Éva Hideg

Interactivity and the Development of Futures Studies[1]

The research issue and its approach

The present state of futures fields is determined by the competition between two lines of futures studies, evolutionary and critical futures studies. This competition could be considered favourable as it stimulates the evolution of approach and methodology to answer always-upcoming problems about the future. The competition is unfavourable as representatives of the two trends experience communication problems tending to eliminate each other, professional communication is filled with misunderstandings, those futurists that force one side do not learn from the other side, and they are not interested in producing theoretical consequences from empirical futurist work. *The end of competition of the two trends is yet uncertain; however the idea of integral futures has just appeared in the futures literature.* Slaughter declared in 2004 that present circumstance and way of cultivating futures despite its variation is 'not a good place' – anti-utopia – that should be left behind (*Slaughter*, 2004). By the beginning of the 21st century the futurists' work has become fragmented, which is why it is unable to contribute efficiently to the solving of the civilisational crisis. The Futurists' community should not be busy finding answers to questions such as: which future concept or methodology or method is correct or incorrect, they should however find answers to those that intend to lead the way for cultivating futures fields, and in a way that all futurists and schools of futures may contribute to the enrichment of the knowledge base and tools of futures fields. This new approach was called integral futures by Slaughter.

---

1 This study was published in the volume of 'Futures Studies in the Interactive Society'. Hideg, E. ed. Futures Studies Department, Corvinus University of Budapest, Budapest, 2009, 13-53.

There are two main ideas regarding integral futures. In the first one integral futures studies is the improvement of critical futures studies when different future concepts and imaginations are connected at the transcendent level with transcendental meditation (*Slaughter*, 2008). The second idea of integral futures is based on the free will of the futurist: all futurists can freely select their research goal, perspective and methods, which also include paradigms, grasping paradigms, as it is now usual in the fields of the social sciences (*Voros*, 2008).

This study shows the possibility and interpretation of integral futures embedded in the evolving process of futures field, and as a paradigmatic answer to new social challenges. This is fundamentally due to the fact that futures fields have a 40 year past. In the past 40 years there have been successful and difficult times as well. Futures have become a scientific field, having developed its paradigms, and the widening of its practice, were the main points of success; while the main difficulties were found in the ideological discussion as it developed into a science, and loss of confidence in the forecasts during the 1980s. *Futures has been able to improve itself while reacting to problems*; hence the experience of its development process could have been used for shaping the possibility space of its future, and showing the subject matter of integral futures from this aspect.

Futures has become an individual discipline and science in the 1970s and 1980s as a basic and an applied science at the same time, in addition to the practical need in society in relation to gaining further knowledge and influencing the formation of the future, these tendencies, both played a definitive role in this process. The change in societal needs has also played a significant role in the evolving process as futures fields are very sensitively connected to practice itself. Futures fields' responses to social needs also depend on the ability of the entire science and the futures fields as such, meaning a knowledge base, scientific approach and methodology could all be used for dealing with the future. *This study examines the future evolution of futures fields within this dual binding*. It searches for answers to the following questions: how the clash of trends could end reflecting new social needs; whether a new change of paradigm could actually occur; whether integral futures could come into existence; and which paradigms in relation to futures fields could be restructured. In seeking answers the

study first goes through the past evolution of futures fields from the point of changing social needs, secondly it examines those social challenges that require answers from futures fields, and thirdly it searches for the responding possibilities of futures fields with the dynamic and comparative meta-analysis of the paradigms of futures fields.

The development of futures fields with regard to changing social needs up until today

Futures as futures research developed into an individual and normal science in the 1970s and 1980s. Reacting to the most instinctive human need it promised to foresee the future on a scientific basis with the forecast of probable futures. It supposed that governance supports or influences the shaping of the future within the forecasted range of future.

Prognostics had a definitive role in futures fields becoming a science. Prognostics was successfully cultivated in connection with or as a part of specialised disciplines from as early on as the 1920s. Prognostics as a scientific predecessor of the later individualising futures fields became its part as an approach and methodology. Futures fields carried on its prognostics's focus on the later forthcoming future, with its the emphasis of the genetic connection of the past, the present and the future, and its forecasting methodology[1].

The upcoming of futures research did not begin with the development of its own paradigm, but with forecasting and the creating of futures images, where futurists parallelly dealt with theoretical and methodological questions, adaptations and the development of methods, at the same time as focusing on the solutions of new assignments. The forecasting of economics and especially the scientific-technical development developed within the concept of *whoever 'knows the future', will indeed progress faster*. The future and the importance of progress are elemental parts of Western culture, however the two world order's living side by side, and their competition raised the significance of both areas. Moreover they were not just culturally important, but also at the level of daily political, social, economic and governmental decisions.

Ideological discussions and confrontations followed this golden age when forecasts and future images emerged. Futures as futures research which was developing into a scientific field, was at first rendered more difficult by its approach as an ideological issue in the ideologically divided world, as in the East, and as in the West. Futures research was considered as the shaper of the official ideology (e.g.: *Kahn* and *Wiener*, and the activity of the Hudson Institute (*Kahn, Wiener*, 1967)) or as major left side critics (as reading reflections to 'Limits to Growth' by *Meadows* and his fellows (*Meadows et al.*, 1972)), while the futurological elements of futures research was labelled as a bourgeois science in the socialist world at that time.

Furthermore the first soviet futurist who was most acknowledged at that time, *Bestushev-Lada* wrote about bourgeois futurology, while his book entitled 'Window into the Future' incited activity in relation to Marxist futurology and social prognostics in the Eastern block (*Bestushev-Lada*, 1970). The era of détente brought peaceful coexistence and competition, in which ideological discussions and confrontations were moderated, as *the main focus was on working on daily problems and on the acceleration of social-economic development*.

At the same time this rejection incited those who were dealing with futures research to develop this new scientific discipline the *more free of value judgements as they could in addition to the search of new connections within the same approach*. This last statement is also valid, since we know that futures research in socialist countries was in service to socialist planning, while futures research in Western countries was connected to civil democracy and/or to democratic planning[2]. The selection of the research topic and the tolerance among futurists grounded for the independence from social systems and ideologies. Science and technology, the future economic development of countries, or the forecast of the growing and developing potential of the world, were typical research topics that were important for every kind of societal structure and ideology, based on the general idea that growth and development were in the spotlight. *The tolerance of futurists was founded on the idea that science is free of value judgement and it serves progress.* If we deal with the future on a scientific basis, then ideological confrontations and discussions could be eliminated. The above-mentioned change of international and local environment in society fostered the increase in tolerance.

Futures research developing into an individual area of science was taking place with more processes facilitating each other: it was helped by the future oriented social praxis that defined its new and unique needs, and also by the fact that dealing with the future in science had its predecessor, besides the predictions of the specialised disciplines and forecasts of prognostics. Futures research became a new and individual research area in the 1970s and 1980s with scientific research shops, international organisations, scientific journals, specialist books and textbooks, using science's ideological neutrality and concept of serving social progress. The cultivation of futures research created an inspiring environment for the development of its specialised discipline's specialities and its own paradigm.

Until the 1980s futures research overviewed and structured its theoretical and scientific basics, such as its methodology and the various tools of methods. According to the main scientific wave it gave a *positivist answer to the question of how we should deal with the future*. The subject matter of research was future that materialises later. It drew a conclusion to the future based on knowing reality and the tendencies of development derived from that. The possibility range of probable futures was founded on probability considering also the uncertainty of the future. Positivist futures research methods were gathered from the science of revealing reality, but it also had individually developed methods. It supposed that its forecasts were used to shape the aims of practice. As a result of the development of this scientific approach, methods and their application in relation to constructing forecasts on a scientific basis became a regular activity at different institutional levels, which also included national and international institutions.

Table 1. **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
The 'worthwhileness' and usefulness of futures research results	Verification, reliability and fulfilment

Not noticing those futures that do exist in the present is a blind spot of the positivist futures research paradigm, because it interprets future itself and the knowledge of the future only for the forthcoming times. This causes an incapacity to deal with human activity as an effect on the future, to decide whether choosing futures has any significance, to deal with future shaping originating from individual endeavour, or to see the extent to which social values based on different cultures influence the future and the forecasting process itself.

Despite all the success the beginning of the 1980s and in the 1990s, futures research encountered critical times. Most of the forecasts of the 1970s and 1980s were not standing in good stead, because there were unexpected turning points, new and unwonted phenomena instead of the forecasted consequent futures and their variations. These included the oil crises and the economic downturn that followed, in addition to the collapse of the socialist system. Disappointing results meant that decision makers became increasingly dissatisfied when more forecasts did not prevail as thought, and so these forecasts had also lost their power to be supportive for decision-making processes. In addition to the fact that forecasts had not materialized, they were also leading the attention of decision makers to events that could not have followed after such decision making situations, neither at the national, nor at the international level. For example the Club of Rome's forecast preferred zero growth, or there was a normative future image that was characterised by sustainable development (*Meadows et al*., 1972, *Our Common Future,* 1987). Decision makers and the employers of the forecasts were right in feeling that forecasts did not help them in making better decisions. Under these circumstances futurists had to come up with long and complicated explanations with regard to what

futures research really was, what could be expected from forecasts and why forecasts did not prevail.

During times of accelerated changes and the even more obvious instability, societies reacted differently to forecasts' capacity of foreseeing and supporting decisions. *Objection to forecasting escalated, it was also declared unnecessary, however there was a strong need to forecast expected changes, even just for the short term. New questions emerged* as a result of practice, which could not have been answered within the thinking of the positivist futures research paradigm, or if it could, practice would not have accepted such answers. The following are some examples of those questions: Do we have the possibility to decide and choose at all, or are we drifting with the events? Can we have an effect on the future at all? Can we know ahead at least those that we cannot avoid? At what level can we decide about the future, if we can decide at all? How will we shape the future so as to be unique and to belong to us, if we think that in fact we are also responsible for our future? Who exactly, and what institutions at which level may have a role? and what kind of role could they have in shaping the future? Is the future based on one justified value system, and is it possible to create a solid, coherent future image, or only thinking in partial futures based on different value systems is the only possibility in a strongly differentiated world?

Discovering these confrontations *futurists became aware* that futures research and forecasts were not well communicated, and laymen and decision makers were both uninformed: they had different expectations regarding futures research moreover futures research had a different answer for them. However it became clear that the way the world operated had changed. Instability and sudden changes disturb the course of life and the flow of events. All these factors inspired futurists to self-analysis and to rethink their work, how did they examine the future? what did they really undertake when making a forecast?. *The position of futures research and forecasts in the 1980s and 1990s and the reaction of futurists and the employers of forecasts typically show the circumstances of a paradigmatic crisis, and that the way out of the crisis is through a change in paradigm.*

Throughout the 1990's self-reflection, the collection, evaluation and development of theoretical and methodological experiences *gradually became characteristic of the*

cultivation of futures research. Self-analysis and self-reflection were interconnected to the overview of evolution of futures research and the way it had been passed on, in the classification of future concepts pictured in forecasts and in forecasting methods, in addition to the review and re-evaluation of the possibilities of using forecasts (*Hideg*, 1992). We can say that these are the normal tasks of every scientific activity; this is not peculiar, because science evolves in this way. However from these reviewing and developing studies we can heighten those research trends that reflected the changed circumstances and the critics of futures research, as well. *These studies throw new light upon the goal and the social role of futures research, moreover have guided the cultivation of futures research towards new research perspectives.* The research perspectives renewing futures research appeared in connection with the search for a new concept of the future, with turning to possible future interpretations different from the present and its trends, and with the recognition of the future-shaping role of social actors.

Throughout the 1990s and the early 2000s theoretical discussions and the exposition of different viewpoints were somewhat underplayed, and those forecasting projects, methods and method developments which elaborated and solved the realisation of various new research perspectives got to the foreground. *Paradigms stemmed from those researches within the new research perspective that could react to the post-modern change of era and the spread of the idea of a post-normal science at the same time* (*Hideg, Kiss, Nováky*, 1998). The post-modern change of era brought the strengthening of globalisation and the valorisation of locality at the same time. Both of them go hand in hand with the rising importance of freedom of social actors and stakeholders and with the re-evaluation of the future in the present (*Kiss*, 2005). With the re-evaluation of the social role of science, post-modern trends of thoughts and the idea of post-normal science put forward the social utility and expedience of scientific results within the changed circumstances.

Futures research recognised that *even though it is not possible to forecast the future, it then could in fact help social actors', stakeholders' activity in shaping the future thinking individually or in a group, if studying the future being shaped in the present draws attention to possibilities and risks, and/or supports the development of future*

orientation and future thinking of actors and social groups with its research results. This recognition was the reaction to the new circumstances and social needs.

Evolutionary and critical research perspectives of futures managed to find new methodology and new ways of cultivating futures scientifically upon the new social assignment (*Hideg*, 2002). The futures field that concentrates on the future that exists in the present in thinking and in emotions was not called futures research, but futures studies in the English literature (*Masini*, 1993).

Evolutionary futures studies[3] focuses on the complexity and the simultaneously determinate and indeterminate characteristic of the future. The futurists as observant and the acting participants use general evolutionary theory as a world view and as a heuristic. They examine the subject of research, which contains the human factor as well, holistically interconnecting each other's perspective. Evolutionary futures studies, examines the new possibility range of futures within a different context using the generalised concept/metaphor of evolution for the movement of self-organizing and emerging social complexities. *As a consequence it assigns the possibility range of futures arranged in evolutionary patterns.* It breaks with the positivist approach, assuming that forecasting probable future is not possible within unstable circumstances. Subsequently from its approach, preliminary knowledge on the future could not be gathered. All knowledge that refers to the future is reflective, that could be falsified only partially, and then should be set to be reflected again.

Evolutionary futures studies has *hypothetical future thinking* as it considers possible emerging and declining or even catastrophic futures too. In a certain subject and space-time it considers possible to form scientifically based concepts about the possibility range of futures, the alternative futures and the processes that take place within them. It *keeps future open notwithstanding any research results*, because future could not be foreseen according to events, or the human-social reactions and actions. That is the reason why future should be explored through the study of future possibility.

Table 2. **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 'wothwhilness' 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

Critical futures studies[4] focuses on the future existing in the present and on human foresight. Its starting point is that foresight as a human capacity is an evolutionary capability; hence it works for every human being. Man deals with the future with all of his mental capacity, thus his future thinking consists not only of clearly conscious and rational thoughts, but also of emotions, faiths and beliefs. Man lives in community and so is able to deal not only with his own future, but also with his community's. Critical futures studies is interested in this last topic: how do ideas relating to the future and common future thinking emerge, moreover how they could be shaped.

Critical futures studies sets futures fields in the transformational cycle of community level's future thinking. The task of futures studies is the critique of community's future ideas and the development of such methods that could help begin the shaping of the community's future ideas. The critical futurist does not make forecasts, but organises and supports the foresight process. The process and its results, future ideas are considered good and useful if they are transparent, controllable and can be repeated,

accepted by community, and considered to be reflected by other communities, and other communities really do reflect them, thus the social discourse about the future is a free, continuous and open social learning process. Therefore critical futures studies has a subject, human thoughts about the future, that are examined by the participant, an observant critical futurist, and the existing and forming techniques and methods shaping concepts and ideas of the individual and society are used and improved.

Critical futures studies does have, and at the same time does not have an actual future thinking. It does have it, because it is embodied in several future ideas, in futures case studies and as a result of future workshops of the practice. However on the other hand, it does not have an actual future thinking, because as a consequence of its main point, when elaborating on the expectations about the future, future images and strategies are not the task of the futurist. A Futurist as a participant observant can influence future thinking with analyses and criticism, moreover the futurist can develop and use methods to elaborate different future shaping ideas.

The output of the critics and workshops differ in space and in time, so there is not a synthesis of one future idea, unless considering the fact that they are all motivated by overcoming and restructuring the relation system of the industrial age. However this kind of synthesis does not even cross the minds of critical futurists, because they all agree that the age of big narratives has ended. Critical futurists do not have an actual future thinking but an *action program* that includes *continuous critical activity*, and the *development* of critical methods and approaches, and the *methodology of participatory foresight*.

Table 3. **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

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

Both of the paradigms have materialised blind spots. The evolutionary futures studies' paradigm does not define the extent to which the human factor plays a role in consciously shaping the future and sustaining changes, moreover the extent to which these two roles have changed. Therefore the paradigm does not define when the individual and the community are active, when they are passive observant, and when they are sustaining, moreover when studying each complexity's future what is the proportion of these two statuses that relate to each other. Thus the paradigm could not answer question of why and how human factors change its two positions in the complexities. *The critical futures studies' blind spot is given by the fact, that critical futures studies concentrates on deconstructing and reconstructing future ideas, and it does not consider as its subject, research how each future concept forms other areas and other communities of the society, the life of the individuals and the world outside of society.*

Table 4. **The renewed paradigm tools of futures fields**

Positivist paradigm of futures research	**Evolutionary paradigm**	**Critical paradigm**
	of futures studies	
Future in the future	Future in the present	
Future is determined but can be influenced	The future is open and can be constructed Future is constructed by human, social actors	
Futurist is observant	Futurist is a participant observant	

Search for probable futures	Study of possible futures	Study and construction of acceptable/preferable futures
Exploration and projection of development tendencies by conditional plausibility	Exploration and study of evolutionary patterns	Participating in shaping human foresight
Modelling simple dynamism	Modelling complex dynamics	Critic, social/post-structural discourse
Scientific support for decisions of community and for policy	Science contributes and supports the future idea construction of the actors	
Human factor's future shaping effects could not be studied	Change in role of human factor as active participant and passive side could not be studied	Effects of acceptable/preferable futures on other communities, individuals and on the non-human factors of the future could not be studied

Futures fields, during its development until today, have formed three paradigms according to the social needs that it reflected. *With the positivist paradigm it satisfies the need of knowing the future in a preliminarily form. Evolutionary and critical paradigms both allow futures fields to support the future shaping activity of the actors that form the future.* The renewed future fields do not give preliminary knowledge about the coming future which occurs later, but supports to shape present thoughts about the future by exploring the evolutionary patterns and/or with the critics and improvement of future thinking.

The capacity of futures studies to solve problems and its possibility to change

The dynamic and comparative analysis of futures paradigm shows that there was a paradigm shift in futures studies. With this shift futures studies 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 studies 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 studies 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 according to a new paradigm. The two new paradigms of futures studies resulted from the paradigm shift *allowed futures studies 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 studies to solve problems has risen with the appearance of these new paradigms. The paradigm shift occurred according to Kuhn's concept (Kuhn, 1962)* because both evolutionary and critical paradigms of futures studies have overwritten the paradigm matrix of futures studies according to the paradigm matrix of positivist paradigm.

If we follow paradigm history's change in time we can see the following *periods: the 1970s and the 1980s: the beginning; end of the 1980s and the 1990s: the paradigm crisis; the 1990s and the early 2000s: paradigm shift*. The present competition of paradigms can be considered as a period of preparation for a new paradigm crisis, in which futures studies form new paradigm(s) answering to upcoming societal needs. *The history of futures studies continues with a new paradigm crisis, followed by a paradigm shift, according to Kuhn's pattern of scientific evolution* (*Kuhn*, 1962*).*

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*.

Futures studies has a set of paradigms that consist of three paradigms. With the paradigm shift and with the appearance of the two new ones, futures studies has a greater capacity to solve problems. Futures studies' set of paradigms faciltates the solving of problems, using forecasting and foresight tools. Futures studies through paradigm shift *has also become a post-normal science* (*Funtowitz, Ravetz*, 1993), 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 (Hideg, 2007). If we consider that with the paradigm shift futures studies has become a post-normal science, we must admit that futures studies is unlikely to again become a science with one paradigm The process of futures studies 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 studies'. *The elimination of the gap could help generate a new paradigm shift and the development of new paradigms.*

The two paradigms evolving after the paradigm shift are alternative and theoretically 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.

After the paradigm shift the evolution of futures studies has been characterised by the competition of the two paradigms. *Competition has accelerated the perfection of both paradigms and their spread in practice.* None of them could beat the other, throughout the paradigm competition, 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 (*Keenan*, 2006)[5] or praxis foresight (*Hideg*, 2007) did. 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 based on communicational problems between the representatives of the paradigm as well (*Hideg*, 2007). *Futures studies could have overcome its detrimental form and the harmful effect of paradigm competition, if its self-reflection would operate in relation to its reflection. So it would also give attention and reflect the hanging needs of practice, and that would*

give possibility to a new paradigm shift which would definitely not bring another competition of paradigms.

The blind spots of paradigms show that futures studies is not able to manage problems of the future with three paradigms. *Futures studies 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 studies can be shifted into a variational-selectional scientific evolutionary track (Popper, 1972).*

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 a *successful recombination could bring another paradigm shift. The paradigm shift that follows the recombination raises the capacity of futures studies in dealing with its tasks, as well as making it possible for futures studies to switch its variational-selectional evolutionary track after the new paradigm shift (Popper, 1972), using its enlarged paradigm tools.*

The interdisciplinary nature of futures fields (*Hideg*, 2008) has had a paradigm-generating role in the formation and change of paradigm. Futures studies was established in a positivist paradigm, by the representatives of positivist sciences, indeed the representatives of the social sciences and humanities had a great role in the paradigm shift and the formation of the two new paradigms. In the competition of paradigms well-defined and specific futures paradigms were developing, that has started to resist always-upcoming external interdisciplinary effects, and has been able to take part in other interdisciplinary researches with its own paradigm[6]. As a consequence we can appoint that *futures studies is able to do development on its paradigms*, but for this the futurist must inevitably regularly educate himself. *This process does not prevent futures studies from widening its view and refreshing its methods along*

interdisciplinary lines it does however give it more space to be scientifically influenced by internal effects rather than the external ones.

Table 5. **The paradigmatically possible futures of futures studies according to the complex meta-analysis of paradigms**

Factors that influence the dynamism	**Possible futures**
Tracking the changes in time	Emergence of paradigm – crisis in paradigm – paradigm shift – the process of change in paradigm is followed by another crisis of paradigm and paradigm shift, reacting to new societal needs
The outcome of the competition of paradigms	A/ the end of paradigm shift according to Kuhn, will result in the victory of one paradigm B/ eliminating undesirable consequences with the interconnected actuation of reflection and self-reflection – a paradigm shift with the development of new, but not competitive paradigms
The fulfilment of post-normal scientific aspect	Eliminating the gap between futures theory and practice with a new paradigm shift and with the development of new paradigms
Using the paradigm tool	Creating variant of paradigms and with their selection running the track of variational-selectional evolution
Elimination and eliminability of blind spots	Recombination subsumed to the external point of view that influences the content of components, that results in a new paradigm shift
The effect of interdisciplinarity	A paradigm generating role in formation and shift of paradigm – in the future the inner own power falls into the line by the regular education of professional futurists

The factors that influence the paradigmatically possible futures within the futures studies project are illustrated by more evolutionary tracks in the future. Any of them could materialise if certain factors become dominant. If all six factors have an effect at the same time, then the possible evolutionary forms could be estimated by analysing those factors that strengthen and weaken, or even contradict each other. In this case

there are only three possible evolutionary forms left. *In the first form, the new paradigm shift occurs with the development of new paradigm(s), and during that self-reflection connected to reflection, new blind spots are eliminated (and also the newest ones become visible), moreover the gap between futures theory and practice is also eliminated.* Futures studies could materialise this way by developing its inner power and interdisciplinarity. The paradigm tool could help it through recombination that intends to eliminate blind spots. *After the new paradigm shift futures studies can shift to a variational-selectional evolutionary track that has a raised capacity. The second form is to overcome one paradigm, finishing the paradigm shift according to Kuhn, using its own inner power. The third form is the variation of the existing paradigm tool, basically with its own inner power, which results in futures studies' shift to the variational-selectional evolutionary of track unchanged capacity.*

Table 6. **The paradigmatically possible evolutionary forms of futures studies**

Evolutionary forms	**Characteristics**
Form 1	New change of paradigm with new paradigm(s) - with self-reflection connected to reflection - eliminating new blind spots - eliminating the gap between futures theory and practice - using its own inner and interdisciplinary scientific capacity path that raises capacity to solve tasks
Form 2	The overcoming of one paradigm completing the paradigm shift according to Kuhn - Using its own inner scientific capacity path that reduces capacity to solve tasks with unsolved problems
Form 3	Variation and combination of the existing paradigm tool - basically with own inner scientific capacity path of unchanged capacity to solve tasks with unsolved problems

The probability of the second and third forms have decreased due to the fact that they include less dynamising factors, leaving the following questions unanswered: how the gap between futures theory and practice, furthermore all their blind spots could be eliminated? furthermore how interdisciplinary lines could be used to refresh the concept and methodology of futures studies. Both forms are followed by narrowed futures studies, and the loss of its interdisciplinary character. It is a thread for the third form moreover if futures studies would vary and combine its paradigm tools with great

flexibility. Both forms proceed toward a paradigm crisis, because futures studies is not able to flexibly respond to the new challenges with one paradigm and with its restricted paradigm tools.

The possible evolutionary tracks that raise the capacity to solve tasks and the interpretation of integral futures studies

The possibility of the first evolutionary track is more expounded than the others, because it includes most of the factors that induce the dynamism and the interconnection of the paradigms, thus it makes it possible to define integral futures itself. 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. However I will draw attention to the significant role of the developing activity of futurists and of those who arrive from other disciplines in the materialisation of the evolutionary track. I am concerned *how one integral futures studies could be constructed with these 'ingredients'*.

For this exercise I will *first select one external point of view* concerning new societal needs, to which futures studies should react. I will then analyse *whether the factors that induce the dynamism of the paradigm subsumed to the external point of view could be formed and connected, making the recombination of the alternative paradigms and the formation of new paradigms possible, that are able to manage the process of futures studies, and its development into integral futures studies.*

Sustainability, democratic participation, new societal needs in relation to the continuously widening creation of knowledge

The challenge for futures studies 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. Knowledge, varied in nature, the scientific, the empirical and the tacit should be continuously connected in all fields of life, built within each other, to create new knowledge to sustain community's and humanity's and their environment's existence and prosperity. In this process of creating knowledge, human, community organisation, environmental, technical and economical problems should be

handled together and interconnected to realise real time subsistence and sustainability. At the beginning of the 21st century societal challenges became especially important in three fields: sustainability, democratic participation and the problems of creating new knowledge.

In the years following the Millennium it has become evident that dealing with environmental issues could not be postponed. The possibility of global climate change raises more and more questions (*The IPCC Assessment Report,* 2007), and besides this other environmental components do have a worsening status (*Global Environmental Outlook*, 2007). Sustainability and the passing to the way of sustainable development should be taken seriously at a global and at a local level as well (*Jackson*, 2009). The exploration studies of environmental degradation and climate change show that human effects have a definitive role in unfavourable changes. Societies could act for sustainability only if they get to know those mechanisms of action that function within the environmental changes and the societies' need to satisfy actions, placing human interference in the mechanism of action. *Dealing with sustainability emphasises the analysis between environmental and human 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 (*Pateman*, 1970, *Heinelt and et al.*, 2002, *Barber*, 1984, *Hippel*, 2005, *Bezold*, 2006).

Democratic participation is based on interactivity between individuals and social groups. Leydesdorff appoints that this interactivity represents the functionality of post-modern societies (*Leydesdorff*, 2001). New solutions for problematic issues gained with interactivities between individuals and individuals, as well as individuals and groups, in addition to groups and groups show how society works. 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 (*Barber,* 1984, *Baiocchi*, 2003).

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 (*Gáspár*, 2009). 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 (*Bandura,* 1986). This means that new and socially useful knowledge is put into context and is creative. New knowledge evolves in specific problematic situations where new knowledge is shared among people, hence knowledge integration is realised. 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.

The net of interactivities have a different nature, and living in them the individuals' and society's knowledge that could evolve, that is practice-oriented and that includes foresight has become more valuable. That is why the three challenges and their consequent issues become research topics in the research of sustainable, knowledge-based, interactive and societal networking models. These societal models have also resuscitated programs on societal development (e.g.: the knowledge society program in the European Union (*Europe and the Global Information Society,* 1994, *Memorandum*

on Lifelong Learning, 2000) or the educational or vocational development programs (*Hideg, Nováky*, 1998)).

Futures studies reacted with continuous participation in the research of these issues. There are many forecasts and foresight activities on these challenges and their partial problems. Futures studies is very active in revealing environmental problems, and in shaping the future model of sustainable society, knowledge society and interactive society (some examples for further reading: *Meadows et al.*, 1972, *Our Common Future*, 1987, *Malaska*, 1991, *Rosnay*, 1979 and *Eder*, 1997 and *Hideg*, 1999*). These activities are very important but not enough to react to challenges. Futures studies should also react to challenges with the development of its own activity, because the capacity of creating, foreseeing knowledge and its continuous creation are elementary in relation to interactive human existence.*

Interactivity and the interpretation of integral futures studies

The main point of the challenges is the real-time realisation of complexly defined by sustainability and the extension of individuals', communities', social actors' participation in relation to knowledge integration and the creation of new knowledge. Futures studies should also react to interconnectedness of tasks with the development of its paradigms.

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 (Csányi, 1999).*

This world view is different from futures studies' evolutionary 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 studies must be modified to be able to consider the non human environment more than the server of cultural-societal evolution. The critical futures studies have to change its world view as well, not to consider human culture and society as independent from the non human world, and as a system that could be shaped by the actors unlimitedly. If futures studies tends to deal with futures that are co-evolutionarily possible and sustainable, keeping its present paradigms, and tends to participate in shaping concepts that regard these futures, then it will have to modify its view and in consequence also the content of the other components of its paradigms.

Regarding the *participation of individuals, communities and social actors,* futures studies, especially critical futures studies has already reacted and actively taken part in the development and spread of paradigms. Despite this it has to develop its actor/participant relations within the critical paradigm too. In relation to social actors, the hunting and integration of new and possible actors into futures studies should get a greater role and the non human future shaping factors should appear as actors in societal discourse, representing the fact that social actors have freedom to shape their future, even though this freedom is not totally without limitations. Within these limitations the role of non-human factors, like natural-geographical environment, the biosphere, the ecosystem etc. is growing. Evolutionary futures studies has identified the future shaping role of social actors, but it analyses them only in terms of evolutionary patterns and in relation to interconnection with other future shaping factors.

If we consider futures studies' level of development and its characteristics we can appoint *knowledge integration and its recreation* in relation to futures studies, 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 studies should produce new theoretical-methodological and practical knowledge.* New theoretical-methodological knowledge is based on the integration of new scientific results and its own scientific creation of knowledge. Futures studies could get its new practical knowledge by its new theoretical-methodological knowledge, when it merges scientific, empirical and tacit

knowledge values and expectations into acceptable/preferable futures. Besides this, futures studies *has to secure its continuous creation of knowledge and the interconnection of its theoretical-methodological and practical knowledge*. Moreover it has to maintain its interdisciplinarity and adapting it to its new tasks. In the practice of knowledge production, evolutionary futures studies has a disadvantage, while critical futures studies has problems in the creation of theoretical-methodological knowledge. The continuous creation of new knowledge is secured by the paradigm of critical futures studies, but the evolutionary futures paradigm does not. The connection of theoretical and practical knowledge is unresolved in both paradigms.

To differentiate the creation of theoretical and practical knowledge regarding the future is necessary because of the following issues: Not all practical future work can be raised to a scientific and methodological level, as futures studies would disappear as science. Within these circumstances testing, comparing, reflecting and self-reflecting these scientific results would not be possible. But not all theoretical-methodological research results could become practice, because the individual characteristics of practice would be eliminated in space and time. The theoretical-methodological futurists cannot participate in each practical futures studies work, because they are few, in addition to specific knowledge about producing forecasts and foresight in practice. Theoretical professionals may write handbooks, but there is no guarantee that those people are also involved in the practice. Theoretical-methodological futures studies requires a strong connection with practice, because without knowing how to produce a certain forecast, it is impossible to be self-reflective. *The development of theory and methodology and future practice do all create new knowledge, but they are different in the way in which they are produced and what their validity and competence is.*

Futures studies is able to reflect challenges; interconnected operation of reflection and self-reflection, elimination of blind spots by recombining the paradigm according to an external point of view. The common use of interdisciplinary capacities are all possibilities of development, that allow futures studies to reflection in the case when *futures studies answers the challenges with the development of a paradigm*. During the development of a paradigm, futures studies has to concentrate on the development of new theoretical-methodological and practical knowledge and their interconnection, and it should use complementary characteristic of the two alternative paradigms, and then

the development of a paradigm could be made by the recombination of paradigms brought by the contentual modification of the components of the paradigms. The question is whether the paradigms developed in this process result in integral futures studies. With the new development of paradigms futures studies could be integrated if developing new paradigms along the complementary and interconnected paths that create new knowledge eliminates the undesirable effects of the present competition of paradigms. These paths could be formed by recombining the two, theoretically complementary paradigms. *The paths that create new futures knowledge could be found in theoretical and practical futures studies.*

Theoretical futures studies creates knowledge on future theories and methodology; scientific knowledge referring to evolutionary patterns, and creates hypotheses. Practical futures studies indeed develops and improves the process of creating knowledge, in accordance with the practical work of forecasts and foresights in space and time. Both theoretical and practical futures studies create specific knowledge, so they could be effective if they operate separately but in continuous connection with the other path of creating new knowledge. *Thus integral futures studies is a process within scientific futures studies that with the recombination of paradigms creates a new section.* Indeed we can also say that integral futures studies *is a result of the differentiation within futures studies, which is the separation of several knowledge creating paths, and of integration which is the paradigmatic builder of the interconnections of the knowledge creating paths.* Integral Futures Studies is science with two or more paradigms, of which the paradigms are complementary and could be completed and reflective to new societal needs, only if they are interconnected. Integral futures studies does not stop the competition, but replaces it inside the certain paradigms. Integral futures studies could not be a science with one paradigm as it would not have anything to integrate; it could not be without a paradigm either as there are no common rules of cultivation, lastly neither could its knowledge be integrated. *Integral futures studies is not the end of the development of futures studies, but a new possible period* that widens and modernises the capacity of futures studies to solve tasks by eliminating its blind spots. Integral futures studies widens the paradigmatic tool, and maybe it will be the one that opens the way for futures studies towards a variational-selectional scientific development track.

The idea of *Slaughter* for integral futures could be connected to the integral futures studies 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. 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 studies (*Slaughter*, 2008). I think that this kind of integration of knowledge does not belong to the interest of futures studies as a science, and the competition of paradigms is not yet closed, and still many requirements to be met.

Some statements of Voros on integral futures studies are very important for my study. According to Voros futures studies could be integrated only when its paradigm is a meta-paradigm, which stays afloat freely above other ones *(Voros, 2008). From this paradigm futurists could select arbitrarily according to situations, in relation to what they would like to study, the goals and the contexts.* A paradigm like this does not exist yet, thus *Voros* advices to grasp the thesaurus of social sciences' paradigms. This idea is considerable: *if futures studies become integrating or integrated, then we will not leave paradigms behind*. As the specific disciplines' paradigms represent different approaches and methodologies, paradigms could be integrated only at the level of meta-paradigms. But *Voros* does not undertake to do that, so he suggests an approximate solution: futures studies as social sciences without its own meta-paradigm could use all meta-paradigms as its own meta-paradigm, and can freely grasp them. According to him *then in fact integral futures studies would admit all point of views, trends and paradigms.* This operation method is not typical of present futures studies, because there is the competition of paradigms, and futurists need some standard requirements for futures studies. *Voros'* suggestion is reasonable and acceptable regarding the fact that *the unproductive competition of the paradigms should be solved on neutral ground.* With this the professional-scientific experience, the accumulated knowledge base of futures studies that have been collected for many years would have been lost; moreover he suggests resumption. That is why I think that if I finish the meta-analysis of the development of futures studies and its paradigms, I can contribute to clarify the paradigm of integral futures studies, and based on that, the interpretation of integral futures studies.

The paradigms of integral futures studies

Based on the train of thoughts that I have just described, I can say that integral futures studies consist of two futures studies that are independent but develop in strong interconnection. *One is theoretical; the other is practical. Both fields integrate and create scientific knowledge.* The theoretical futures studies of integral futures studies develops future theory, methodology and paradigm to explore the co-evolutionary patterns and their change, and concentrates on the changing role of societal actors. The practical futures studies of integral futures studies develop and apply integral forecasting and foresight methods during its practical work, and its scientific activity aims to methodologically solve the integration of knowledge of different nature.

The two fields have a division of labour by cultivating scientific futures studies. The theoretical futures studies develop the science of futures studies, which makes complex study of the development of practical futures studies, and with or without its help produces forecasts and foresights. Practical futures studies use, criticise and develop the results of theoretical futures studies during its practical scientific activity, adapting to certain space-time and exercises.

This division of labour also assumes that there are futurists who are not cultivating scientific futures studies, and whose *profession would be the making of integral forecasts and foresight*. This assumption is not unreal as dealing with the future is quite prevalent at different institutions. Hence the advisor and supporter of future activity has become an individual undertaking, and the foresight manager is an individual job and position in most countries of the world. If science of futures studies evolve towards integral futures studies, then integral futures studies will be able to have a renewal effect on the widely run forecasting and foresight activities in the practice, and that will also be used for developing its theoretical and methodological questions. One of the motivations is the regular education of professional futurists. Cultivating integral futures studies can assure the prepared educators and create a modern knowledge basis

and system of professional requirements, which is the theoretical base for the continuation of established and practice-oriented education of futurists.

The two independent fields must have two different paradigms. Theoretical futures studies reflect the new challenges as it adjusts its own world and future view to the forming of a co-evolutionary world view, indeed it also willing to participate in the global-societal program of forming sustainability, with the forming of its own knowledge that refers to co-evolutionary and sustainable future concepts. Towards this it needs to form the future concept, the approach, the methodology and the paradigm of the science of futures studies, 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[7].

Practical futures studies reflect the challenges too, as it would like to participate in forming the acceptable/preferable future of sustainability. This task will be completed if it develops different integral forecasting/foresight 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*[8].

Modifying and recombining the content of the components of evolutionary and critical paradigms to suit the aspects of co-evolution, participation, knowledge integration and the continuous creation of new knowledge could form two new paradigms of integral futures studies.

Following the co-evolutionary world concept requires change in the world and future concept of futures studies. *The approach in which the future approach at present and the openness of the future both remain unchanged in the paradigm of integral futures studies as well*. However their content is restructured as the importance of possible, acceptable/preferable 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.

Theoretical futures studies develops the definition, the scientific basis and the exploring methodology of the futures, that are interpreted by the co-evolutionary paradigm. The possible and also acceptable/preferable human concepts should be formed in the practice with the participatory involvement of future shaping actors, in different fields, time and place during integral forecasting/foresight activities. The practical futures studies develop its methodology and practice for different integral forecasting/foresight activities based on the participatory paradigm.

Futurists and their community are participant observants in both new 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 studies do not change, thus we can say that integral futures studies support the formation and improvement of society's future shaping thoughts.

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 studies 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 studies 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 studies and in the production of certain forecasts/foresights.*

As theoretical futures studies is a *continuous activity of integrating knowledge and creating new knowledge* first, it has to maintain its paradigm – the interpretation of possible futures, the co-evolutionary patterns, the co-evolutionary methodologies – and has to construct new variants of paradigms. Secondly, it also has to develop its theory on integral futures studies, in order to do that it should study the history of futures studies and the different practices for the production of forecasts/foresight. Thirdly, it should be in continuous connection and interconnection with practical futures studies 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.

Table 7. **The outline of the co-evolutionary paradigm matrix of theoretical futures studies**

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 studies	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 studies and the different practice of producing forecasts/foresight: self-reflection of futures studies as a science
The objective and task of integral futures studies	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 studies as a science: creation of integral futures knowledge, construction of a new variant of paradigms, maintenance and development of futures studies' knowledge basis, interactive connection with practical futures studies

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 interconnections and interactions within the system
The 'worthwhileness' and utility of results of integral futures studies	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

On the contrary the subject of practical futures studies 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 studies 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 studies 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 studies 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 studies 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 studies 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, like the realisation as part of a planning process or in using them to maintain the co-evolutionary pattern in theoretical futures studies.

Practical futures studies 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 studies has to be connected to theoretical futures studies as with newly developed future ideas, as well as its methodology.

Table 8. **The outline of the participatory paradigm matrix of practical futures studies**

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 studies	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 studies	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 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 studies	Partial falsification, transparency, comprehensibility, acceptability, used in other human actions, possibility to improve, utilisable and explorable for theoretical futures studies

Both paradigms will have blind spots. The following could be expected with regard to the construction of paradigms based on complex meta-analysis:

- within the co-evolutionary paradigm we cannot decide and examine whether a compound system that works and changes in different environments, change and develop due to the interaction between the several systems or by reason of external or internal determining factors

- within the participatory paradigm there is no such rule, how to integrate knowledge of different nature, to be more precise there are rules only for process organisation. As a consequence the context of scientific and reliable knowledge, the intuition and the fears and hopes of the practical integral forecasts and foresights could not be fixed in advance. The different future ideas resulted in practical futures studies are not commensurable in relation to the different nature of their knowledge.

The development and evolution of the interconnected theoretical and practical paradigms could be realised by:

- new knowledge created by theoretical futures studies becoming part of the tangible /methodological knowledge, that take part in certain practical futures studies work,

- certain future constructions of practical futures studies become a source of knowledge and research topic with the cultivation of theoretical futures studies,

- both paradigms' creation of knowledge connected to their own research topic and goals refresh its interdisciplinarity with common research and/or understanding,

- regular education of professional futurists, that create a continuous, direct and living connection between the two ways of scientific cultivation of futures studies.

The blind spots of the new paradigms draw the attention to the fact that both theoretical, both practical futures studies will have to search for new variants of paradigms, to find solutions that suit their future tasks. For this the paradigmatic tool of integral futures studies that is enriched with two new paradigms could be used.

Summary and conclusions

According to the analysis of the development track of futures fields and its paradigms, and its capacity to react to the new needs of integral futures studies, consists of the joint of theoretical and practical futures studies that have new and independent paradigms, that are interconnected in many aspects and that are co-operating. Integral futures studies 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 studies 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 science of futures studies can step the evolutionary form of the variational-selectional model of scientific evolution with a new paradigm shift and with the development/evolution of the interconnected paradigms of theory and practice.* Futures fields' paradigmatic tools and its capacity to solve problems can be further widened with the development of integral futures studies. Its operationalisation is summed up in Table 9.

Table 9. **The widening of the paradigmatic tool of futures studies**

Integral Futures

Reflection: to the co-evolutionary world concept, to the societal participation, to the continuous integration of knowledge and to the needs of creating new knowledge as they are the different manifestations of interactivity
Futures in the present: the ideas about the future of cultural-societal system regarding the intershaping effects of the human system and its environmental system – the future is open

Theoretical integral futures studies	**Practical integral futures studies**

Theoretical integral futures studies	**Practical integral futures studies**
Based on the co-evolutionary paradigm	*Based on the participatory paradigm*
Relativity of independence and interaction between them	
Co-evolution between the human and non human evolutionary system that induce the future	Participation in shaping integral forecasts and foresights
Exploring co-evolutionary patterns; the real and possible/imaginary system of past-present-future and the examination and study of the complex dynamism of their interactivity; development of integral future theories	Exploring and improving the future ideas of human factors/human actors and the circumstances that shape them; enforce the widespread of the participatory principle
Complex dynamism with holistic and co-evolutionary modelling; development of interactive models and model systems	Representing human actors and also the non-humans by humans in the integral forecasts and foresights and their participation in the expanded societal/post-structural discourse
Possible futures in co-evolution, and placing cultural-societal futures within them; forming the scientific basis for practical futures studies activities	Acceptable/preferable futures constructed by participation; forming the scientific basis for integral forecasting and foresight process
Continuous activities	
Maintenance and development of integral future knowledge, possible futures and paradigms	*Maintenance and development of acceptable/preferable futures and the integral forecasting and foresight process*
Observing the interaction systems between human and non-human, and exploring and interpreting the changes in the possible futures' co-evolutionary patterns the exploration of spreading effects induced by the realisation of future ideas, development of future theories, of models and of methods, the study of practical futures activity, development of paradigm	Following up the realisation process and the environment of the acceptable/preferable futures, feedback to induce a new integral forecast/foresight process and to improve the process using new theoretical and methodological knowledge
The continuous realisation of knowledge integration and the induction of creating new knowledge	
Connection of hypothetical and non-hypothetical knowledge regarding the different co-evolutionary systems, and creation of new knowledge of future theory and methodology, contributing to develop the knowledge base of integral futures studies	Creation of knowledge regarding the interconnection and the development of different actors' different knowledge of the future, and their beliefs, hopes and fears, contribution to the development of the knowledge base of integral futures studies
Interdisciplinary lines	
Matching the approach and topics of theoretical and practical integral futures studies	

Theoretical integral futures studies	**Practical integral futures studies**
Sources of blind spots	
Changes by non mutual interactions cannot be examined	The criteria of connecting knowledge, beliefs, hopes and fears are not defined
The connection of theoretical and practical integral futures studies	
Paradigmatic assignment of continuous interactions; setting up regular education of professional futurists	

Notes

1 Here I have to mention some writers and their work that have been very important in prognostics and still have a great impact. Kondratieff's method for analysing macro-statistic data, his theory and methodology for analysing long waves was published in 1922 (*Kondratieff,* 1993). Morgenstern wrote a book about economic forecasting in 1928 (*Morgenstern,* 1828). E. Jantsh published a handbook on the methodology of technological forecast in 1967, R. Ayres wrote a book on using technological forecast in long term planning in 1969 (*Jantch*, 1967, *Ayres,* 1969). Box and Jenkins published a book for using statistical time series analysis in forecasting in 1970 (*Box, Jenkins,* 1970).

2 Géza Kovács and his research group and followers were in the vanguard of domestication of futurology and futures research in Hungary (*Kovács,* 1970, *Besenyei, Gidai, Nováky*, 1977).

3 Developing the evolutionary futures studies Laszlo and his research fellows (*Laszlo ed*., 1991 and *Laszlo, Masulli, Artigiani, Csányi eds.*, 1993), Dator (*Dator,* 1998), Malaska (*Malaska*, 1995) and Mannermaa (*Mannermaa,* 1991) were on top.

4 In developing critical futures Masini (*Masini*, 1993), Slaughter (*Slaughter*, 1995), Inayatullah (*Inayatullah*, 1998) and Loveridge (*Loveridge,* 1998) had a definitive role.

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 (*Country Specific Practical Guides to Regional Foresight*, 2002, *Keenan, Miles, Koi-Ova*, 2003). The idea and methodology of autonomous foresight 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.

6 Organisational foresight is connected to strategic management and knowledge management too through with the researches and with solving practical problems (*Loveridge*, 1998, *Tsoukas*, 2004, *Gáspár*, 2008 and *Daheim, Uez*, 2006).

7 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. These denominations mark that this phenomenon, system and the approach deriving from that has been revealed in different researches and in other scientific disciplines as well. The co-evolutionary paradigm has *become a meta-paradigm* showing its popularity in other scientific disciplines (*Csányi*, 1997, *Pléh*, 2007, *Leydesdorff*, 2001).

8 The participatory paradigm is such a paradigm of the social sciences that systematises the general rules of the process of societal knowledge creation for practice. It supposes that knowledge is always connected to humans and individuals, and the augmentation of knowledge is valuable in itself, because it serves the completion of men. Because knowledge is always personal, all need to take part in the social creation of knowledge, as equal participants. The creation of knowledge is a process that is embedded in the social and cultural environment. New knowledge will be created if knowledge of the participant grows or transforms, and if it could be improved; and its assumption is equal participation, and a knowledge creating process that is legal, transparent for everyone and reflective (*Heron, Reason*, 1997).

References

1 Ayres, R., 1969. Technological Forecasting and Long-Range Planning. McGraw – Hill, Inc. New York.

2 Baiocchi, G., 2003. Emergent Public Spheres: Talking Politics in Participatory Governance.American Sociological Review 68, 52-74.

3 Bandura, A., 1986. Social Foundations of Thought and Action. A Social Cognitive Theory. Englewood Cliffs, Prentice Hall, New York.

4 Barber, B., 1984. Strong Democracy. University of California, Berkeley.

5 Bezold, C., 2006. Anticipatory Democracy Revised. In: Democracy and Futures, eds. Mannermaa, M., Dator, J., Tiihonen, P. Committee for Futures, Parliament of Finland, 38-51. pp.

6 Besenyei L., Gidai E., Nováky E., 1977. Jövőkutatás, előrejelzés a gyakorlatban. Közgazdasági és Jogi Könyvkiadó, Budapest.

7 Bestushev-Lada, I., 1970. Окңо в будущее. Наука, Москва.

8 Box, G., Jenkins, G., 1970. Time Series Analysis: Forecasting and Control. Holden-Day, San Francisco.

9 Chesbrough, H., 2003. Open Innovation: The New Imperative for Creating and Profiting from Technology. Harward Business School Press, USA.

10 Country Specific Practical Guides to Regional Foresight. CORDIS, FOR-LEARN project. Available at: www.cordis.lu/forresight/cgrf.htm (25.02.2006).

11 Csányi, V., 1997. Evolúció vagy Teremtés: Mítoszok vitája? Magyar Tudomány 11, 1281-1293.

12 Csányi, V., 1999. Az emberi természet. Vince Kiadó Kft. Budapest.

13 Daheim, C., Uez, G., 2006. Corporate Foresight in Europe: Ready for the Next Step? Second International Seville Seminar on Future-Oriented Technology Analysis, Seville, September 2006. Available at: http://forea.jrc/fta/intro.html (01.12.2007).

14 Dator, J., 1998. The Future Lies Behind! Thirty Years of Teaching Futures Studies. American Behavioral Scientist 42, 3, 298-319.

15 Eder, P. F., 1997. The Emerging Interactive Society. The Futurist 43, 3, 43-47.

16 Europe and the Global Information Society. Recommendation to the European Council. Brussels. 1994. Available at: www.ispo.cec.be:81/infosoc/backg/bangeman.html (15.03.2007).

17 Funtowitz, S., Ravetz, J., 1993. Science for the Post-Normal Age. Futures 25, 739-755.

18 Gáspár, J., 2008. A jövő alakítása a vállalati stratégiaalkotási gyakorlatban. PhD disszertáció tervezet. BCE, Gazdálkodástudományi Doktori Iskola, Budapesti Corvinus Egyetem.

19 Gáspár, T., 2009. A jövővel foglalkozás szintjei és síkjai. Jövőelméletek 17. Budapesti Corvinus Egyetem, Jövőkutatás Tanszék, Budapest (under press).

20 Global Environmental Outlook. United Nations Environment Programme 2007. Available at: www.unep.org/GEO/geo4/ (15.06.2008).

21 Heinelt, H., Getimis, P., Kafkalas, G., Smith, R., Swyngedouw, E. eds., 2002. Participatory Governance in Multi-Level Context. Opladen, Leske und Budrich.

22 Heron, J., Reason, P., 1997. A Participatory Inquiry Paradigm. Qualitative Inquiry 3, 3, 274-294.

23 Hideg, É., 1992. Irányzatok a jövőkutatásban. Magyar Tudomány XXXVII, 7, 797-810.

24 Hideg, É., 1999. A jövő társadalmi modelljei. In: Gervai, P., Gáspár, T., Hideg É., Horváth, E., Nováky, E. ed., Bevezetés az információs társadalomba. Képzőművészeti Kiadó és Nyomda, 7-31.

25 Hideg, É., 2002. Implications of Two New Paradigms for Futures Studies. Futures 34, 283-29.

26 Hideg, É., 2007. Theory and Practice in the Field of Foresight. Foresight 9, 6, 36-46.

27 Hideg, É., 2009. Interdiszciplinaritás a jövőkutatásban. In: 'A jövőkutatás helye a 21. században. A jövőkutatás fejlődése és tudományterületi kapcsolatai' VII. Magyar (Jubileumi) Jövőkutatási Konferencia. Budapest, 2008. november 13-14. Proceedings, Tóthné Szita, K., Gubik, A., eds. Palatia Kiadó és Nyomda, Győr, 64-68.

28 Hideg É., Kiss, E., Nováky, E., Hideg, É. ed., 1998. Posztmodern és evolúció a jövőkutatásban. Budapesti Közgazdaságtudományi Egyetem, Jövőkutatás Tanszék, Budapest.

29 Hideg, É., Nováky, E., 1998. Szakképzés és jövő. AULA Kiadó, Budapest.

30 Hippel, E., 2005. Democratizing Innovation. The MIT Press, London.

31 Inayatullah, S., 1998. Causal Layered Analysis: Poststructuralism As Method. Futures 30, 6, 815-829.

32 Jackson, T., 2009. Prosperity without Growth? – The Transition to Sustainable Economy. Suistanable Development Commission. Available at: http://www.sd-commission.org.uk/publications/downloads/prosperity_without_growth_report.pdf (10.09.2009).

33 Jantch, E., 1967. Technological Forecasting in Perspective. OECD, Paris.

33 Kahn, H ., Wiener, A., 1967. The Year 2000. MacMillan Ltd., London.

35 Keenan, M., 2006. Running and Managing a Foresight Exercise. BIC Group Holding. Available at: https://www.unido.org/foresight/rwp/dokums_pres/keenan_running_and_managing_foresight_46.ppt (18.06.2008).

36 Keenan, M., Miles, I., Koi-Ova, J., 2003. Handbook of Knowledge Society Foresight. European Foundation, Dublin, http://www.eurofound.eu.int/transversal/foresight.htm (10.05.2006).

37 Kiss, E., 2005. Magyarország és a globalizáció. Kodolányi János Főiskola, Székesfehérvár.

38 Kondratieff, N.D., 1993. Болшие циклы конюнктуры. In: Kondratieff, N.D., Ізбранные сочинения. Экономика, Москва, 6-84.

39 Kovács, G., 1970. A nagy távlatok és a tervezés. Közgazdasági és Jogi Könyvkiadó, Budapest.

40 Kuhn, T., 1962. The Structure of Scientific Revolutions. The University of Chicago.

41 Laszlo, E., ed., 1991. The New Evolutionary Paradigm. Gordon and Breach, New York.

42 Laszlo, E., Masulli, I., Artigiani, R., Csányi, V., eds., 1993. The Evolution of Cognitive Maps. Gordon and Breach, New York.

43 Leydesdorff, L., 2001. A Social Theory of Communication, USA, Universal Publishers.

44 Loveridge, D., 1998. Foresight and Its Emergence. Ideas in Progress. Paper Number 7. University of Manchester, PREST. Available at: http://www.personal.mbs.ac.uk/dloveridge/documents/emergepdf_wp7.PDF (15.01.2007).

45 Malaska, P., 1991. Economic and Social Evolution: The Transformational Dynamics Approach. In. The New Evolutionary Paradigm, Laszlo, E., ed.Gordon and Breach, New York, 131-179.

46 Malaska, P., 1995. The futures Field of Research. Futures Research Quarterly 11. 1. 79-90.

47 Mannermaa, M., 1991. In Search of an Evolutionary Paradigm for Futures Research. Futures 23, 4, 349-372.

48 Masini, E.B., 1993. Why Futures Studies? London, Grey Seal Books, England.

49 Memorandum on Lifelong Learning. European Commission (2000): Available at: www.bologna-berlin2003.de/pdf/MemorandumEng.pdf (15.01.2002).

50 Meadows, D., Meadows, D., Randers, J., Behrens, W., 1972. The Limits to Growth. Universe Books, New York.

51 Miles, J., Keenan, M., eds., 2002. Country Specific Practical Guides to Regional Foresight. CORDIS, FOR-LEARN project, Available at: http://www.cordis.u/foresight/cgrf.htm (10.02.2005).

52 Morgenstern, O., 1928. Wirtschaftprognose: eine Undersuchung ihrer Voraussetzungen ind Möglichkeiten. Julius Springer, Vienna.

53 Our Common Future. Report of WCED, 1987. Oxford University Press, Oxford.

54 Pateman, C., 1970. Participation and Democratic Theory. Cambridge, Cambridge University Press.

55 Pléh, Cs., 2007. A tudomány jövője: a kognitív tudomány példája a tudomány tagológásáról és diverzifikálásáról. Magyar Tudomány 168, 9, 1118-1129.

56 Popper, K., 1972. Objective Knowledge: An Evolutionary Approach. Clarendon Press, Oxford.

57 Rosnay, J., 1979. The Macroscope: A New World Scientific System Fitzhenry & Whiteside Limited, Toronto. Available at: http://pespmc1.vub.ac.be/macroscope/ (11.02.2006).

58 Slaughter, R., 1995. The Foresight Principle. Adamantine Press Limited. London.

59 Slaughter, R., 2004. Futures Beyond Dystopia: Creating Social Foresight, Routledge, London.

60 Slaughter, R., 2008. What Difference Does 'Integral' Make? Futures 40, 120-137.

61 The IPCC Assessment Reports, 2007. Available at: www.ipcc.ch (03.08.2008).

62 Tsoukas, H., 2004. Coping with the Future: Developing Organizational Foresightfulness. Futures 36, 137-144.

63 Voros, J., 2008. Integral Futures: An Approach to Futures Inquiry. Futures 40, 190-201.