Providing the Balance of Technological and Social Changes in Real-Time Regime Plus the Economic Growth*

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In this article, the author argues and proves that the causes of the crisis in the world can only be understood through the prism of the world-view approach. It is also stated that the problems pertaining to socio-economic and technological progress, acceleration of economic growth and formation of a new model cannot be resolved within the framework of the existing development paradigm. The author reasonably and objectively proves that the world undergoes the most difficult stage of transition from one to another development paradigm, and substantiates the possibility of proceeding to a new development paradigm. In order to realize such paradigm-oriented transition and to reach the objectively set development goal speedily, the author sets forth a proposal to develop and realize the mega-project for building a new life model and the mechanisms of its realization – that is, coordination, at each local level, between the state, societal and business interests with interests of any given particular individual. Balance of technological and social changes is a basis for transition to the new model of the economic growth.

Keywords: *systemic crisis, worldview, new cognition methodology, new development paradigm, megaproject, economic growth.*

Introduction

There is a long list of reasons and factors being seen as responsible for declining economic growth, no matter which country or region is analysed (see, *e.g.,* Korotayev, Tsirel 2010; Grinin, Korotayev 2010a, 2010b, 2011, 2014a, 2014b, 2014c, 2015; Korotayev, Zinkina, Bogevolnov 2011; Grinin, Korotayev, Malkov 2010; Grinin, Tsirel, Korotayev 2015). But are these listed or yet-to-be-found reasons and factors the root causes that really hold back the economies of most countries in the world? Or are they consequences of some deep-lying processes, reflecting the effects of objective patterns of development that are still concealed from researchers – despite the fact that famous economists wrote about the increasing uncertainty in economy and politics? (Friedman 1956; Krugman 1979; Bernanke 1984). Nowadays, many people see the number one reason in the ineffective modelling of further economic growth as there are no visible ways to reverse this trend, and no solutions have come up for any of the problems. Ben Bernanke, the former Chairman of the US Federal Reserve System (FRS), stated that a victorious war or vigorous preparation for such a war could be the best ways to lead the American economy out of the growing crisis

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(Polunin 2015). The Russian academic literature features debates on the need for a shift to a different model of economic growth in Russia (Kudrin and Gurvich 2014).

Therefore, we keep insisting on the following. The existing model of economic development cannot be changed before objective reasons for the origin and roll-out of the global systemic crisis have been convincingly identified. Understanding these reasons, the society will be able to arrive at a model that will ensure a radical positive breakthrough in all aspects of human life and lay the groundwork for transition to crisis-free development or, at least, proactive crisis management.

There are a lot of scientists in the world who have addressed these highly challenging issues in their research work. Consider, for example, the well-known reports to the Club of Rome. However, not a single country around the globe can boast of a long-term strategic crisis management plan or vision of the future.

Thus, we have to note that today, more than ever, there is a pressing need for a new attitude to the crisis that we observe both in Russia and globally. The search for a new evolutionary model and a new concept of human development becomes inevitable.

Regularities of the Human-System Development

More than thirty years ago, in an attempt to throw some light on the inconsistencies of the Soviet Union's economy, we concluded that the then existing economic theories and scientific knowledge in general had run out of their explanatory capabilities in the search of ways to overcome negative developments. The main reason behind it is that so far scientific knowledge, including economic knowledge, has been gained through acquisition and processing of empirical evidence of the past and subjective judgement based on data interpretation. Thus, if we take a look at references to present-day textbooks, for example, macroeconomics course books, then we will find that they are totally based on the content that dates back to the second or third quarters of last century (*e.g.*, Romer 2015). The author of another book on the theory of economic growth writes, 'In the theory of growth, just as in macroeconomics and mainstream economic theory, research is closely linked to, conclusions verified and confirmed through empirical developments, or it is questioned, disproved and often initiated by empirical studies'. In other words, all these reflections are very much based in a constant forward projection of given data, interpreted not only with unchanged means bit also without changing the methodology.

> Empirics of economic growth have expanded the range of countries and periods under study and revealed material gaps between the basics of neoclassical economics and reality. There is a fair amount of such factors and determinants that impact on long-term growth, and their list is neither definitive nor exhaustive. Among other factors and determinants, determinants defined by subjective behaviour of people, society and government are of major significance. Considering the objectives defined by new empirics, the theory of economic growth is focused on the search for models that can help to explain the impact of subjective (behavioural and institutional) parameters on long-term growth... However, the progression of empirical studies has given rise to certain questions being addressed to the fundamental theory with no answers found. Furthermore, persistent inconsistency with previous stylized facts has been revealed and required clarification, and additional determinants of growth have emerged beyond the core theory. Ultimately, the key driver of sustainable growth in the neoclassical

> model, *i. e.* technological progress seen as a 'black box' of a kind, requires increasingly more explanation (Sharaev 2006: 23–24).

This is why it has become quite obvious that in order to resolve the existing problems and identify the source of inconsistencies in systemic development, it is necessary, in terms of political economy, to find the only possible form of production relations, or human connected with production, distribution, exchange and consumption of social benefits, and with thereto relevant and new adequate productive forces. Since then, we have been looking for a way of theoretical thinking (in terms of political economy) and methodological tools that would help to see the objective (and free from empirical lay-ups) picture of the human-society development. This, in turn, would enable us to identify objective reasons behind the origin of crises and to suggest a possible model of human relations that might be adequate to technological advancements that break into the life of the human society at an incredible speed. This is achieved through the application of the worldview approach.

The worldview approach is based upon:

- The identification of the goal of development of humankind on the Earth, which is the human being with a multitude of needs and the satisfaction of her or his highest-level human need, which is evolving into a spiritually, intellectually and physically perfect human being with a high level of consciousness;
- The identification of the need for applying a holistic, systemic and interdisciplinary approach to all aspects of the human society development;
- The identification of a single measure for all and any processes and phenomena, which is the time;
- The identification of a single criteria to assess the development of humankind, *i. e.* the time between the need to achieve the common goal of the development and the reality where the human society finds itself at every moment, in any form of presentation, and each particular person in relation to this goal. Within this perspective, if the time between arising of a particular person's need and the fulfilment of this need tends to shrink, the humankind demonstrates correct and effective progression toward the goal.

Thus, our search has resulted in a new methodology of cognition, helping us to identify some regular patterns of the development of human society.

Since ancient times, the goal of development of human society and humanity has been a focus of research for experts from various disciplines of science and spiritual knowledge. For example, back in 1784, Immanuel Kant, a German philosopher and the founding father of classical German Philosophy at the turning point of the Age of Enlightenment and Romanticism, treated in his article titled 'Idea for a Universal History from a Cosmopolitan Point of View' world history as a goal-oriented process. He was looking for a way to subject history to a rule of law, and he believed that this law of history must by all means be the law of development. Immanuel Kant saw the solution of this problem in connecting history to the goal it had been originally committed to, which could make history regular in nature. Subjecting history to law means making it move towards a goal. In other words, he suggested understanding history in a teleological way. He suggested making an attempt to discover, in the meaningless course of human routine, the purpose of nature which could potentially underlie the history of human beings, living without a plan of their own. According to Kant, the ultimate purpose of the world's existence is to fully develop the rational inborn abilities of the human being (Kant 1963–1966: 8).

The authors of the reports to the Club of Rome have also endeavoured to formulate the goal of the global society's sustainable development and, based on that, offer new ideas for reshaping the international order (RIO) and find a new ideal form of social organization of people (Tinbergen 1976). A special attention is given to this issue in the Fifth Report to the Club of Rome titled 'Goals for Mankind'. In this report, global problems are analysed in terms of a system of goals and values, which suggests a revolutionary transition from quantitative to qualitative analysis. In the opinion of the authors, led by Ervin Laszlo, this requires the goals of global development to be formulated and presented to the global community (Laszlo *et al.* 1977).

Governed by the challenge of formulating the goals of global development, Ervin Laszlo and his working group in the course of their study analysed the 'atlas of goals' both at the national and transnational levels, representing various regions, countries, churches, multinational corporations, the UN, and other international organizations. They interviewed numerous people from a great variety of areas of human activity, and proposed four global goals. The first and foremost is to ensure global security, *i. e.* to stop the arms race, prevent wars and conflicts, and repudiate the violence. The second important goal is to resolve the food crisis on a global scale. According to the researchers, the achievement of this goal must eliminate famine and create a world system capable of satisfying the humankind's need for food. The third goal suggests the creation of a system for global control over employment of energy resources and raw materials, which will facilitate the transition to sustainable and environmentally friendly energy consumption, control over technologies and promotion of efficient management of natural resources. And the fourth goal is the global development toward a better quality of life and social justice in terms of the distribution of both physical and spiritual wealth (Laszlo *et al.* 1977).

To achieve this goal, the authors offered several scenarios of the 'global solidarity revolution'. They hope that scientists, religious leaders and business representatives of one country could have influence one their peers from other countries, and then they, all together, could address critical issues and work out general solutions. Unfortunately, first, these calls for coordinated efforts could hardly be heard while the existing model of humankind development is at work. Second, in view of the systemic approach to the development of human society, as a result of simultaneous setting of multiple goals, none of them might fail in achievement, and such pattern is well known from history.

I also set the task to identify the initially specified goal of the human-system development. That is, the task was to find the goal that cannot serve a means to attain the higher objective within the framework of the earthly human existence. At the same time, this goal must signify the start (reverse connection) of the qualitatively new spiral of development for the entire system as well as for each of its sub-systems. Hence, if any socio-economic and political system may be analysed through the prism of the realization of the ultimate goal, then such goal is of the planetary, global nature. Moreover, if the current practice of socio-economic and political development in any country of the global community is juxtaposed with the ultimate goal, then we can identify the redundant or missing link in the mechanism of the realization of this goal, finding the least time-consuming and hence the most efficient and stable way to its attainment.

As evidenced by the studies, such goal can be represented only by the human being and attainment of the Supreme Reason. Otherwise, development would go along entirely

the opposite path, ending in a deadlock and retrogress, so that everything would have to be started anew, or even be brought to the catastrophic finale, the apocalypse.

The second component of the new methodological tool-kit, represented, as said above, by the integrity, systemic nature and cross-disciplinary approach, is based on the premise that the world is a unity, and the laws of the nature and society are the same anywhere. The world, being an integral system, can only be understood when all sciences and spiritual knowledge are unified into a single systemic, integral and cross-disciplinary or, rather, trans-disciplinary knowledge. For the sake of justice, it should be noted that scholars and scientists have learned already to borrow or combine different disciplines with the spiritual knowledge while cognizing some processes or phenomena.

And, finally, using the only possible index to measure and compare all processes and phenomena – that is the time, and the only criteria for efficiency of the human-system development – that is on the one part, the time between the need to attain the single development goal, and on the other part – the reality, in which, at any given moment, the society and each human individual find themselves in relation to such goal, would provide us with the entirely new understanding of the human-system development.

Today, the humanity is distributed over the time-lines between the origin of the need for implementation of the goal and satisfaction of such need in various points and within various time domains. The greater the distance between human communities, regions, countries and systems on this vector of time, the harder, if not impossible, is to establish a dialogue between them and to ensure peace. When civilizations, peoples, nations, large and small communities and individuals find themselves in *different linear and spherical time domains*, they have different levels of consciousness, which prevents them from ever aligning their interests and understanding. This underlies the origin and aggravation of all woes of humankind. And this makes communities migrating around the globe in search of a better life. This implies that the crisis in global development, wars, terrorism, riots, man-made and natural disasters and all other negative developments stem from deep-lying laws that are common for both nature and humankind. Moreover, as long as people live in different linear and spherical time domains, there will be a semblance that the planet is inhabited by numerous co-existing local civilizations different from one another (Bondarenko 2014a). This is why it is extremely important to set a new direction to the development of humankind so that all people on Earth are equally 'in-between'. In this case, the level of consciousness of each individual will be brought in harmony with other people's levels of consciousness, and they will be able to coordinate their interests in identifying a model for their existence. Hence we will comprehend and realize faster that we all live towards the objective goal of attaining perfection. In all other cases, as we set out in previous articles and would like to emphasize again, development may result in a totally different, opposite scenario: dead end, reverse development to start anew, or a catastrophic finale, of 'apocalypse'.

We should give due credit to those scientists who address the issue of determining the development goals and even emphasize that, 'like a living creature, a nation cannot exist without a goal and orientation. Planning does exist, but the question is: how are things planned, to who's benefit and based in which methodology?... The goals of development must refer to human qualities...' (Buzgalin 2015)

Two Paradigms of Human Society Development

The worldview approach based on the application of all provisions of the new methodological tools makes it clear that for many centuries of the human-society development there have been two major paradigms (Fig. 1):

– **Paradigm 1** implies a direct relationship between production and consumption, which is short in terms of time and space. It originated when everything was produced with manual labour that was in the possession of the humankind, and all produce was consumed soon afterwards. This is the pre-industrial type of production for one's own needs and on a made-to-order basis for a particular consumer at the level of a household (craftsmen). Therefore, the time between arising of a particular person's need and the satisfaction thereof was the shortest. But since the goal was not recognized, the manufacturing capabilities were limited, and the range of needs was narrow, undeveloped and inaccessible for most of the population, then the development was challenged by some troublesome times, food riots, epidemics, uprisings and wars, a great number of deaths, demographic and environmental disasters, urban destruction and decay, downturn in trade and crafts, etc. (see, *e.g.,* Turchin 2003; Turchin, Korotayev 2006; Turchin, Nefedov 2009; Korotayev, Khaltourina 2006; Korotayev, Malkov, Khaltourina 2006; Korotayev 2014; Korotayev *et al.* 2011; Korotayev, Malkov, Grinin 2014). The human society development towards the goal was spontaneous, either approaching it or moving away from it.

– **Paradigm 2** implies that the relationship between production and consumption is mediated. This development paradigm originated at the outset of technological developments, division of labour, emerging markets, diffusion of middlemen and the universal equivalent for exchange of deliverables, *i.e.* money. Progressive geographical expansion and development of foreign trade brought about the transformation of the first direct development paradigm into the second mediated one. Its development was accelerated by the transition to industrial technologies. The flow of production was formed. Domestic and foreign trade was evolving, too, featuring geographical expansion to a global scale. Production and trade were focused on mass markets to achieve the only goal, namely generating as much profit as possible. Demand from the abstract end-consumer is met through a spontaneous, archaic, market-based form of communication, mediated by the extension of time and space. The needs of individuals are not considered. Under these conditions, uncertainty of consumption resulted in the emergence of an increasingly growing disproportion between the time of production and the time of circulation of goods and money and, finally, caused them to grow utterly desynchronized. The time of circulation exceeds manifold the time of production. A huge gap appeared between the dynamics of physical and monetary factors of production. The development towards the goal is spontaneous with evolution followed by involution, and vice versa (see, *e.g.,* Grinin, Korotayev, and Malkov 2010). Therefore, cycles and crises, chaos and complexity, and all other negative events in human society development, being the result of this kind of development. They are, repeating themselves, but on a greater scale and with greater probability of a catastrophe in the final stage. Moreover, the increase in the time of circulation of goods and money compared to the time of their production is the underlying reason for inefficient use of all, including human, resources, or for non-recoverable losses.

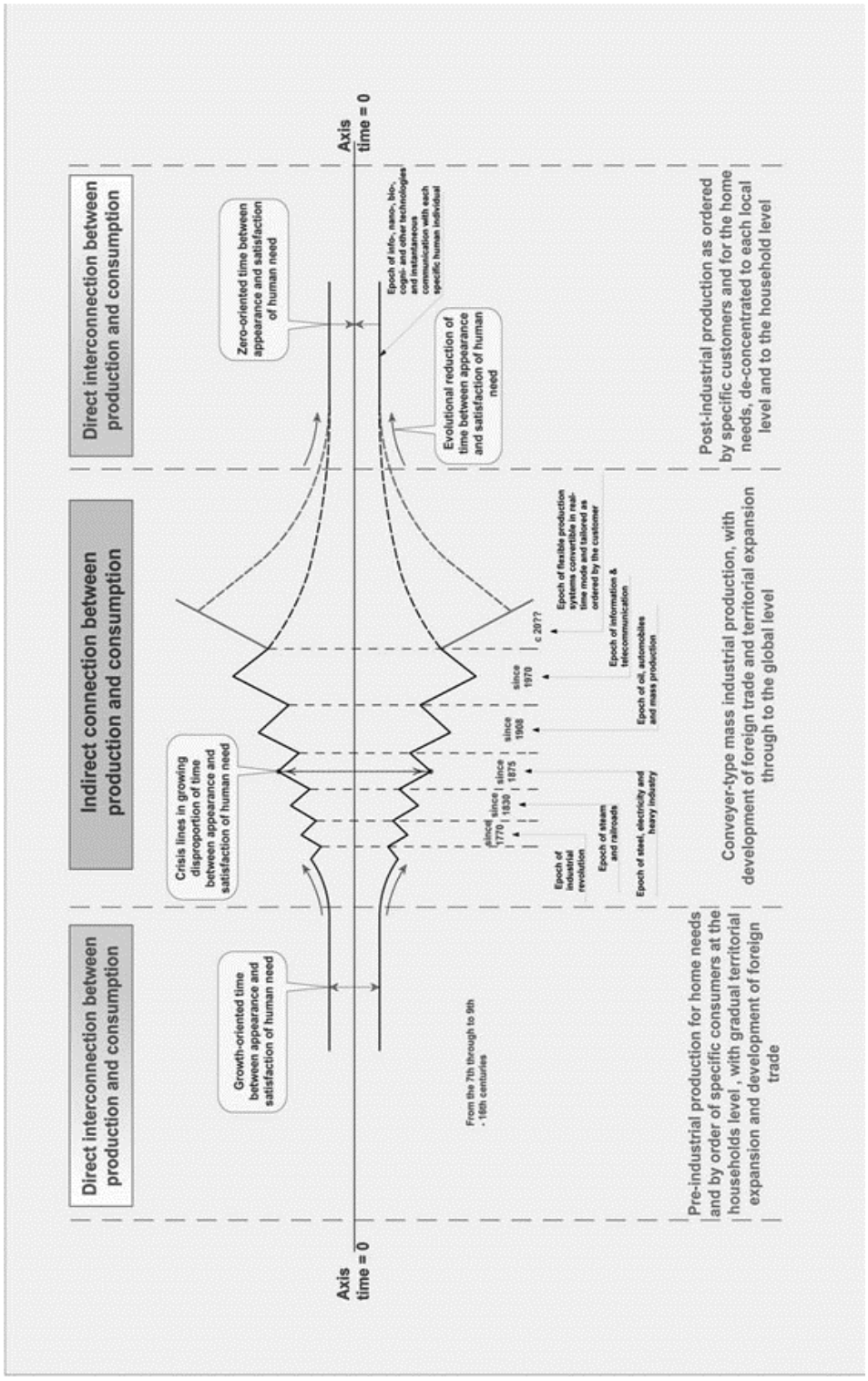

Fig. 1. Representation of the human society development

Combating the financial crisis with the tools of monetary policy only aggravates this gap in the movement of the real product and money, and makes for a greater disproportion between the time of production and the time of circulation of goods and money. This is exactly why Raghuram Rajan, President of the Reserve Bank of India, believes that the monetary policy of the advanced countries creates an environment similar to the one that triggered the Great Depression 80 years ago. Raghuram Rajan presented this outlook at the International Conference on Economics held by the London Business School in late June 2015. Rajan's words become even weightier, considering his predictions for the 2007–2008 crisis back in 2005 and his record of service. For example, before taking over leadership of India's central bank, he worked as a chief economist with the IMF and is a recognized authority in the world of economics. 'I am concerned that in order to accelerate economic development we are slowly drifting into the same problems that existed in the 1930s', Raghuram Rajan said while speaking from the platform during the conference in London. 'I think this is a universal problem. This is not just a problem of advanced or emerging markets. It is all much broader and more complex' (Manukov 2015).

When speaking about the problems driving the world to a new Great Depression, Rajan refers to the efforts made by the central banks of many developed countries to spur sluggish economies after a financial crisis through ultra-low interest rates and quantitative easing (QE). The US, Japanese and European banks have resorted to these measures in recent years. Raghuram Rajan fears that quantitative easing programs may cause the developing countries to retaliate to maintain their share in the markets, as it was the case in the 1930s. He says, '[t]he problem is that while trying to achieve growth through QE out of nothing, we do not create this growth but take it away from one another' (Manukov 2015). All the more so as the US FRS 'created' several trillions of dollars for the three QE waves. They have not demonstrated any spill-over effects yet since the velocity of money is still lagging behind the pre-crises levels (Manukov 2015). Thus, the fears expressed by Raghuram Rajan that the world may be slipping into a new Great Depression are reasonable.

In other words, the financial crisis is, in the chain pattern, increasingly transforming into the economic, political and, ultimately, systemic crises. This is the dominant model today.

The present-day systemic crisis is the peak, agony and inevitable decline of this development paradigm. That is, the model of human relations based on indirect relationship between production and consumption has worked itself out and nowadays constitutes the objective basis and source of almost all major adverse events.

Let us provide a few examples on certain phenomena. Poverty and inequality, emergence of the Bretton Woods System, creation of controlled chaos systems and systems for manipulation of human consciousness, economic slowdown, rise in prices and inflation, de-industrialisation, terrorism and corruption, some 'natural' anomalies and disasters, information and real wars with numerous victims and losses of property – all these are links of the same chain, a product of the mediated development model. The recent events in Ukraine, the EU, the USA, Russia and other countries of the world are the yield of this development paradigm. The factor of time in this paradigm of human relations plays the most negative role.

Any attempts and real efforts that have been recently made to reshape the existing model of development, *e.g.,* through renunciation of the Bretton Woods System and

the dollar as the only world currency, will only lead to greater disproportions. Thus, in its efforts to create an equivalent of western international financial structures, today China has taken part in the establishment of a BRICS international bank, a currency pool, and a bank for Asian infrastructure development, and emerges as one of the world's leaders in terms of its influence in Asia and other parts of the world (see, *e.g.,* Grinin, Tsirel, Korotayev 2015). China is already using its holdings of gold and foreign exchange to assist the weak and struggling nations, to which China is going to extend loans. For instance, China provides support to Venezuela and Argentina, and makes similar promises to Russia – meaning that China is strengthening its position as a lender of last resort for many countries, thus reshaping dramatically the global economy. Even though the Western supremacy in the world economy may or may not be terminated, under these conditions there is no guarantee that the Chinese supremacy will not occur. If the Yuan, which accounts for over 80 % of all trading operations and more than 90 % of all international transactions worth hundreds trillion dollars, becomes the world reserve currency, there is no guarantee that China, like the USA, will not begin printing national money without any limits. Once it ceases to be the world's factory supplying its goods to all destinations on the planet, China may replace them with the only commodity, *i.e.* money, and make for another Bretton Woods System or a greater gap between real products and money. The disproportions will increase whose consequences are rather obvious.

The same negative consequences will result from evolvement of the existing development model, *e.g.* consolidation of BRICS, the Eurasian Union or any other union, since the new environment with a common global market based on the consolidated space offering free movement of goods, services, capital and labour, will not allow to become new powerful centers of economic development. Why? Because it maintains and enhances the lack of balance between the time of circulation of goods and money and the time of their production. And secondly, because today all countries have different 'in-between' time positions, *i e.* at different levels of development compared to the objective development goal, and they will never be able to get their interests coordinated.

The Balance of Technological and Social Changes – the Basis for Transition to the New Model of Economic Growth

So we can see that the existing paradigm of human development represents mediated relationships between people that are not consistent with the present era of hypervelocities, digital, info-, cogno-, nano- and other technologies of the 21st century, and the employment of these technologies is not yet intended for implementation of the objective goal of the human society development.

And here is the objective reason why the interests of nation, business and communities become too different in the vast 'in-between' domain, and they do not match the interests of an individual. At the moment the world objectively finds itself in the most challenging time period, the period of transition from one development paradigm to another (Fig. 2). According to Christopher Coker, Professor of International Relations at the London School of Economics (LSE) and philosopher of war, '[n]obody wants to live in the days when the world order is breaking down. These are really dangerous times' (Coker 2015).

The highest priority is now seen in the need for driving the development toward the objective goal not by trial and error, but in a conscious manner. It turns out that we really need a new model of development. But what should it be like? When offering their version

of a new model, some scientists think, for example, 'that this model must combine strategic planning and self-organized markets, and a continuously growing private sector supported by the government. The key element of this concept is harmonization of interests' (Buzgalin 2015). To substantiate these suggestions, examples from Asian and Scandinavian experience are given.

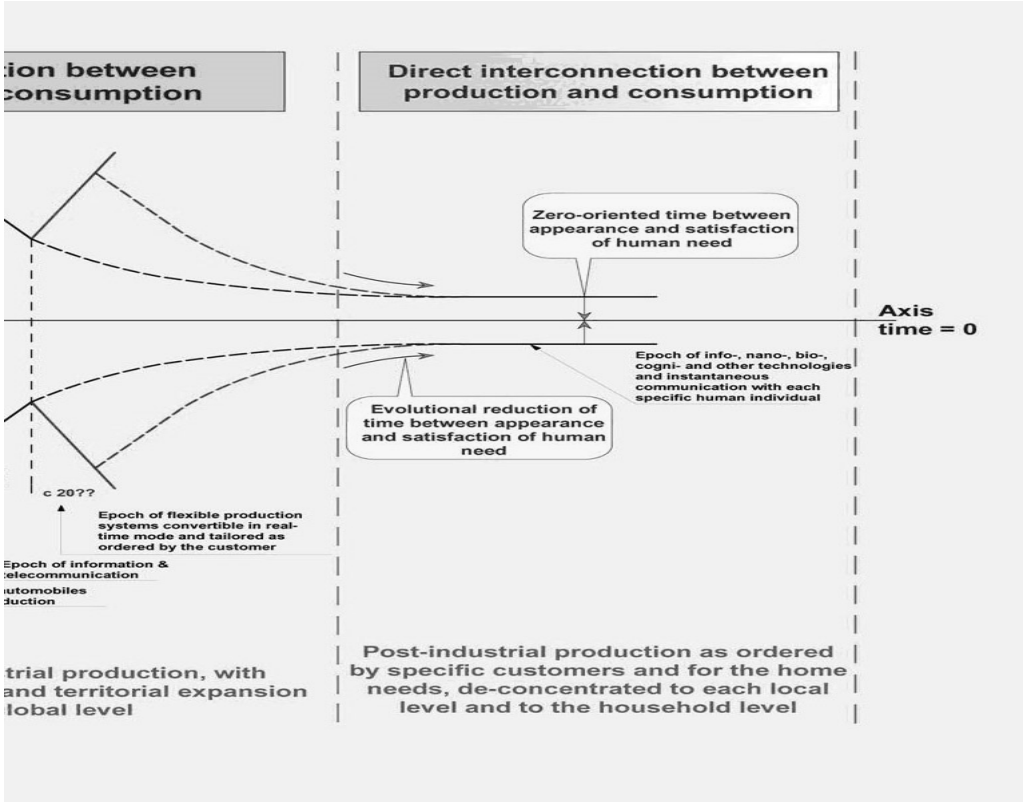

Fig. 2. Representation of transition to the new (first) development paradigm

But are the above-cited suggestions really correct? As for the Chinese experience, we should note as follows: yes, indeed, we witnessed a Chinese economic miracle called a socialist market economy. As some researchers of China suppose, this economy incorporates the systemic approach and determines the way a modern economy can and must develop. But our studies based on the worldview approach have shown (we mentioned it in our previous section) that the Chinese economy is not quite effective. Let us refer to facts. For example, in 2009–2013, USD 6.8 trillion of investment was wasted because of the Chinese government's endeavours to stimulate economic growth and hyperactivity of the construction industry. This is what research conducted by the National Development and Reform Commission and the Academy of Macroeconomic Research showed. During this period, nearly half of all investments in the Chinese economy were 'ineffective', as pointed out by the authors. Evidence of this can be found, for example, in ghost cities with empty high-rise buildings (Fig. 3), unused motorways and abandoned steelworks

(Nevelsky 2014; Grinin, Tsirel, Korotayev 2015). Similar examples of inefficient use of all resources, including human resources, can be found in every country of the world, including Russia.

Fig. 3. New ghost cities with empty high-rise buildings

Let us return to China. While demonstrating a very high level of income inequality and inevitable reorientation from foreign trade to the domestic market, the growth rates of the Chinese economy are going down dramatically. 'Persistent slowdown of the Chinese economy within the next years may lower global economic growth below the level of 2 %, which is interpreted as a recession, Ruchir Sharma, Head of Emerging Markets at Morgan Stanley Investment Management, one of the world's largest investment banks explains: "The next global recession will be made in China," he predicted in his interview to Bloomberg. According to Sharma, "over the next couple of years, China is likely to be the biggest source of vulnerability for the global economy"' (Los 2015). This is confirmed by many other facts as well. For example, 'Chinese corporate debt is estimated at USD 16.1 trillion, or 160 % of GDP, which is twice as much compared to the USA. Experts see the reason for such a big debt in Beijing's endeavours to stabilize economic growth. Wang Tao, Chief China Economist at UBS (Switzerland), whom the agency quotes, believes that the current situation may lead to "a crash landing" of the Chinese economy. He emphasizes that over the past few years Chinese officials have been trying to stimulate capital inflows into the real economy. But now corporate incomes slow down as the prices decrease, which makes debt repayment even harder' (IA lenta.ru 2015). Let us give another example. On July 27, 2015, for the second time in the past month, the Chinese stock market tumbled by 8.5 %. This marked the record-breaking fall of the Chinese indices in the past eight years… (IA Interfax 2015) These facts fully confirm our implications for the lack of effectiveness of the Chinese model (Grinin, Tsirel, and Korotayev 2015).

As for the Scandinavian economic model, many economists point out that, firstly, it suggests the largest extent of government interventions in the national economy, the highest level of GDP redistribution through the national budget, and at the same time the low-

est level of corruption, bureaucracy and abuse. Secondly, this exists because the Scandinavian system is based on truly democratic principles, when the government acts transparently and is controlled by a network of civil society institutions. As far as the Scandinavian economic model is concerned, using the worldview approach we can state the following: on the one hand, redistribution-based relations not directly related to labour input, which these countries are so proud of, ultimately suppress motivation to increase labour productivity and cause decay of personality. On the other hand, there is, for example, Iceland that was recognized in 2007 as the best country of the world to live in, but in terms of area and population this country is equal to our municipalities, although, unlike them, Iceland is financially autonomous. Moreover, with the use of information technologies Iceland, peacefully and without a revolution, shifted to direct and open democracy. That is, they managed to get individual interests of each particular person taken into account, and captured this decision in the new Constitution. The first line of the fundamental law says, 'We, the people who inhabit Iceland, wish to create a just society where every person has equal opportunity'. This is the preamble of the Constitution (IA RSP 2013).

Therefore, we can conclude that the existing model of development represents mediated relations between people, which, on the one part, are not consistent with the present era of hypervelocities, digital, info-, cogno-, nano- and other technologies as we have said before, and, on the other hand, it is rather ineffective and tends to exhaust all types of resources. All this multiplies as long as the development towards the objective goal occurs by trial and error, unconsciously, or as the model is denied. Or it occurs in a conscious way, but to the benefit of a limited number of people and their individual goals. This is why transition to another path of development is of the highest priority. But this path must make for development towards the objective goal in a conscious way, through evolutionary, irreversible and continuous minimization of the 'in-between' time, and full achievement of the goal.

The worldview approach not only enables us to objectively see the virtual inevitability of transition back to direct relationships that are typical of the first development paradigm, but also the way to shape another model of human relations and arrangement of life provided that the objective development goal is met. It only becomes possible with the emergence of digital and other technologies of the 21st century, through which production aims to meet the needs of each particular person again, and no excess produce is left, and with digital equality in terms of access to wealth in its full diversity. Only digital equality between particular people, equal access to wealth based on ordering, as well as coordination of people's interests at each local level through self-management, will allow eliminating all systemic shortfalls in social and economic development of each country. This condition, being the only one possible, will ensure security of the person, his/her neighbourhood, region, country and the world as a whole.

This is the only way to solve the complex tasks of coordinating the joint activity of all economic agents and optimising their relationships in a fundamentally new social environment. Thus, transition to the direct relationship between production and consumption makes it possible to exclude the root cause of the systemic crisis and shift to an evolutionary path towards the development goal.

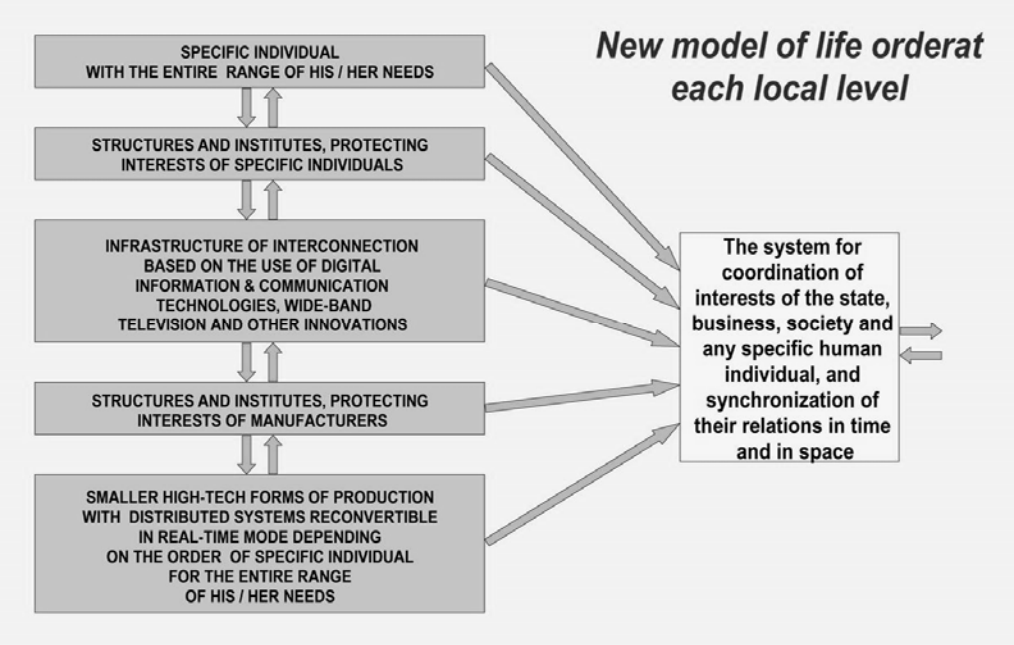

Fig. 4. Representation of a new model of living arrangement

Here is a diagram of a new model of living arrangement (Fig. 4). This is a new model of relations, and it must develop at each local level simultaneously. Information technologies adequate to these relations will allow creating a mechanism for coordination of the interests of the government (self-governing authorities), society and business with the interests of individuals towards the sole goal of creating an environment where each individual would be able to attain perfection. It is not without reason that Ervin Laszlo emphasizes in one of his articles that 'deliberate movement towards a well-organized system of cooperative communities that are focused on the common goals of maintaining the system of life on the planet is vital necessity' (Laszlo 2012). More details on this model of living arrangement can be found in other works of the author of this article (Bondarenko 2014b, 2015a, 2015b).

Using the existing and future digital additive technologies, any physical thing could be produced almost instantly. Wide availability of digital technologies in industry is already challenging the traditional business models specific to the mediated model of development, since digital production rests on personalisation, that is, production for a 'single-person market'.

These examples are fully indicative of the fact that the paradigm of human relations based on a mediated relationship between production and consumption has run dry with regard to flow, or mass, non-targeted production. This model is very costly and rather inefficient, it has caused most of those negative and (in some cases) catastrophic consequences that we are witnessing today.

That is, we already find evidence of the laws of the human society development identified theoretically through the worldview approach in life.

At the same time, there is another side of the digital revolution in industry and other areas, which increases the time between the need to achieve the objective development goal and today's reality dictated by the model of living arrangement. In other words, transition to a new unmediated paradigm of development will occur sooner or later, but it alone does not guarantee that this will happen to the benefit of a particular person for him/her to attain perfection.

Thus, for example, US military experts engineered a technology for cooking food under combat conditions using a 3D printer. American scientists, with the participation of a research team from the Massachusetts Institute of Technology, have designed a 3D printer capable of producing food according to pre-defined parameters. These parameters include calories, proteins, carbohydrates and vitamins, they consider preferences of soldiers and allow a bigger choice of food in the combat ration. Therefore, by using the 3D printing technology the US military seek to improve combat readiness, extend its potential and enhance military unit effectiveness.

Another example. Today, in the light of the ongoing crisis and deterioration of purchasing power, the existing retail sector, as one of the key elements of the mediated development paradigm, is looking out for new ways to expand its impact and influence consumers. Previously, NLP technologies were used to influence the customer, thus boosting sales and generating profit. Nowadays digital technologies have replaced them. They do not only include interactive digital assistants used for promotional purposes, but also 3D printers in e-commerce to print goods in a specially equipped delivery truck while on the way to customers (Fig. 5), promotion of cyber and wearable technologies, and technologies offering to carry your physical presence over into the virtual world using mirror touch screens.

The need for such systems is supported by the fact that 'the time lag between the receipt of an order and delivery of goods to the customer potentially decreases the level of customer satisfaction and has a negative impact on revenues' (Quirk 2015).

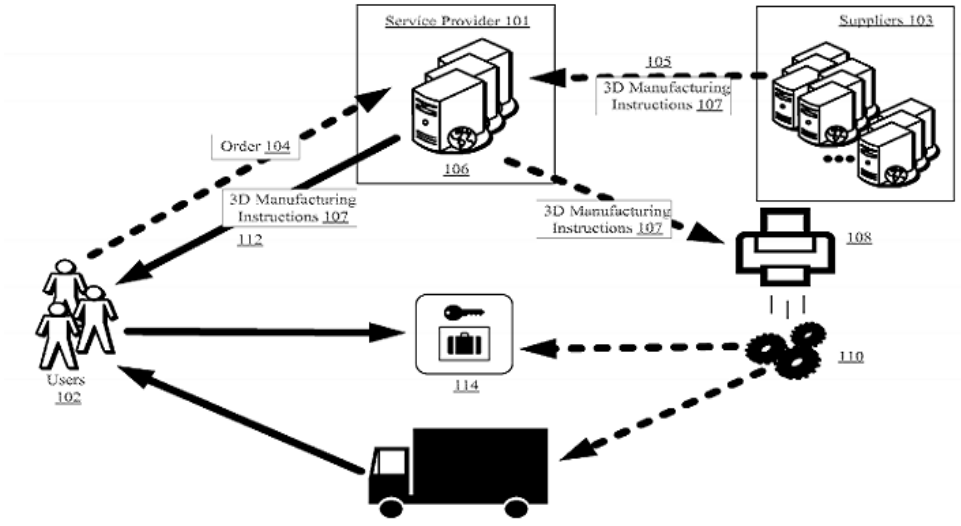

Fig. 5. 3D printing of goods in a specially equipped delivery truck while on the way to customers

On the one hand, this means a decrease in the demand for warehouse premises but, on the other hand, the stock of goods will become endless. That is, flow production of goods is drawing towards trade. Thus, the mediated development paradigm is supplied with new capabilities to survive on.

However, the greatest hazard about prolonging the agony of the mediated development paradigm does not belong to the aforementioned digital technologies. The hazard is that retailing becomes subject to virtual-reality technologies, promotion of wearable technologies, and technologies offering to carry your physical presence over into the virtual world using mirror touch screens (Bird 2015), and it becomes capable of influencing the mind of each customer individually. The Internet of Things (IoT) is gaining ground. This is a network that enables physical objects to communicate without requiring human interaction and mind.

In retail, these technologies pursue the same objective of having impact on the human being so as to get the person trapped and promote sales. Digital technologies allow remembering the customer's search queries, which makes software more personalised when used often (Sinha-Roy and Richwine 2015).

According to recent research conducted by ResponseTap, 73 per cent of respondents representing the business community stated the information on individual purchasing experiences was of great importance. These days dominance is potentially assigned not to the Internet that offers human-to-human interaction, but the Internet of Things. The inventors of these systems believe that pretty soon big customer data are likely to transform to super data. Using them, the IoT technologies will be able to collect and interpret information, and send findings directly to marketing specialists. As we can see, all this predetermines artificial intelligence surpassing that of humans.

Therefore, if we take a look at the retail sector, we can see that we are here also moving towards our own 'singularity'. We refer to the point where the time between the origin of the need for some product and availability of this product for purchasing tends to zero, where the digital and physical retail worlds converge, and the borders disappear completely; when traditional stores become as 'smart' as their Internet peers (or even 'smarter'); when purchasing data and history are instantly registered and stored by the system; and the level of Artificial Intelligence impresses customers all over, regardless where they decide to pick and buy products. Soon there will be no borders between offline and online trading, as the 'retail singularity' or, rather, technological singularity in commerce would sweep off all such borders on the way (Rees 2015). Is not what the American scientist Vernor Vinge wrote about in 1993 in his article 'The Coming Technological Singularity: How to Survive in the Post-Human Era', a topic also looked at by other scientists (Vinge 1993; Hanson 1998], including Russian researchers (Novoselov 2001). According to Vinge, 'singularity' is to occur as soon as 'in thirty years (*i.e*. in 2023), when technologies allow for superhuman intelligence creation. Shortly afterwards, the age of human supremacy will inevitably come to an end'. Whatever the case, according to Vinge (and, by the way, Stephen Hawking and other prominent scientists, as well), we still have a long way to go to Apocalypse. But is it really only about moving to apocalypse? Whether Vinge and Stephen Hawking are right or not, we will uncover below.

A similar situation that shows that the world stands on the brink of technological singularity is observed when 'smart' cities of the future are created. The first smart city appeared in South Korea. This largest project for construction of a 'smart' city is called

Songdo. It is located on a man-made island. This grand project is being implemented by Cisco, 3M, Posco E&C and United Technology (IA Mico. Technologi 2014).

Songdo was conceived to become an important business hub in North-East Asia, and the developers expect the city to attract many companies that wish to engage in trading and business activities in this region. Similar objectives are set when designing smart city concepts in other regions of the world. Such projects are included in the urban development plans of China and India. Traditional cities and towns are growing "smarter", as well. A new smart city called Innopolis is being created near Kazan in Russia. The developers pursue the same goal, *i.e.* to develop high-tech business (Shchukin 2015).

But what makes smart cities different? All life-support systems in each building of a smart city intercommunicate through a single centre. A variety of robots and automated solutions are everywhere, including garbage collection, cleaning of skyscraper windows, traffic control, trading, *etc.* All this is done by smart machines, not people.

A single network may power a fridge and a multi-cooker, traffic lights at an intersection and, say, automatic equipment at a power plant. City objects start living on their own with minimum human intervention. The weather station registers precipitation and a fall of temperature, while the signal from it is transmitted to the air conditioning system in every office making it adapt to a new regime, and the coffee machine makes hot coffee to meet you because your car has already communicated your arrival at the parking place. We can provide many more images, but we should not forget that it is not about an individual's way of life. It is rather about a streamlined housing and utilities infrastructure, security and life-support systems, *etc*. In other words, the purpose of smart cities is to create an environment for businesses and scientists who invent high-tech systems, and to try out the smart city technologies for the sake of their subsequent roll-out in order to generate profit, but not the people who will inhabit them.

This is why the smart city concept can boast of both supporters and critics today. The critics say that a smart city offers a human being a good many opportunities, but at the same time it makes him/her a small dot on a huge screen that displays where the person is, and what he/she is doing at any moment of time. According to Adam Greenfield, the author of 'Against the Smart City', the concept of a city as a huge high-performance robot is attractive for major IT companies, like IBM and Cisco, which look forward to big municipal contracts. It is of no use to individuals and communities (Beresneva 2014).

Using the example of Songdo, experts began to discuss another problem of a smart city, apart from continuous monitoring of every person, when the Control Centre provides images of people at every corner of the city, 24 hours a day, seven days a week. It is the risk of so-called digital inequality. It turns out that complete integration into the urban environment is only available for a person who owns an advanced gadget with all applications installed. Citizens who do not have up-to-date smart phones for whatever reason become deprived of most of their rights and find themselves disconnected from the vast majority of crucial processes. For example, in a smart city they will not be able to choose to make a payment either online or in the same old way through a bank office. They will not be able to buy a train ticket at a booking office or take advantage of any other opportunities.

During the Future Cities Summit held in early December 2014 in London, many reports were made on new technologies destined to change the living standards of the cities and their inhabitants, and quite a few smart city projects were presented, but there was also

enough criticism of the idea itself. It may be worth taking notice of the opinion expressed by Jonathan Rez from the University of New South Wales quoted by *The Guardian*. 'Architects engaged in the planning of cities of the future should employ psychologists and ethnographers as part of their teams', he says. 'What is a city if not people?' (Beresneva 2014).

Finally, experts are apprehensive about situations that may occur once the software is out of order. How will such a city carry on without the Internet or in case of a power blackout?

Besides, Russia demonstrates currently a discernible trend towards the ideas of a digital revolution. We can imagine how dangerous these digital technologies, nano-, bio- and cognitive technologies, virtual reality, development of the Internet of Things, creation of smart cities, and other artificial intelligence technologies are. Digital inequality will become more severe, and other adverse effects will show up, if these technologies are widely used not just within the existing paradigm of development, but also the new one, and if the humankind does not recognize the objective development goal.

This problem could only be solved if 'technological singularity' is complemented with a singularity in shaping a new model of living arrangement. Combined, they will allow achieving a 'humanistic singularity' or, rather, accelerating penetration into the area of 'singularity', where the time between the achievement of the development goal and the reality for each particular person and society will tend to zero in every possible way. Most regrettably, nobody addresses the need for remaking the fundamentals of the human society, *i.e.* the creation of a new model of human relations, a new model of living arrangements that would be adequate to the technologies of the 21st century.

The Paths to Attaining the Balance of Technological and Social Changes

The most important thing that we have derived from the worldview approach is that it helps to define the fundamental concept of the new model of living arrangement and to substantiate the need for and possibility of the development and implementation of the MEGAPROJECT titled 'The Territory of Advanced Development: for the Good of the People'. The core idea of the Megaproject in solving the strategic goals is to build up a new basis at each local level in any country of the world simultaneously, *i.e.* new direct human relations adequate to the technologies of the 21st century, and a mechanism for their implementation through real-time coordination of the interests of the government, community and business with the interests of an individual. This is the shortest practicable way to the desired future. Why? Because while every individual represents being a customer and a consumer of all the goods, at the same time represents the government, business or civil society, and as the time between the arising of the need for achievement of the goal and the fulfilment of this need decreases, the interests will increasingly match.

One of the examples of well-coordinated interests is the launch of the online project Active Citizen in Moscow, which is at its early stage of development as of yet (IA Mos.ru 2015). The Project invites every Muscovite to take part in urban management and helps authorities to make the decisions that most inhabitants of the capital city look forward to. The initiators of the Project believe that having experienced the effect of online referendum once, Muscovites will never refuse from the service voluntarily and will not let the authorities to wind it down.

When addressing the tactical tasks of the Megaproject, the key issue is the following:

1. For Russia: the project can be developed by scientists from all institutes of the Russian Academy of Sciences, which is a motivation for the further existence of the RAS. In this connection, we should remember the GOELRO megaproject (the early 1920s) for the throughout electrification of Russia, which was accomplished most efficiently and successfully.

2. Globally: an international interdisciplinary team of scientists and practitioners could be created to develop the Megaproject with the involvement of the global intellectual community in the development of the proposed model where people are united by a network, possibly under the auspices of the UN. Given that in September 2015 in New York the international community has approved a new set of goals for sustainable development for the next 15 years and the Sustainable Development Agenda (UN 2015), it is crucial for all humankind that from the very beginning this set of goals should be considered as part of the objective development goal, now that the global demographic development and scarcity of natural resources are increasingly problematic (*Ibidem*).

3. The pilot project should also be implemented under the auspices of the United Nations locally in different countries, and, once tested and improved, the transfer of the new model of living arrangement to the entire world should be ensured. The collective shaping of a new model of living arrangement is the message Russia could send out to the world. The project could be integrated into the UN Sustainable Development Agenda. It could be part of sections like the one regarding social contracts, for example. This will help to ensure social protection and not only to provide basic public services in the fields of healthcare, education, power, water supply and sewage, but also to make available the access to the entire circle of physical and spiritual human needs for each particular individual, not for all people in an abstract way. Moreover, implementation of this project will allow to achieve the whole set of goals previously approved by the UN for the first time in history, as well as to guarantee the respect of human rights set out in the Universal Declaration of Human Rights adopted by the United Nations General Assembly back in 1948.

4. The proposed project may also become an integral part of a new global infrastructure of the United Nations, a forum aimed not only at stimulating investment in infrastructure to ensure sustainable development, but also at effective investment management with minimum resources and maximum result, which will ensure overall implementation of the ideas for protection and conservation of our planet and natural resources, biodiversity and climate.

5. If the project is supported by the UN, the Technology Facilitation Mechanism stipulated in the Agenda will apply, which opens new horizons and facilitates the development, transfer and extensive use of corresponding technologies. It is not a coincidence that we have already written in our book titled ‘Forecasting Future: a New Paradigm’ (published in 2008) that the issue of the UN transformation as an institution for coordinating the interests of humankind at a global level is extremely important. The key objective of the UN, or any other institution established under the UN, will be the provision of a dedicated structure to accumulate all knowledge, from the origin of humankind to the present day, and especially the knowledge received from the future. From this database of scientific and technical information, one will be able to retrieve any piece of knowledge for the purpose of building technological connections between the origin of a particular person's need and its fulfilment in any point of the planet, which ensures increasing synchronization of

all processes in space and their continuous decrease in time. The missing knowledge dictated the need to continue the R&D in the respective spheres (Fetisov and Bondarenko 2008).

6. The UN-supported partnership of the government, business, society and an individual brought together in the pursuit of common goals at each national and supranational level gives hope that the theory and practice of solving the issue of sustainable development will coincide in time and space. Most importantly, when considering the interests of each human being, there is real hope that the effective resolution of challenges faced by any country of the world is subject to every inhabitant, and efforts will be made to facilitate it.

Conclusion

The change of development paradigm is an objective process. However, the outcomes of this change may vary depending on the dominant model of living arrangement that will be the first to achieve 'singularity', *i.e*. the point of no return.

Model option 1. The development occurs in a conscious way in the interests of a limited group of people towards their goal. There is a discernible trend for 'technological singularity' that stems from artificial intelligence and technologies for manipulation and control of human consciousness. The ultimate goal is to take control over the world. It does not match the objective development goal. The future where the time of achievement of the objective goal equals zero will never happen. We are edging towards an apocalypse.

Model option 2. Goals may be chosen in a conscious or unconscious way, and intrinsically they may constitute subgoals of a higher goal, *i.e.* the objective goal of development. Simultaneously, a limited group of people set their own goals. The two groups are moving in different directions. The development towards the objective goals occurs by trial and error. Therefore, in this case the future is uncertain, *i.e.* the time of achievement of goal 'singularity' may or may not come. But this will be much extended in time and accompanied by significant human and resource losses, and may also lead to an apocalypse.

Model option 3. The development occurs in a conscious way towards the objective goal and in the interests of each particular human being living on the Earth. Focus on the interests of an individual and coordination of these interests in real time through production at request without unnecessary produce is the only possible prerequisite for sustainable development toward the goal. In this case, technological singularity is synchronized with singularity in shaping new human relations, and their understanding of the need for evolutionary and irreversible progression towards the point where the time of goal achievement equals zero.

Thus, the new development paradigm and the benefits of the digital revolution in industry, all other areas and everyday life will only do the humankind good if there is simultaneous creation of a new model of human relations objectively aimed at development for the sake of a particular person and his/her attaining the Supreme Intelligence. In all other options, mankind is headed towards an apocalypse. It is not without reason that Ervin Laszlo notes in his article 'Global Bifurcation: The Decision Window' that '[w]e have reached a watershed in our social and cultural evolution. The sciences of systems tell us that when complex open systems ... approach a condition of critical instability, they face a moment of truth: they either transform or break down' (Laszlo 2011).

This is why it is important to comprehend that a change in the development paradigm will cause the creation of a real-time mechanism for coordination of the interests of the government, society, business and an individual through production at request without unnecessary produce as the only possible prerequisite for sustainable development towards the goal. Given that, the prerequisite for balanced technological and socio-economic changes in real time as the basis for eliminating the root cause of the crisis is to recognize and accept objectivity of the human society development goal, which is the creation of an environment where every individual would be able to attain perfection!

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