting of the needs.

The child must be helped to develop as a smart

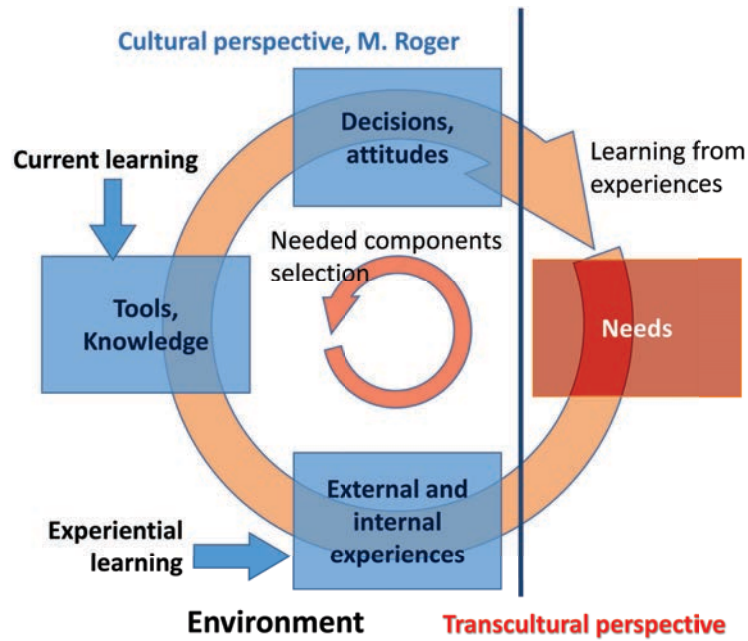


Figure 5: Complete learning cycles from transcultural perspective.

being, by integrating the components necessary in increasing his capacity of managing all the necessary elements for a fulfilled life. This can be achieved even during the prenatal state when the environment in which the mother lives and her experiences influence the child. For a harmonious development during early childhood the ideal would be for the parents to adopt a transcultural perspective to ensure a cooperative environment based on authentic and total respect.

Education is a process proposed by the society. But in order to be efficient and contribute efficiently to the development of autonomy it must be assumed by the person who is learning. The active role in the evaluation of the experiences, in selecting the components that would lead to a better development should belong to the one that teaches. The society should come up with complex learning activities, to assist and support, so a person may grow on the path he considers right.

To achieve these things education must be built as a smart process, sensitive to context, to students and to their results. It can achieve this only if it integrates all the elements of a smart system: 1. a platform with real time information about training in using the cultural instruments, the awareness of attitudes and the valorization of experiences; 2. a system based on respect, principles and clear attitudes appropriate to human nature; 3. a large

palette of instruments that can be used and also the correlations between the personal needs and the needs of the system in which education is developed; 4. the needs it answers to must be very clear.

To build a platform with information about the entire learning process, concerning not only the cultural instruments but also their integration and utility, the best solution is an online platform. It can be a mirroring instrument of the one who learns and a knowledge instrument for the one that helps and supports the efforts. And thus, the educational endeavor is individualized and becomes majorly effective.

A good understanding of the self of the student is not possible without knowing the precise way in which the smart systems work and their programming. To this one must add concrete approaches of evaluating all the elements that determine the usage of certain software and cultural instruments throughout the learning cycle. Not only the people need to learn but also the systems they form together.

## 7 The Extension of the Transcultural Perspective and Smart Education Concepts to the Systems Formed by People

Duhigg [3] presents a way in which the skills are developed and can be changed. It is relatively easy



to observe the similarity between them and the functions on smart machines. The skills always follow a result, a reward that can be assimilated to the needs for whose meeting the smart products are built. They have external triggers, and to be properly executed must consider certain internal and external variables, which corresponds to the data on the information platforms. The decisions are integrated in skills, and to properly execute the specific tasks, certain routines and procedures are followed, like in the case of the software.

In this case we can say that to manage the participation, the brain develops mental software to use the instruments, like I have explained in the case of the drivers. As the neural pathways are becoming secure through repetition to control the implementation of the tasks, they are carried out much easier, until their aware involvement is no longer necessary. And the hypothesis of the mental software sustained by other researchers (Bruce Lipton, John Lilly etc) is also sustained by the interesting phenomenon of moving the area that controls the execution of the skills in the basic ganglia, Duhigg, [3]. This process is similar to compiling of the programs and integrating them into the operating systems to be run faster and safer. The skill does not become uncontrollable because it is easy to observe what we do with our conscious mind, and recording it is sequential, which means we can intervene anytime in the operations, decisions and the purpose we follow etc.

Duhigg [3] also argues the fact that not only people have skills, but also the organizations, the communities, the nations. The fact that there are organizational cultures, a culture of the communities and nations are arguments for this opinion. Within them, mental software is found and it is relatively easy to indentify by observing the activities. Moreover, the means to change the skills in organizations is the word, by modifying the understanding of the concepts and the perspective, as Zaffron and Logan show [12].

All these organizational skills can be executed without becoming aware of them, just like the man can live without knowing what makes him an intelligent being and how he can quickly and significantly improve his participation. But just like the man cannot take over completely the control over himself without recognizing himself as a smart system, also the teams, the organizations, the communities, the nations will not have a high self-control and an aware

participation without building themselves as smart systems.

Just like man, being systems, the teams, the organizations, the communities and the nations have three basic psychological needs. Without them they cannot develop as systems with self control. Taking into consideration and observing their decisions, the instruments they use, the experiences, the entire cycle of interdependences, allows an improvement of the state of these systems and their evolution to quality participation to the integrative systems.

The transcultural perspective makes sense not only horizontally, by reporting to the similar cultures, but also vertically, by reporting to the cultures of the integrative systems. Man can evolve without serving any functions in the integrative systems like a family, a team etc. But it matters what function the family has inside the society, the team inside the organization and the organization inside the community. If there is no alignment of the goals and consent on the system of values, of decisions, of the instruments used, man not being able to participate with all his resources, will pull him back from total involvement. For example, the leaders cannot expect quality participation, achieving coherence in a team, organization if they do not truly respect their team members and do not demand respect between them. And the respect means recognizing others as smart and autonomous systems with basic psychological needs that must be considered.

What helps achieving internal coherence, authentic individualization and a good cooperation of the person is spirituality. It is the same for a team, an organization, a community or a nation. Without reporting to timeless realities and values like long term coherence, sustainability, respect, the momentary interests can destroy the systems by lacking coherence in the activity of the participants.

Because of this, Covey [19] discovers and supports the idea that the trust is based not only the competence but also on character. But we can talk about the character and the competence of any supra-individual system. And the teams, the organizations, the communities and the people can be trustworthy or not, some can even pose as a threat to the other systems.

The transcultural perspective allows an observation of the systems from this point of view. It ensures the awareness, so the actors involved, no matter on which level, do not act anymore led by instincts and

impulses, but by deep needs that do not contradict each other. It is easy to observe this, you do not need to exploit other systems to achieve autonomy, competence and the capacity to integrate and interconnect. On the contrary, any manifestation that lacks respect moves the systems away from meeting the needs, the autonomy is not real, the competence is not reached and we cannot even mention the authentic integration.

In order to evolve any system needs to learn. Learning is efficient if it helps it become a smart, an intelligent one. Smart can be understood, in this case, as the art of managing the system (System Management ART). An education that integrates this, the complete learning process is a smart education. It cannot navigate only towards the man as a system; it must also consider the team, the organization etc. In this respect, there is a general preparation of man that can be offered by society, but one is also required inside the teams, organizations etc.

The teams can have smart people and they do not need to be smart if they do not become self aware in this perspective. The more people are aware of what being smart is, the quicker we can form a smart team. The more smart teams there are the quicker a smart organization can be created. We can see things similarly at the level of communities and nations.

The experience in self-managing is not sufficient in reaching the cultural levels 4 and 5 [20]. It is necessary to be part of a team and to be well integrated inside it to reach level 4. Also, to reach level 5, the man and his team must become useful to society, even to the world, as a validation of his authentic training on all the components.

It is obvious that creating a smart team, a smart organization, a smart community etc refers not to the smart technology they use but to the way they are as a system. To become that, to go from the childhood of the group to maturity, one must take into consideration the basic psychological need from a transcultural perspective.

## 8 Conclusions

The mechatronics era can bring to man what McLuhan anticipated, a good live for him and for all the forms of integration and participation. It is possible because through an analogy with the functioning of the smart, integrated systems from mechatronics

man can be better understood, like the systems he participates to. In normal conditions, man is not fully free and capable of an authentic collaboration due to the cultural limitations. But this thing can change if a transcultural perspective is consequently adopted. This recognizes sources of instruments and mental software in cultures that people can use to improve their lives.

The personal programming that integrates the cultural and genetic programming is a quite difficult process that man must “travel” to take complete control over himself. To succeed, the biggest support comes from spirituality. But because it is not fully aware of its purpose it often falls in a type of culture.

The current education lacks real respect for man seen as a smart system. It does not allow the satisfaction of the basic psychological needs or a natural, conscious evolution of man.

The smart education presented in this paper is based on the transcultural perspective and can overcome these limitations if it consequently supports those who learn an advanced management of instruments, actions, attitudes, aiming for satisfying the basic psychological needs. This type of education and a transcultural perspective are necessary for teams, organizations, communities and nations too. It results from the fact that they are systems that need a self control and quality participation.

A good understanding of technology as a means of development and not as purpose in itself can lead to a major transformation of man and society like never before. This can happen because it allows functional models to be built for man and the systems he is part of based on mental software. They represent a good understanding of information that determines the actions; they allow it to be much easier improved so that life can become truly fulfilled.

**Author Contributions:** Paper was written collaboratively by the authors.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

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## About the Authors



**Ioan Vlaşin**, PhD, has been a principal for 18 years at Gymnasium School “Mihai Eminescu” Ighiu Alba and a teacher for over 25 years in the preuniversitar school system in Romania. For a year he has been a school inspector, and for three and a half years he was the project manager the Alba County School Inspectorate. He has graduated the Physics Faculty of the Babe – Bolyai University in Cluj Napoca. After that he has followed the courses of the Post graduate Academic School of Applied Informatics and Programming from the Technical University in Cluj Napoca, post university courses of Managing the conflicts; has masters studies in Educational management and Pastoral Counseling from “1 December 1918” University Alba Iulia.

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