ÉVA HIDEG

INTEGRAL FUTURES BASED ON THE PARADIGM APPROACH

- manuscript -

Abstract

The study discusses the interpretation of integral futures in the context of paradigm. The dynamic matrix model of futures paradigm has been developed for carrying out meta-analysis of futures. As a result of meta-analysis integral futures and its new paradigms are defined by way of reconstructing futures paradigm history as responses to changing societal needs and through the outcomes of dynamic and comparative analysis of futures paradigms. The study sets the argument that integral futures: a) is entering a new phase in development of futures that responses to societal demands for sustainability, democratic participation and continuous knowledge production and integration, b) it is the phase of cooperation building between theoretical and practical futures, c) it is the complementary development of co-evolutionary and participatory paradigms, d) it unfolds further research perspectives for futures.

Keywords: paradigm, meta-analysis, futures research, futures studies, integral futures

1 Emergence of the integral futures concept

The futures has become much fragmented by the beginning of the 21st century, therefore it is incapable of offering effective help in solving the present crisis of civilisation. The community of futurists is occupied with seeking answers to questions as to which futures concept, methodology or procedure is correct or false. Amid these conditions the research perspective of developing integral futures emerged last several years. The majority to futurists is in agreement with the perspective of integral futures, but possible responses are still in the making, while the idea of the 'age of dystopia' continues to occupy the futures [1]. Present day futures is characterised by competition between evolutionary and critical paradigms [2]. Responding to the issue of integral futures Slaughter suggests that critical futures were the 'winner' and in the interest of strengthening its position and problem sensitivity it should expand into a kind of integral futures, in which scientific and non-scientific knowledge, or rather rational and non-rational knowledge would be linked by transcendent thinking and meditation based on Wilber's complexity theory [3]. This proposal raises the issue whether the futures can remain to be a science in the future, whether it can be further advanced as a science[1]. The proposal by J. Voros sets forth the expansion of integral futures as a solution

[1] Science is used as a category that includes the natural, social and human sciences. The latter often is named Humanities.

within the science [4]. According to Voros, different lines of futures could be integrated, if its paradigm were a kind of meta-paradigm that floats freely over other paradigms. Futurists could select as they please the subject, purpose and context of their study from among these meta-paradigms. Such a paradigm is non-existent, thus for the grasping process, futurists should draw from resources of social sciences paradigms, according to Voros. In my opinion, *the wealth of knowledge so far accumulated by futures and its internal development capability should not be disregarded, while contemplating integral futures.*

Some other futurists state that Inayatullah's CLA methodology and the action futures research also present integral futures [5] and [6]. According to Gidley beside Wilber's theory other complexity theories should be integrated in futures [7]. Agreeing with them to some extent I think that futures as a scientific field should be integrated in itself first of all to be capable responding to core societal needs. *Integral futures should unfold newer research perspectives for futures that are also relevant from the aspect of social practice.*

In this study I wish to contribute to the interpretation of integral futures and related debates by sharing meta-analysis results of futures paradigms. I wish to demonstrate that the paradigmatic interpretation of integral futures is possible; a) through the reconstruction of developments in paradigms and paradigm changes of scientific futures, spanning the past, present and the future, b) through the dynamic and comparative meta-analysis of futures paradigms. Integral futures shall remain to be a science, in this interpretation, and it is capable of contributing to solving the present crisis through the expansion of its two newer paradigms.

2 Complex meta-analyses methodology of futures paradigms

The study of futures paradigms requires meta-analysis. The outlines of the paradigms and their complex dynamics are revealed when we observe the paradigms and their changes responding to changing societal needs from above and from the outside. This 'overview' can be well-founded and substantial in content if it gives account of the internal logics, consistence of certain paradigms and reveals other opportunities of paradigmatic development, inherent in the present futures scenario by their comparative analysis. The latter requires one to see and understand futures also from the inside. The research and analysis therefore requires both an upward and a descending construction work, applied in a complex, co-ordinated way. The *dynamic model of futures paradigm matrix needs to be elaborated to carry out meta-analysis*, which will serve to describe each existing and possible futures paradigms and their dynamic interconnections. By connecting results of dynamic and

comparative analyses of futures paradigms will allow us to answer the question as to what kind of futures an integral futures could emerge, in terms of paradigm.

In the course of the study, my interpretation of the futures paradigm concept was based on Kuhn's paradigm definition [8] and [9], but I have also taken into consideration in what sense others have expanded it [10], [11] and [12]. My interpretation of paradigm briefly is the following: it is comprehension of the world of a given discipline, to outline its research topic, its purpose and task, its methodology and its application rules, including expectations regarding the 'worthwhileness' and usefulness of the factual knowledge thereby generated. In terms of futures this means that the comprehension of the world of futures paradigm relies on future-perception. In other words it relies on what futurists presume about the nature of the future, how that future interlocks with scientific knowledge, experiences derivable from the past and the present, including the actual social values and philosophies. Comprehension of the future and the world is closely linked to defining the situation of the researches and the research community. Selection of the researcher's orientation has an influence on the domain of the reality to be studied, along a given paradigm. The presumed world orientation and situation of the researcher has an influence also on the other paradigm components.

The field of inquiry comprises areas of future assumption and their expressed forms which may be scientifically studied through the methodology and apparatus of methods applied in futures. The research topic takes shape when research goals and tasks are also taken into account. The research goals and tasks include the preliminary researcher expectations, the necessary tasks to be accomplished and quality criteria related to the research process (professional scale), which are marked out, formulated and expectably achieved during research of various areas of the future. This component of the paradigm concept principally connects the paradigm to social practice and the profession. The reason is that social expectations about the utility of futures results have an influence on the research goals to be set out and thereby upon the whole research process. This should be emphasized in regard to futures, because basic and applied research is markedly interlinked in these, including efforts to meet requirements of the profession. On the other hand, research goals and tasks are taking shape in close relation to the research subject and the future orientation of the researcher himself.

Methodological principles contain such deliberations and orientations that need to be considered in the research process, or need to be observed by the researchers. Methodology principles can be the embodiment of the problem solving methods, deriving from the comprehension of the future and the world. Naturally, the formulation of methods exercises

an effect on all other items of the paradigm. Method application rules are the common balance of effective application of the methods, its limits and possible directions of its development, which is mostly dependant on methodology principles, but also to other components of the paradigm. The 'worthwhileness' of research results and their usefulness are indications of the reliability and control of research results on the one hand, and their forms of practical application on the other hand.

It can be observed that while formulating each component I paid attention to the fact that they need to connect also to each other, thus they mutually determine specific contents. These mutual definitions, specifics, shall turn into a paradigm, if one of their actual common factors 'solidifies' into a more-or-less consistent system. These in turn are the ones that are comprehended and more-or-less accepted by futures communities, new research projects will be built on these and results will be put into practice by society.

We can assign to the discussion of futures theoretical-methodological issues, a kind of paradigm-matrix model that contains component specifics of futures paradigm, without providing their interpretation. This matrix model harmonises with the paradigm topology of Guba and Lincoln [11] in the sense that it contains the research situation-definition, the goals and preferences that can be linked to futures, including the ontology, epistemology and methodology aspects. In addition it includes the so-called axiology aspect, as proposed by Heron and Reason, under which all paradigms have to include definite reasons as to why and under what conditions the produced knowledge is valuable [12]. (See the table 1.)

Table 1. **The dynamic matrix model of futures paradigm**

Components (TI)	Paradigm characteristics (TJ)
Comprehension of the future and the world	
The futurist's and their community's situation	
The field of futures inquiry	
The goal and task of futures inquiry	
Methodological principles	
Rules for method application	
The 'worthwhileness' and usefulness of futures results	

Source: self-made

The futures paradigm-matrix consists of not six, but seven components, or lines, because the field of inquiry was given a separate line. Given the fact that the research subject can change also according to ontological and preferential considerations, therefore it belongs to both components of the futures, its emphasis is justified. The sequence of the lines demonstrates the specific logics of futures field.

In the first line of the matrix 'T' marks the time, which is changing in itself. Lines of the first column include components of the paradigm, which connect with each other to form the paradigm, in this case the futures paradigm. The letter 'I' (after the T) stands for index, to indicate that I regard as possible the alteration or even change of paradigm components in time. The letter 'J' in the second column indicates the component features characteristic at the given time. If competing paradigms exist alongside in given T periods, then the content of the second column may be two or even polyvalent. If the actual characteristics of the paradigm – the individual T(I, J) parameters – change and/or a new component is included in the matrix, and there be a change in their inter-relation, this would be an indication of paradigm change. A change or alteration in the individual characteristics of the paradigm suggests the forming of new schools. This matrix is therefore suitable also for the expression of complex paradigm-dynamics.

The paradigm-matrix thus created is not only in harmony in content with the paradigm topology components of the quoted bibliographies, but also differs from them. This alteration lies in its dynamism, in other words it does not pre-determine the kind of paradigms that already exist, but instead it defines the existing and formulating futures paradigms as a result of a research process, through the application of this matrix. The paradigm-matrix remains hypothetical and conditional until the full description of the internal consistence, and reconstruction of individual futures paradigms takes place by using content and methodology analyses of futures literature, including the demonstration of the main reasons of paradigm change, its circumstances and consequences. This also requires supporting the facts by arguments, historical facts, practical forecast and foresight studies, taken from studies backed by solutions. It will be showed that the paradigm-matrix is also suitable for the creation of other paradigms and to demonstrate the hypothesis of other paradigm changes.

Based on the expansion of the Gödel-theory and arguments by Feyerabend, we can assume that each paradigm has *a blind spot*. I did not include this characteristics in the lines of the paradigm-matrix because it constitutes a part of the given paradigm dynamics, rather than its inner consistence. Recognising the blind spot of the paradigm shall pave the way to the paradigm shift.

3 Main results of the complex meta-analysis, from the aspect of paradigmatically possible future of futures

It is revealed during the reconstruction of futures paradigm history that three types of futures paradigms have evolved, forming the basis of forecasts and foresights regularly prepared. These are the positivistic, the evolutionary and the critical paradigms.

Futures, exactly *futures research*, became and independent, normal scientific field through *the positivistic paradigm*, in the 1970-ies and 1980-ies.[2] In reaction to the most instinctive human requirement, *it promised anticipatory knowledge of the future, based on scientific evidence, by forecasting the interval of probable future*. It was presumed that social leaderships will promote or influence shaping of the future in the forecasted future domain. (See the table 2.)

Table 2. **Matrix of the positivist futures paradigm**

Components	Paradigm characteristics
Comprehension of the future and the world	The future that materialises later, that connects to the past and the present genetically, and the objective world is knowable with observation and thinking
The futurist's and their community's situation	Observant
The field of inquiry in futures research	The future of society and issues concerning the future of human beings, complexity and dynamics
The objective and task of futures research	Gaining preliminary knowledge about the future, forecasting the possibility range of probable futures
Methodological principals	Complex problem treatment, dynamic modelling
Rules for method application	The various procedures' and methods' – both the objective and subjective – associated usage

[2] The matrix of the positivistic paradigm was prepared on the basis of content analysis of the handbooks of the 1970-1980-ies and on the methodical analysis of the rousing forecasts. Please see primarily [13], [14], [15], [16], [17] bibliographies.

The ‘worthwhileness’ and usefulness of futures research results	Verification, reliability and fulfilment

Source: self-made

The blind spot of positivistic futures paradigm is *its failure to recognise the futures, inherent in the present,* because it can interpret both the future and future knowledge in terms of the times to follow. Consequently, it cannot react to the question as to how the activity of mankind could influence the future, or whether there is significance in the choice among possible futures, or the future shaping individual and community efforts. Further important questions as how future can be influenced by social values founding on different cultures and how this is reflected in the preparation of the forecasts remain without answers.

Evolutionary futures studies[3] reacts to the increased societal instability and the needs to explore more possible futures. It sets in the focal point of its paradigm *the complexity of the future, and its parallel determined and undetermined character*. The general evolutionary theory studies the subject of research in a holistic way, through the interlinked aspect of the observer and acting participator, and the human factor also forms a part of this. For the movement of self-developing, emerging social complexities, it applies the generalised theory/metaphor of evolution, while studying the new possibility domains of the future. It therefore provides alternative and plausible futures that can take place in space time and can be organised in evolutionary patterns. It breaks away from positivistic paradigms, because it does not regard as possible the forecasts of the probable future, under circumstances of instability. Concluding from its aspect, no preliminary knowledge can be obtained about the future. All knowledge regarding the future can only be reflexive which can be falsified only in part, and made subject for a new reflection. Evolutionary futures upholds the openness of the future in the face of all its research results, because it is impossible to know the future in advance, neither along the lines of events, or human-social actions and reactions. For this very reason we need to research the future, by way of studying the possibilities that lie in the future. (See the table 3.)

The blind spot of the paradigm derives from the fact that *the role of the human factor is not determined by the paradigm, when we consider his role as either conscious future shaping, or enduring future changes, in the evolutionary patterns*. We also need to consider

[3] The creation of the evolutionary paradigm matrix, was prepared on the basis of content and methodology analysis of the theoretical studies designed to develop the evolutionary futures mode of approach and methodology, including the futures case studies prepared recently that met international response. Please see primarily the [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29] bibliographies.

what causes these roles to change. Another words, we cannot determine within the paradigm when man and his communities are active participants of future shaping processes, or when they are its passive observers, enduring subjects. Neither can we determine the ratio of those present from either group when studying the future of individual complexities. Therefore the question as to why and how the human factor can change these dual roles, cannot be answered within this paradigm.

Table 3. **Matrix of the evolutionary futures paradigm**

Components	Paradigm characteristics
Comprehension of the future and the world	The future is dynamically complex, determinated and indeterminated, the human factor is also part of it, revealing evolutionary possible futures with knowledge, creating new knowledge and reflection
The futurist's and their community's situation	Participative observant
The field of inquiry in futures studies	Issues relating to the future of society and mankind, self organisation, emergence and complex dynamics, which the human factor is also part of
The objective and task of futures studies	Reflective interpretations and theories about possible futures, and their inclusion in social communication
Methodological principals	Holistic point of view, thinking in evolutionary patterns
Rules for method application	Combined use of subjective methods and evolutionary models
The 'worthwhileness' and usefulness of futures studies' results	Setting in the process of (partial) falsification and reflection, reflection of the reflected, trial in practice, possibility of pursuing the research in concrete space-time

Source: self-made

Critical futures studies[4] reacts to the societal needs of actors to participate in shaping their future. It places into the focal point of its research *the futures that exists in the present, including human foresight*. It sets out from the premise that this human ability is a gift of evolution, therefore it works in the case of each human being. Human being is occupied with his/her future with all his/her mental capacity, therefore his/her thoughts about the future take shape not just in clearly conscious and rational thoughts, but also in emotions, faiths and beliefs. On the other hand, human being is an individual living in communities, therefore he/she is able to reflect on not only his/her own future, but also that of his/her community. This latter feature is the one that critical futures is really interested in, i.e. how community level future orientations and ideals evolve, are generated or transformed.

Critical futures places futures itself into the transformation cycle of community level future ideas. On the one hand the task of futures is the critique of community level future ideas, and on the other hand working out procedures that will enable its involvement in shaping future ideas, at community level. In the course of this work, the critical futurist does not prepare forecasts, but rather he organises and promotes foresight procedures including the participative ones. He regards these procedures and the resulting future ideas to be suitable and useful if they are transparent, controllable, reproducible, accepted by communities and can be reflected by others. In other words they attach importance to the free flow of social discussion about the future, regarded as a social learning process. (See the table 4.)

Table 4. **Matrix of the critical futures paradigm**

Components	Paradigm characteristics
Comprehension of the future and the world	Future is part of the human world, is existing in the present, and is a thought, emotion, faith and belief that is continuously constructed by people and their communicational interactions, that influences the present activity; future could be interpreted and improved by learning
The futurist's and their community's situation	Participant observant

[4] Matrix of the critical paradigm was prepared on the basis of content and methodology analysis of the studies preparing the theory for critical futures and literature on the practical aspects of foresight preparation. The most important bibliographies were [30], [31], [32], [33], [34], [35], [36], [37], [38], [39], [40], [41].

The field of inquiry in futures studies	People's and their groups' relation to the future, formation of ideas and relations about the future of communities
The objective and task of futures studies	Participation in the social transformational cycle, support of forming future thinking at community level
Methodological principals	Communicative simulation of critic and transformational cycle, placed in context
Rules for method application	Combined use of subjective methods
The 'worthwhileness' and usefulness of futures studies' results	Becoming subject of social discourse, transparency, controllability, repeatability, acceptance at community level, reflection on the reflected

Source: self-made

The source of this paradigm's blind spot is that while concentrating on the emerging futures ideas on community levels and deconstruction and re-construction of future ideas, *it does not regard it as its task to research how individual future orientations work to shape other areas of society, the thinking way and lifestyle of other communities and individuals, and the world beyond societies, for example the natural environment.*

The dynamic and comparative analysis of futures paradigm shows that there was a paradigm shift in futures around the 2000s when evolutionary and critical futures were established. With this shift futures has discovered the future that already exists in the present and its role played in societal future shaping. It has also changed its world and future concept, and its idea about the place and role of futures and futurist too. The future of society is not formed by laws or development tendencies, but by the activity of societal actors. The compass for action of social actors is their thinking about the future. Scientific futures does not forecast the future, it rather supports actors of society and individuals to improve their positive attitude to the future and their future thinking. Futurists have scientific tools to study ideas about the future and their materialisation or non-materialisation, in addition to the role of other future shaping forces and factors. The futurist can be a participant observant and has the possibility to deal with the future as a social product. The two new paradigms of futures resulted from the paradigm shift *allowed futures to refine and adjust its goals, tasks and the way to reach and solve them, according to changing circumstances and needs. The capacity of futures to*

solve problems has risen with the appearance of these new paradigms. The paradigm shift occurred according to Kuhn's concept [42], because both evolutionary and critical paradigms of futures have overwritten the paradigm matrix of futures according to the paradigm matrix of positivist paradigm.

If we consider that the paradigm shift did not entirely follow Kuhn's pattern, because the positivist paradigm was substituted by not one but two others, then the present competition of paradigms could be considered part of the process of the paradigm shift. We can suppose that *the first paradigm shift would finish when one of the two paradigms would overcome the other*. The present competition of paradigms can also be considered as a period of preparation for a new paradigm crisis, in which futures forms newer paradigm(s) answering to upcoming societal needs. *The history of futures can continue with a new paradigm crisis, followed by a paradigm shift, according to Kuhn's pattern of scientific evolution* [42].

At present futures has a set of paradigms that consist of three paradigms. With the paradigm shift and with the appearance of the two new ones, futures has a greater capacity to solve problems. Futures' set of paradigms facilitates the solving of problems, using forecasting and foresight tools. Futures, more exactly evolutionary and critical futures through paradigm shift *has also become a post-normal science* [43] because its practice orientation, its capacity for reflection and self-reflection and for considering users' viewpoints and evaluation have grown. *Futures studies' post-normal scientific approach would not have been able to be completed, regarding the interconnection of different practical experiences and theoretical futures knowledge that are continuous and also evolve each other* [44]. If we consider this statement, we must admit that futures is unlikely to again become a science with one paradigm. The process of futures developing into a post-normal science has not yet finished, hence the gap between theory and practice could be a catalyst for the evolution of futures. *The elimination of the gap could help generate a newer paradigm shift and the development of newer paradigms.*

The two new paradigms evolving after the paradigm shift are alternative and potentially complementary. They are alternative because their answers to the future shaping role of human factor are both possible and also theoretically complementary. Evolutionary paradigm answers the question concerning the role of human factors in the complexity of the future and in the shaping of evolution's cultural-societal pattern. The critical paradigm supports the improvement of the future thinking of individuals and societal groups, because within that paradigm societal actors shape the future of society according to this paradigm. While the evolutionary paradigm focuses on possible futures, the critical one concentrates on

acceptable and preferable futures. These latter characteristics of new paradigms show their complementary characters.

The blind spots of paradigms show that futures is not able to manage all problems of the future with three paradigms. *Futures can raise its practical utility even with these three paradigms, if it uses its tools of paradigm to form a new variant of paradigm. In this way the development of futures can be shifted into a variational-selectional scientific evolutionary track* [47]. The appearance of blind spots in a paradigm illustrates that the blind spots of former paradigms could be eliminated. If we systematically search the possibility to *eliminate blind spots* of the two new and alternative paradigms, then we can *make a recombination of paradigms according to a selected external point of view*. Studying the reactions to new challenges could create the external point of view. The alternative paradigms are the ones that could be appropriated to this restructuration, as they are also complementary. This kind of restructuration could bring the contentual modification of the components of the alternative paradigms, thus *successful recombinations could bring another paradigm shift. The paradigm shift that follows the recombination raises the capacity of futures in dealing with its tasks, as well as making it possible for futures to switch its variational-selectional evolutionary track after the newer paradigm shift* [47], *using its enlarged paradigm tools.*

Competition between two new paradigms has accelerated the perfection of both paradigms and their spread in practice. None of them could beat the other and, indeed, there are many undesirable effects of the competition as well. Undesirable effects include the moderation of communication between those futurists who work along different paradigms, the new mentality that aims at beating each other, and the secession of several foresight activities, like autonomous foresight [39]] did[5]. The tendency of introversion and enmity is detrimental as it distracts futurists' attention and capacity from responding to societal challenges. The gap between futures theory and practice is also based on communicational problems between the representatives of the paradigm [44]. *Futures could have overcome its detrimental form and the harmful effect of paradigm competition, if its self-reflection would operate in relation to its reflection.*

[5] Besides communicational problems the intention of separation and individualisation of foresight activity that adapts serving the one-needed political-institutional decision-making practice has appeared. This new foresight activity considers legitimate and authentic only its methods, but does not consider itself as part of futures studies [45], [46]. The idea and methodology of autonomous foresight [39] that is defined outside futures studies could be found in the literature of technological, regional and institutional foresight. This intention of separation is problematic as it doubts the legitimacy of other foresight activities instead of criticising them.

4 Integral futures as a possible evolutionary track that raises the futures' capacity to solve tasks

It is impossible to foresee how and in what combination of the evolutionary track's dynamising factors that raises the capacity to solve tasks could materialise, hence I will not describe that. I am concerned *how one integral futures could be constructed on results of meta-analysis.*

4.1 New societal demands and the integration of futures

The challenge for futures in the early years of the 21st century is that societal practice has faced great instability, with regard to the risks human-societal formability and its limitations of the future pose. Societal challenges became especially important in three fields: sustainability, democratic participation and the problems of creating new knowledge.

Sustainability is not just an upcoming research topic, but also a *new world view* as it considers that interactions of evolutionary systems of different nature are specific functioning systems in itself. This functioning system is specific as the evolutionary systems that participate in the interactions do indeed preserve their capacity to function and evolve also after the series of interactions, they do namely change in a form of co-evolution, which in due course means that several systems are the successful survivors. This concept of the world's dynamism is human centric and is optimal only from human aspects. Apart from the already interpreted optimisation, we can see that behind this *there is a world view that supposes that cultural-societal systems and the system that shapes its environment are interconnected, that they indeed shape each other in mutual interaction. Their mutual movement is defined as co-evolution* [48]. This world view is different from evolutionary futures' approach as this considers the environment(s) of the society as an evolutionary system as well. However this is not a great difference, the concept and world view of futures must be modified to be able to consider the non human environment more than the server of cultural-societal evolution and social actors have freedom to shape their future, even though this freedom is not totally without limitations, at the same time. *Dealing with sustainability emphasises the analysis between environmental and human dynamic interactions, and their foreseeing and planning.*

Democratic participation is becoming increasingly important in the operation of global and multicultural societies. Wars and violent conflicts as solving societal problems

could be eliminated by widening the democratic participation of individuals and societal groups. Developing democratic participation is an important goal in modernising the operation of political, economic and social institutions. Democratisation developed by participation does indeed belong to the category of societal evolution. Democratic participation expresses a new position for individuals, in which they are able to affect their own living environment and their own societal position.

The *continuous and widening creation of knowledge* is the focus of contemporary societies, because *new knowledge is needed to realise both sustainability and democratic participation as well*. New knowledge is not only created by the social elite, but also by all individuals in society. Additionally new knowledge has to be organised and created within the process of participating in interactivities. The creation of new knowledge is not only a continuous action, but also a part of a reflective societal learning process. Thus *the key issue of societal evolution is the development of such individual and societal knowledge base, which has a very strong interconnection.*

The three new challenges are interconnected by interactivity. Interactivity shows the characteristics of the dynamic relations and interconnections of the world, in addition to the importance of human factor's new role in interactivity. Living in a state of interactivity demands that we are aware of how to act in certain situations, furthermore *how we can become creative as components of different complex systems*. We should be able to define our place in a complex system, to communicate, co-operate and interpret the signs, answering with reflection, thinking and acting with responsibility according to our situation. Moreover we should be able to estimate the possibilities of the complex system's components' reactions to our ideas and actions, and the changes the other components' reflective answers induce in our own situation.

If we consider futures' level of development and its characteristics we can appoint *knowledge integration and its recreation* in relation to futures, has to develop new knowledge that could interpret the world and its connections of human culture and society within interactivities' changing network, thus this could be used in the shaping of human interactions. For this futures should produce new theoretical-methodological and practical knowledge. Besides this, futures has to secure its continuous creation of knowledge and the interconnection of its theoretical-methodological and practical knowledge. *Futures is able to response to challenges by the development of a paradigm*. During the development of a paradigm, futures should use complementary characteristic of the two alternative paradigms, and then recombine paradigms brought by the contentual modification of the components of

the paradigms. With the newer development of paradigms futures could be integrated if developing further paradigms along the complementary and interconnected paths that create new knowledge eliminates the undesirable effects of the present competition of paradigms. *The paths that create new futures knowledge could be found in theoretical and practical futures. Integral futures is not the end of the development of futures, but a new possible period* that widens and modernises the capacity of futures to solve tasks. Integral futures widens the paradigmatic tool, and maybe it will be the one that opens the way for futures towards a variational-selectional scientific development track.

The idea of Slaughter for integral futures could be connected to the integral futures developed by meta-analysis in the second evolutionary form, and the integration of knowledge. Slaughter in his study of 2008 moves on along the critical paradigm while the competition of paradigms is not yet closed. His approach states that integration of the knowledge could be realised with the transcendence of scientific and non-scientific future ideas, and with transcendental meditation, that is what he calls integral futures [3]. I think that this kind of integration of knowledge does not belong to the interest of futures as a science. The interest of futures is what kinds of scientifically well based mechanisms and procedures can lead to the knowledge integration and creation especially on the community levels and how futures can integrate and develop own knowledge base about itself. *There is no need for the theory of Wilber and others at this meta-level, but it needs for unfolding further research perspectives for futures.*

Some statements of Voros on integral futures are very important. If futures becomes integrating or integrated then it will be impossible to disregard the matter of paradigm. As the specific disciplines' paradigms represent different approaches and methodologies, paradigms could be integrated only at the level of meta-paradigms [4]. The results of meta-analysis have proven that *paradigms are not unchangeable* so they can be rebuilt by responding to newer societal needs that come from the meta-level. The unproductive competition of the paradigms should also be solved by making interconnection between reactions to newer societal needs and paradigm development of futures.

4.2 Outlines of paradigms of integral futures

Integral futures consist of two futures that are independent but develop in strong interconnection. *One is theoretical; the other is practical. Both fields integrate and create scientific knowledge. The two independent fields must have two different paradigms.*

Theoretical futures reflect the new challenges as it adjusts its own world and future view to the forming of a co-evolutionary world view. Towards this it needs to form the future concept, the approach, the methodology and the paradigm of the science of futures, furthermore it has to create new knowledge. Developing its own co-evolutionary paradigm solves this task, because the creation of theoretical knowledge adjusts to reality[6]. *Practical futures* reflect the challenges too, as it would like to participate in forming the possible, acceptable/preferable and feasible futures of sustainability. This task will be completed if it develops different integral forecasting/foresight procedures and methods for the new future concept and approach. During this, we will notice the improvement of participation, the connection and unification of scientific, experimental and tacit knowledge of the future, we can also say that the connection of professionals' and laymen's knowledge and expectations of the future. *Its paradigm is based on a participatory paradigm, that adjusts to its own task and that is developed by itself*[7].

Following the co-evolutionary world concept requires change in the world and future concept of futures. *The approach in which the future approach at present and the openness of the future both remain unchanged in the paradigm of integral futures as well*. However their content is restructured as the importance of possible, acceptable/preferable and feasible interactions of the human system, the systems of their environment rise. This future is a multitude of mental construction that is continuously born in the human world of men/society, that reflect the systems of the environment and themselves; and this future affects and shapes the co-evolutionary processes of men/society and the non-human world by human interactions.

Futurists and their community are participant observants in both newer paradigms that do not make any change in the content of the components of the paradigm. Likewise the societal role and general goals of futures do not change, thus we can say that integral futures support the formation and improvement of society's future shaping thoughts.

---

[6] The concept of co-evolution was first used in the biological sciences and in ecological researches, but there some other denominations for co-evolution and to similar systems of interconnections, like connectionism, interconnectedness or interactionism. The latter does not refer to dynamic characteristic of interconnections that is very important in futures. The co-evolutionary paradigm has become a meta-paradigm showing its popularity in other scientific disciplines [49], [50], [25].

[7] The participatory paradigm is such a paradigm that systematises the general rules of the process of societal knowledge creation for practice. It can also be seen as a meta-paradigm because it is used in wide range of social sciences [12].

The components of the paradigm change in their subject, goal, task, methodological principles, rules for method application, 'worthwhileness' and utility. The subject of theoretical futures is the study of the formation and change of the co-evolutionary patterns of evolutionary systems of different nature, and how the role of human and non-human factors and their incidence change in their pattern. The goal of theoretical futures is to create reflective knowledge (interpretation, assumptions, conditional theories and methodology) regarding the human and non-human world's common surviving/further possibilities. Its methodological principles are characterised by complex dynamism, and thinking in holistic co-evolutionary patterns, while its methods are characterised by co-evolutionary modelling and building model systems, and the development of simulations of possible interactions of the emerging systems. The criterion of 'worthwhileness' of the theoretical results is falsification, possibility to improve and to place in societal discourse about the future, and also the *utility in practical futures and in the production of certain forecasts/foresights*. As theoretical futures is a *continuous activity of integrating knowledge and creating new knowledge* first, it has to maintain its paradigm and has to construct new variants of paradigms. Secondly, it also has to develop its theory on integral futures, in order to do that it should study the history of futures and the different practices for the production of forecasts/foresight. Thirdly, it should be in continuous connection and interconnection with practical futures in developing the methodology and process for the production of forecasts/foresight. This new or emphasised role is not a new component of the paradigm, because it *affects only its operating* form, whether it causes additional research goals, tasks and development of methods. (See the table 5.)

Table 5. **The outline of the co-evolutionary paradigm matrix of theoretical futures**

Components	Paradigm characteristics
Comprehension of the future and the world	The future is a multitude of mental constructions that are continuously born in the human world of men/society that reflect the systems of the environment and themselves; and this future is affected and shaped by human interactions the co-evolutionary processes of men/society and the non-human world too.
The futurist's and their community's situation	Observant participant

The field of inquiry in integral futures	The possible connection of the dynamic processes of evolutionary systems of different nature, depending on chance, determinism/inertia and the reflective and self-reflective changeability of human constructions of the future The history of futures and the different practice of producing forecasts/foresight: self-reflection of futures as a science
The objective and task of integral futures	Create new reflective knowledge (interpretation, conditional theories and methodology) regarding the human and non-human world's common surviving/further possibilities Self-reflection of futures as a science: creation of integral futures knowledge, construction of a new variant of paradigms, maintenance and development of futures' knowledge basis, interactive connection with practical futures
Methodological principals	Complex dynamism, thinking in holistic co-evolutionary patterns
Rules for method application	Inducing new knowledge on the future with dynamic modelling and building model systems of the connections of the emerging systems, and the simulation of possible dynamic interconnections and interactions within the system
The 'worthwhileness' and utility of results of integral futures	Falsification, and the possibility to place in societal discourse and in process of construction of the future in a certain space and time, in addition to improvement

Source: self-made

On the contrary the subject of practical futures is to search for future shaping human actors and non-human factors that appear in the participatory process, to interconnect them and to induce new knowledge among them regarding the future constructional tasks that emerge in space and time. In the process of creating societal knowledge of the future, non-human factors have to be considered, not just as critical futures does. In foresight these forms

of knowledge that are not controlled and are not developed in the foresight process are in the background knowledge of human actors. In practical integral futures these forms of knowledge are systematically developed and used, that is why these forms of knowledge have to be visualised by the actors, adjusting it to the actorial environment of the integral forecast/foresight. With this *integral factor forecasts/foresights will not be the forecasts/foresights of the futurists, but the scientifically based future concepts of the participant actors.*

The goal of practical futures is to maintain with different kinds of participation, the cultural-societal and individual cycles that construct futures within the interconnecting process of constructing futures at different levels of communities and individuals. The methodological principle is the organisation of participative future constructions, based on the participation of different actors into a creative learning process. Practical futures is subjective in its method application, as it applies and develops the individual, group-based and internet-based methods, moreover these become subservient to them in objective and quantitative methods and model simulations as well. These methods aim to create and control the new and modernised participatory future ideas. Knowledge created by practical futures is not scientific but they are set up in scientifically organised ways and by scientific methods. These forms of knowledge could not be falsified by all aspects, but are comprehensible, acceptable, criticisable, they are even transparent in their set up. Besides this they have to be useful and developed in other human actions as well.

Practical futures is built according to a paradigm of one participatory thinking process, where the characteristic of the process is paradigmatically emphasised. Over that this process should be continuous, so the maintenance, development of future thinking is its goal in space and time, and also the development of the process organising methodology, namely the examination of integral forecasts/foresight. Additionally practical futures has to be connected to theoretical futures as with newly developed future ideas, as well as its methodology. (See the table 6.)

Table 6. **The outline of the participatory paradigm matrix of practical futures**

Components	Paradigm characteristics
Comprehension of the future and the world	Future is a process of mental constructions and reconstructions born in a certain space and time of the human world

The futurist's and their community's situation	Observant participant
The field of inquiry in integral futures	Find different actors and knowledge, among others the representatives of non-human systems and scientific knowledge, interconnect them in space and time regarding the future constructional tasks
The objective and task of integral futures	Maintenance with different kinds of participation, the cultural-societal and individual cycles that construct futures within the interconnecting process of constructing futures at different levels of communities and individuals
Methodological principals	Organisation of participative future constructions based on the participation of different actors into a creative and dynamic learning process
Rules for method application	Subjective, individual, group-based and internet-based methods to connect different knowledge and create new knowledge of the future, and the use of objective and quantitative methods subservient to the participatory creation of new knowledge
The 'worthwhileness' and utility of results of integral futures	Partial falsification, transparency, comprehensibility, acceptability, used in other human actions, possibility to improve, utilisable and explorable for theoretical futures

Source: self-made

5 Conclusion

According to the meta- analysis of the development track of futures fields and its paradigms, and its capacity to react to the new societal demands, integral futures consists of the joint of theoretical and practical futures that have newer and independent paradigms, that are interconnected in many aspects and that are co-operating. Integral futures is the manifestation of the rationality of the 21st century, of men who create knowledge with foresight and who are active as well. Integral futures is not created by the competition of paradigms, because it represents different phases of the creation of future ideas of the co-

evolutionary and participatory paradigm, moreover developing them could be realised by a tolerant, co-operative and interactive research approach and attitude. The competition is not over yet, but is transmitting to answer internal questions of each paradigm. The scientific field of futures can step the evolutionary form of the variational-selectional model of scientific evolution with a newer paradigm shift and with the development/evolution of the interconnected paradigms of theory and practice. *Such a meaning of integral futures unfolds further research perspectives for futures.*

Acknowledgements

The research is financed by the TÁMOP-4.2.1/B-09/1/KMR-2010-0005 project in Hungary.

References

[1] R.A. Slaughter, Futures Beyond Dystopia: Creating Social Foresight, Routledge, London, 2004.
[2] É. Hideg, Implications of Two New Paradigms for Futures Studies. Futures 34 (2002) 283-29.
[3] R.A. Slaughter, What Difference Does 'Integral' Make? Futures 40 (2008) 120-137.
[4] J. Voros, Integral Futures: An Approach to Futures Inquiry. Futures 40 (2008) 190-201.
[5] S. Inayatullah, Theory and Practice in Transformation: The Disowned Futures of Integral Extension. Futures 42 (2010) 103-109.
[6] J.M. Ramos, Movements Toward Holism in Futures Inquiry, Futures 42 (2010) 115-124.
[7] J.M. Gidley, An Other View of Integral Futures: De/Reconstructing the IF Brand, Futures 42 (2010) 125-133.
[8] T.S. Kuhn, Objectivity, Value Judgement and Theory of Choice, in: The Essential Tension, Selected Studies in Scientific Tradition and Change, The University of Chicago Press, Chicago, London, 1997, pp. 320-339.
[9] T.S. Kuhn, Second Thoughts on Paradigms, in: The Structure of Scientific Theories (Suppe, F. Ed.) Second Edition. University of Illinois Press, Urbana IL, 1997, pp. 459-517.
[10] I. Lakatos, The Methodology of Scientific Research Programmes, Cambridge University Press, 1978.
[11] E.G. Guba, Y.S. Lincoln, Competing Paradigms in Qualitative Research. In: Handbook of Qualitative Research (N.K. Denzin, Y.S. Lincoln Eds.) Sage Publications, Thousand Oaks, CA, USA, 1994, pp. 105-117.
[12] J. Heron, P. Reason, A Participatory Inquiry Paradigm, Qualitative Inquiry 3 (1997) 3, 274-294.
[13] H. Lindstone, C. Simmonds, Futures Research. New Directions, Addison-Wesley, London, 1997.
[14] J. Fowles, J. (Ed.) Handbook of Futures Research. Westpoint, Conn. 1978.
[15] O. Helmer, Looking Foreward – A Guide to Futures Research, Sage, Bewerly Hills, London, 1983.
[16] H. Kahn, A. Wiener, The Year 2000, MacMillan Ltd., London, 1967.
[17] D. Meadows et al., The Limits to Growth, Universe Books, New York, 1972.
[18] I. Prigogine, I. Stengers, Order out of Chaos, Flamingo, Glasgow, 1985.

[19] E. Laszlo, (Ed.), The New Evolutionary Paradigm, Gordon and Breach, New York, 1991.
[20] E. Laszlo, I. Masulli, R. Artigiani, V. Csányi, V.(Eds.), The Evolution of Cognitive Maps. Gordon and Breach, New York, 1993.
[21] P. Malaska, The futures Field of Research, Futures Research Quarterly 11 (1995) 1, 79-90.
[22] M. Mannermaa, In Search of an Evolutionary Paradigm for Futures Research, Futures 23 (1991) 4, 349-372.
[23] J. Dator, The Future Lies Behind! Thirty Years of Teaching Futures Studies, American Behavioral Scientist 42, (1998) 3, 298-319.
[24] P. Allen, P.M. Torrens (Eds.), Complexity and the Limits of Knowledge, Futures 37 (2005) 7, Special Issue.
[25] L. Leydesdorff, A Social Theory of Communication, USA, Universal Publishers, 2001.
[26] T. Homer-Dixon, Environment, Scarsity and Violence, Princeton University Press, Princeton, 1999.
[27] É. Hideg, (Ed.), Evolúciós modellek a jövőkutatásban (Evolutionary Modelling in Futures Field) AULA Press, Budapest, 2001.
[28] J. Diamond, Collapse, Penguin Books, London, 2005.
[29] The IPCC Assessment Reports, 2007. Available at: www.ipcc.ch
[30] E.B. Masini, Why Futures Studies, Grey Seal Books, England, London, 1993.
[31] Z. Sardar, J. Ravetz, J. (Eds.), Complexity: Fad or Future? Futures 26 (1994) 6, Special Issue.
[32] R.A. Slaughter, The Foresight Principle, Adamantine Press Limited, London, 1995.
[33] W. Bell, Foundation of Futures Studies, Two volumes, Transaction Publishers, New Brunswick, 1997.
[34] S. Inayatullah, Causal Layered Analysis: Poststructuralism As Method, Futures 30 (1998) 6, 815-829.
[35] S. Inayatullah, Questioning the Future, Tamkang University Press, Tamsui, 2005.
[36] S. Inayatullah, Anticipatory Action Learning: Theory and Practice, Futures 38 (2006) 656-666.
[37] D. Loveridge, Foresight and Its Emergence. Ideas in Progress, Paper Number 7. University of Manchester, PREST, 1998. Available at: http://www.personal.mbs.ac.uk/dloveridge/documents/emergepdf_wp7.PDF
[38] H. Tsoukas, Coping with the Future: Developing Organizational Foresightfulness. Futures 36 (2004) 137-144.
[39] M. Keenan, Running and Managing a Foresight Exercise, BIC Group Holding, 2006. Available at: https://www.unido.org/foresight/rwp/dokums_pres/keenan_running_and_managing_foresight_46.ppt
[40] J. Ramos, S. Inayatullah, (Eds.), Futures Studies and Action Research, Futures 38 (2006) 6, Special Issue.
[41] G. Burt, G., G. Wright, (Eds.), Organisational Foresight, Futures 38 (2006) 8, Special Issue.
[42] T.S. Kuhn, The Structure of Scientific Revolutions, The University of Chicago, 1962.
[43] S. Funtowitz, J. Ravetz, Science for the Post-Normal Age, Futures 25 (1993) 739-755.
[44] É. Hideg, Theory and Practice in the Field of Foresight, Foresight 9 (2007) 6, 36-46.
[45] J. Miles, M. Keenan, (Eds.), Country Specific Practical Guides to Regional Foresight, CORDIS, FOR-LEARN project, 2002. Available at: http://www.cordis.u/foresight/cgrf.htm
[46] M. Keenan, I. Miles, J. Koi-Ova, Handbook of Knowledge Society Foresight, European Foundation, Dublin, 2003. Available: http://www.eurofound.eu.int/transversal/foresight.htm

[47] K. Popper, Objective Knowledge: An Evolutionary Approach, Clarendon Press, Oxford, 1972.
[48] V. Csányi, Az emberi természet (The Human Nature), Vince Kiadó Kft, Budapest, 1999.
[49] V. Csányi, Evolúció vagy Teremtés: Mítoszok vitája? (Evolution or Creation: Discussion on Myth?) Magyar Tudomány 158 (1997) 11, 1281-1293.
[50] Cs. Pléh, A tudomány jövője: a kognitív tudomány példája a tudomány tagolódásáról és diverzifikálásáról (The Future of Science: The Case of Cognitive Sciences of Division and Diversification) Magyar Tudomány 168 (2007) 9, 1118-1129.