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Socio-geographical systems, institutional mechanisms and risk processes

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Abstract

The paper considers the character of socio-geographical systems. It is concerned with complex characteristics of socio-geographical systems and basic types of institutional mechanisms. The paper makes an attempt to elaborate on a qualitative model of socio-geographical systems with different mechanisms relating to social inequalities and territorial differentiations. Qualitative modelling is seen as a precondition of quantitative modelling. Finally, there are considered conceptualisations of uncertainty and risk in relations to socio-geographical systems.

Key words: socio-geographical systems, qualitative modelling, uncertainty and risk

Introduction

"The more effectively a nation state becomes a welfare state – motivated in a way which approaches a more perfect democracy, and having at its disposal national resources big enough to carry out large-scale egalitarian policies with bearable sacrifices on the part of the regions and groups that are relatively better off – the stronger will be both the urge and the capacity to counteract the blind market forces which tend to result in regional inequalities; and this, again, will spur economic development of the country, and so on and so on, in circular causation" (Gunnar Myrdal, 1957, *Economic Theory and Under-Developed Regions*. London: Duckworth, page 41).

"Risk is closely connected to innovation. It is not always to be minimised; the active embrace of financial and entrepreneural risk is the very driving force of the globalising economy. … Risk is the mobilising dynamic of a society bent on change, that wants to determine its own future rather than leaving it to religion, tradition or vagaries of nature. … Manufactured risk refers to risk situations which we have very little historical experience of confronting. Most environmental risks, such as those connected with global warming, fall into this category. They are directly influenced by the intensifying globalisation…" (Anthony Giddens, 2002,

Runaway World. How Globalisation is Reshaping Our Lives. London: Profile Books, pages 3, 24 and 26).

I have chosen these two quotations in order to highlight a number of processes and issues that seem to be in the focus of theoretical and empirical debates on the nature of current socio-geographical systems. First of all, there is the institutionalist emphasis given to the importance of corrective redistributive mechanisms reducing social uncertainties and risks of extreme socio-geographical inequalities arising from mechanisms of market-driven regional development. This Myrdalian institutional approach has recognised various facilitating influences of well-designed government interferences based on long-term development of social rights of citizens and welfare state provisions in industrial and post-industrial countries. The government interferences in the market-driven mechanisms have been allowing circular causation processes of dynamic economic development in modern socio-geographical systems of nation-states. This gradual shift towards "created harmony" of the advanced societal systems has contributed to raising the quality of production factors (i.e. well-educated labour force, effective physical and social infrastructure, etc.) and, in consequence, contributing to increasing productivity level of national economic systems. Myrdal emphasised that the "created harmony" of advanced societal system was facilitated by institutional mechanisms of state interferences that tended to prevent any social group or region from lagging far behind in its development and being really poor. Importantly, the created harmony of the advanced societal system tended to reduce socio-economic risks and uncertainties across social groups and regions caused by the dynamic market-driven development. However, in view of current developments in socio-geographical systems to be discussed in this paper, it is also necessary to note that Myrdal timely recognised already in the 1950s that "the approach to harmony of interests is narrowly restricted to the nation. Welfare state is nationalistic" (1957, 49).

Second, there is therefore the quote pointing out to the current context of globalisation era in which national economies and national systems of regulatory mechanisms have to evolve in new circumstances of interconnected risk situations at different levels or scales. Giddens (2002, 12–19) gives emphasis to the fact that there is a mismatch of scale between the modern post-industrial economy and society at the level of nation state and globalising forces. Nations-states are still important frameworks in which socio-geographical systems evolve, but nation-states are being reshaped under pressures of globalisation and national policy-making and redistributive mechanisms cannot be effective as they once were. Globalisation does not pull only upwards towards supranational scales of continental interdependencies (i.e. largely within the European Union) or world-wide stretching processes, but also it also does push downwards towards regions and localities. In brief, the institutional and territorial framework of nation-state has become in some respects to small to regulate processes evolving at the supranational levels and often too large to solve "small" problems that can be more effectively solved within the national socio-geographical systems at levels of regions or localities. There is a similar claim of Storper (1997, 253) saying that "the new hypermodern economy depends on the rapid

movement of goods, services, and persons…. this kind of economy is the 'risk society', in which the individual must be capable negotiating of a series of life challenges involving risk after risk, from the economic to the social to the personal spheres". He also underlines the fact that the current hypermodern economic systems tend to be more risk-driven forming even "risk societies and economies". It is also significant to stress that risk taking characterising the current dynamic socio-geographical system also implies important environmental risks that are little known and also influenced by intensifying globalisation processes (Giddens, 2002). Finally, these claims clearly indicate that in order to understand the suggested variety of risk and uncertainty situations, it is necessary to recognise in conceptualisations of the current development of socio-geographical systems their multi-level character and take into account development processes at local, regional and national scales, but also at world-wide scale of economic, technological, political and cultural globalisation processes (see also Dostál and Hampl, 2004; 2000). Indeed, taking the claims of these quotations together clearly suggests that there is a need for an institutional-geographical conceptualisation recognising the complex character of socio-geographical systems. Accordingly, I am concerned in this contribution with (i) complex character of socio-geographical systems, (ii) basic types of institutional mechanisms in socio-geographical systems, and (iii) different concepts of uncertainty and risk that also relate to current development of socio-geographical systems.

Complexity of socio-geographical systems

Socio-geographical systems are conceived as real systems and are characterised as a type of active environmental systems (Hampl, 1994; 1995). The complex character of geographical systems results from combination of two fundamental forms of complexity (Hampl, 2000, 29–34): (1) structural complexity (complexes of qualitatively heterogeneous phenomena, i.e. inorganic, biological and social phenomena) and (2) developmental complexity (due to including active social phenomena and processes). Each of the two forms of complexity can further be considered in two specific forms. Structural complexity is characterised by (a) qualitative hybrid nature of geographical systems and by their (b) relatively weak integrity that is resulting from important conditioning through exogenous factors, by wider external environment in respect to interactions between nature and society and also with regard to relationships between levels of macro-systems and micro-systems. In consequence, partial structures and processes in geographical systems are necessarily "determined" by different types of regularities that are also different in terms of variable degree of their probabilistic nature. In a simplified way, one can say that the variability in regularities ranges from functional relationships to "fully" random ones and thus to irregular situations. At the same time, our search for understanding of geographical reality makes it necessary to consider internal order of the systems, but also external conditions that are outside the systems.

The high level of developmental complexity of socio-geographical systems results from the incorporation of the most developed (i.e. societal) phenomena and processes into the structures of systems. Therefore, in analogical way as in social sciences, one can consider two key study problems. First, there is the activity and also the subjectivity of actors carrying societal development and there are corresponding processes of cognition and assessment (see also Kapp, 1961, 103–119). Further, there is the stochastic character and multi-level structuration of the societal system and its development. All these aspects of societal phenomena and processes provide room for speculative assessments, ideological bias of knowledge and associated normative conclusions about societal reality. Second, there also is extraordinary dynamic and variable orientation of societal development. This circumstance complicates collection of information and data on societal development. In particular, the dynamics and variety in societal development result in changes in conditioning factors and imply shorter periods in which established regularities can be used and indicate possible causal factors in development of socio-geographical systems. Accordingly, it is necessary to pay attention to these complicating circumstances in the cognition process and timely recognise possible risks of our "objective" knowledge concerning the socio-geographical systems. However, there is often also an excessive emphasis put upon (a) ideological approaches and (b) absence of law-like regularities in societal development. This excessive emphasis in social science on ideology and irregularity characterizes in particular current postmodern approaches and also resigns from any possibility of systematic and cumulative process of knowledge acquirement.

Already this short and simplified specification of axial principles of the complexity of geographical systems shows the difficult character of their study. Obviously, there arises the question whether it is at all possible to indicate some methodological recommendations regarding a workable conception of geographical studies. In spite of the above-mentioned problems it is justifiable to make such an attempt. In the first place, one can use systemic approaches, i.e. general theory of systems in its original version with its various aspects of systemic ontology (Bertalanfy, 1969) that has been of an empirico-intuitive nature. It can be claimed that systemic approaches can help us to put back together components of reality that standard research is being dismembering for specific purposes of narrow analytic approaches. Accordingly, one can make a strong case for a systemic approach in which complex real systems are organised in terms of more dimensions in hierarchical orders (see also Hampl, 2000; Dostál and Hampl, 1995). The following dimension can be considered as the most important ones:

(i) dimension of rank or scale (macro-region – micro-region),
(ii) dimension development (lower – higher development level in terms of qualitative development),
(iii) dimension of structural complexity (for example distinction between societal and geo-societal systems).

Systemic approach

In a systemic approach, there appear multi-dimensional structuration of organisational levels and development mechanisms as primary themes for the orientation of the cognition process. But, a systemic approach is also needed for elimination of conceptualisations concerned with seemingly contradictory principles or tendencies in development of real systems. In the field of regional development research, for example, there is continuing debate on "natural" dominance of tendencies to divergence or convergence, in spite of the obvious fact that dominance of a certain type of tendency can belong to a transient stage of development and also be dependent on particular development levels and scales of geographical systems. We can point out to examples of the current regional development in the European Union, or to the development in the global system (see also Dostál and Hampl, 2000; 2004). Another examples provide studies in which economic, cultural and ecological themes are placed "side by side" without any hierarchical order or attempts to "incorporate" economy into hierarchical framework of socio-cultural system and further to "incorporate" such a system into an environmental system. However, in general, it is possible to identify a hierarchy of corresponding mechanisms: for example, market mechanisms function in a wider values system – an integrated societal system with political mechanisms and with deeply embedded socio-cultural mechanisms. The emphasis given to the ontological character of systemic or holistic approaches in accordance with the specific subject matter of geography, but systemic approaches cannot only be considering different hierarchical levels.

Some principles of systemic institutional approach

Systemic institutional approach concerned with the nature of societal development in the framework of socio-geographical systems often involves debates concerning questions of social justice and legitimisation of state interventions in the economic subsystem development (cf. Dostál, 1984). The debates also involve basic counter-positions relating to the character of democratic and totalitarian political subsystems. It is difficult to debate such distinctions in more objective terms and, obviously, this provides room for ideological and academic speculations. The systemic approach attempts to provide an "ontological" sketch of a whole range of issues allowing indication of some principal tendencies at different levels of socio-geographical system, thereby taking into account accompanying mechanisms and giving emphasis to integral congruency of tendencies towards homogeneity and differentiation across societal groups, territories and levels (see also Dostál and Hampl, 1995, 37–40). It is not the intention to indicate only conflicting character of societal development. Basic aim of the considerations is to elaborate further on the systemic character of societal system as a part of socio-geographical systems and to give emphasis to interactions of differently structured subsystems. In spite

of the recognition of the importance of risks and uncertainties of current developments in the globalisation context, the stress is upon systemic attempts aiming in the framework of national socio-geographical system at positive influencing of self-regulating mechanisms or at creation of necessary institutional mechanisms of their strategic enforcement. Especially in specific circumstances of a democratic political subsystem it is difficult to answer complex questions concerning an adequate balance between general interest articulated at the level of the whole system and interests of its parts (see Bell, 1979; Dahl, 1990). It is necessary to point out that abovementioned "created harmony" of the advanced post-industrial society and economy implying a certain level of support for weaker parts (societal groups or regions) is not only a result of "good intentions". Because the systemic approach makes clear that there are always pressing needs for an organic functioning of the whole system. This is also recognised in the Third Report on Economic and Social Cohesion: "Strengthening regional competitiveness throughout the Union and helping people fulfil their capabilities will boost the growth potential of the EU economy as a whole to the common benefit of all" (European Commission, 2004). However, it must be understood that one-sided strategic stress given upon redistributive mechanisms and spread of scarce resources or on differentiations (i.e. insufficient support for weak) would lead towards a weakening, lack of cohesion or even disintegration of the whole system. This has been convincingly elaborated in some well-balanced debates concerning the indispensable role of meritocracy in the mature industrial and post-industrial society (see Bell, 1979). On the other hand, however, unrestricted competitive processes would imply the forming of strong monopolies that would obviously curtail dynamic competitive processes and would be leading to some degenerative phenomena of societal development. Such risks can be particularly anticipated in small national economies (see Alesina and Spolare, 2005).

It is clear that this conceptualisation is based on the Myrdalian insights concerning the cumulative character of the societal processes and the recognition that concentration of differences and inequalities is not possible in natural world (see social darvinism as an outcome of not pure, but cumulative selection). Summarising the discussion in this paper so far, there are three basic principles that justify the maintenance of effective regulatory mechanisms mitigating socio-economic differences in the framework of national socio-geographical systems also in the current era of so-called risk society and economy (see also Dostál and Hampl, 1995):

(i) principle of the stability of advanced societal systems maintaining social peace and social concensus. The redistributive interferences of the advanced welfare state guaranteeing basic social rights and thereby significantly reducing risks of excessive socio-economic inequalities across societal groups and regions.
(ii) principle of equal opportunity as an elementary basis of a democratic society. This principle is obviously securing in a cumulative way some unequal outcomes. However, it is established in democratic societies

as basic value justifying individual social and geographical mobility. In order to redress some inequalities, there are good reasons for compensatory rules such as the principle one man, one vote or the entire cluster of civil rights guaranteeing equality at the court and legal personalities such as firms, administrative bodies or interest organisation (Bell, 1979; Dahl, 1990).

(iii) principle of strategic dynamics concerning an acceptable standard of living and allowing participation in economic competition. This principle provides more room for selective processes and strengthening of quality of outcomes of competition processes. It also contributes to the emergence of necessary co-operative processes carried on deepening division of labour in which active participation is indispensable.

These considerations make clear that relations between the whole system and its composite parts must be approached in terms of an integral conceptualisation of the socio-geographical systems. The realisation of a well-balanced system can be ensured by the stimulation of the self-regulating mechanisms whereby there is provided enough room for introduction of necessary innovations and changes. Of a key importance in systemic studies are interactions between various qualitative components and between different scale structurations. In the first place, the multi-level interactions among heterogeneous components characterise socio-geographical systems in which such complex mechanisms are developed at a higher level. The studies of socio-geographical systems can specially reveal mechanisms that lead to "identifications of compromises"; for example, between short-term and long-term effects (see distinctions between operative and strategic planning of major investors). Such an approach obviously necessitates solutions of many research questions. First, there is the question of how to distinguish in studies of socio-geographical systems spontaneous mechanism from regulatory mechanisms when one knows that formations of such mechanisms, respectively rules of the game, are an integral outcome of considerations of societal needs and possibilities, and also resulting from enforcements of particular interest articulations. In consequence, in studies of socio-geographical systems there is insufficient knowledge of mutual and usually mediated qualitatively different mechanisms at different scales (ranks). Given these intricacies of geographical research, it seems advisable to direct the research towards studies on long-term development tendencies of systems and their components that can bring insights into qualitative changes of mechanisms studied (see also Myrdal, 1957). In view of current levels of cognition of real systems in environmental and social sciences, one must suggest research efforts that are considering the above-mentioned types of mechanisms as important themes of current enquiries concerned with geographical systems.

The complexity of the subject matter (i.e. studies of geographical systems) needs to be tackled by various methods, but it also necessitates establishing linkages between themes, i.e. attempting synthetic approaches following integrative conceptu-

alisations that enable more adequate interpretations of research results. Because, only corresponding research outcomes based on "differently sophisticated" methods can provide convincing results. Therefore, one can suggest a parallel approach: (i) research efforts of a qualitative character (i.e. verbal and logical identification of relationships and interactions, conditions or "integral" organisation of systems), (ii) a "simple" quantitative research (interpretation of data with the help of statistical maps, simple correlations, etc.) and (iii) sophisticated quantitative research (multi-dimensional modelling, multivariate statistical analyses, GIS methods, etc.). Possible differences in research outcomes of various methods can suggest formulations of new research questions and necessitate new analyses and provide sensible themes for further research (see also Bennett and Chorley, 1978).

Research concerning long-term developments of complex systems and particularly societal systems, has resulted in alternative approaches, different methodological conceptions and various ways of studies. For example, there is made a principal distinction between extensive and intensive research designs (see Harré, 1979; Sayer, 1992) and that is reflecting in a sensible way the realities of current research strategies. However, one can ask why is this interpretation of research design are not resulting in conceptualisations of methodological approaches that can enable research strategies connecting the two types of research design? Or why structuralist conceptions of societal development are understood more or less as contradictory conceptualisations disproving voluntaristic conceptions, or why holistic methodology is "only" seen in contradiction with methodological individualism? Similar questions are also considered by Giddens (1994). The exiting methodological plurality can be illustrated by the above-mentioned distinction between the intensive and extensive types of research design. It would be going too far in this paper to debate in detail implications of these two types of research design. However, it is necessary to make a few remarks relating to research efforts orientated on cognition of geographical systems. First, a vast majority of socio-geographical and demographical research is traditionally made according to the extensive research design with its emphasis upon abstract cognition and general applicability (see also Cloke, Philo and Sadler, 1991). Most of researchers see the choice between the two as a dilemma. Yet, it is not necessary. Second, there are analogous problems of extensive and intensive research in the research considering complex themes in physical geography. Generally, this means that the complex subject matter of geography has been necessitating comprehensive (extensive) research orientations. Further, it seems that necessary combinations of extensive and intensive designs are realised seldom. This suggests that current level of cognition of societal and environmental themes does not allow deeper solutions of these fundamental research issues. It seems that possible solutions would have to consider studies concerning societal development a necessary transformation of the "principal" alternatives into "partial" alternatives and focus on integral co-influencing of partial structures, processes and articulations of interests. It is currently popular to stress subjectivity and individual, corporate or mass articulations of interests (Scharpf, 1997; Dostál,

2002) and choose particular ideological positions in scientific research claiming objectivity. However, one cannot believe in an objective ideology and, in consequence, such a manner of "doing" social science has to be rejected.

Qualitative modelling as a precondition of quantitative modelling

The preceding considerations indicate to a certain extent possibilities and also necessity of a useful modelling of socio-geographical systems and its importance in the process of cognition of real systems. It is obviously possible to reject the importance of modelling approaches. However, in general, quantitative approaches and particularly quantitative modelling provide important tools for more exact and deeper research efforts. It is clear that conceptualisations of complex and less-understood systems can sketch models in qualitative terms and in combination with quantitative modelling approaches can contribute to formulations of research questions. According to the well-known definition proposed by Chorley and Haggett (1997, 22) says that a model "is a simplified structuring of reality which presents supposedly significant features or relationships in a generalized form". Due to the much demanding character of selecting and interconnecting fundamental features of the studied reality, it is necessary to define in clear terms phenomena and relationships under study and procedures of the cognition process. Therefore, modelling approaches can contribute to orientate studies by qualitative methods as well as by quantitative ones. Quantitative modelling approaches have to add to qualitative modelling procedures certain controlling features. In consequence, combinations of qualitative and quantitative modelling methods can contribute to the same integral process of cognition of socio-geographical systems.

Conceptualisation of a synoptic model of socio-geographical system

An example of qualitative modelling can be given considering structuration and development mechanisms of integral societal system (see Figure 1). The point of departure is a primary systematisation and generalisation of cognition of reality (see Hampl, 1994; 2000) providing a foundation for specification of the purpose of investigation: types of regularities to be sought and what constitutes order in given parts of reality. This indicates basic direction of studies and subsequently also research efforts searching for regularities. It is therefore possible to derive methodological approaches from the subject matter of the discipline. It appears that a primary distinction in modelling approaches would be the difference between the qualitative and quantitative methods. It is clear that primary schematisation and generalisation of qualitative models give necessary logical and theoretical cohesion to subsequently postulated quantitative models. The qualitative model of structuration and development of integral societal system, including specified interactions

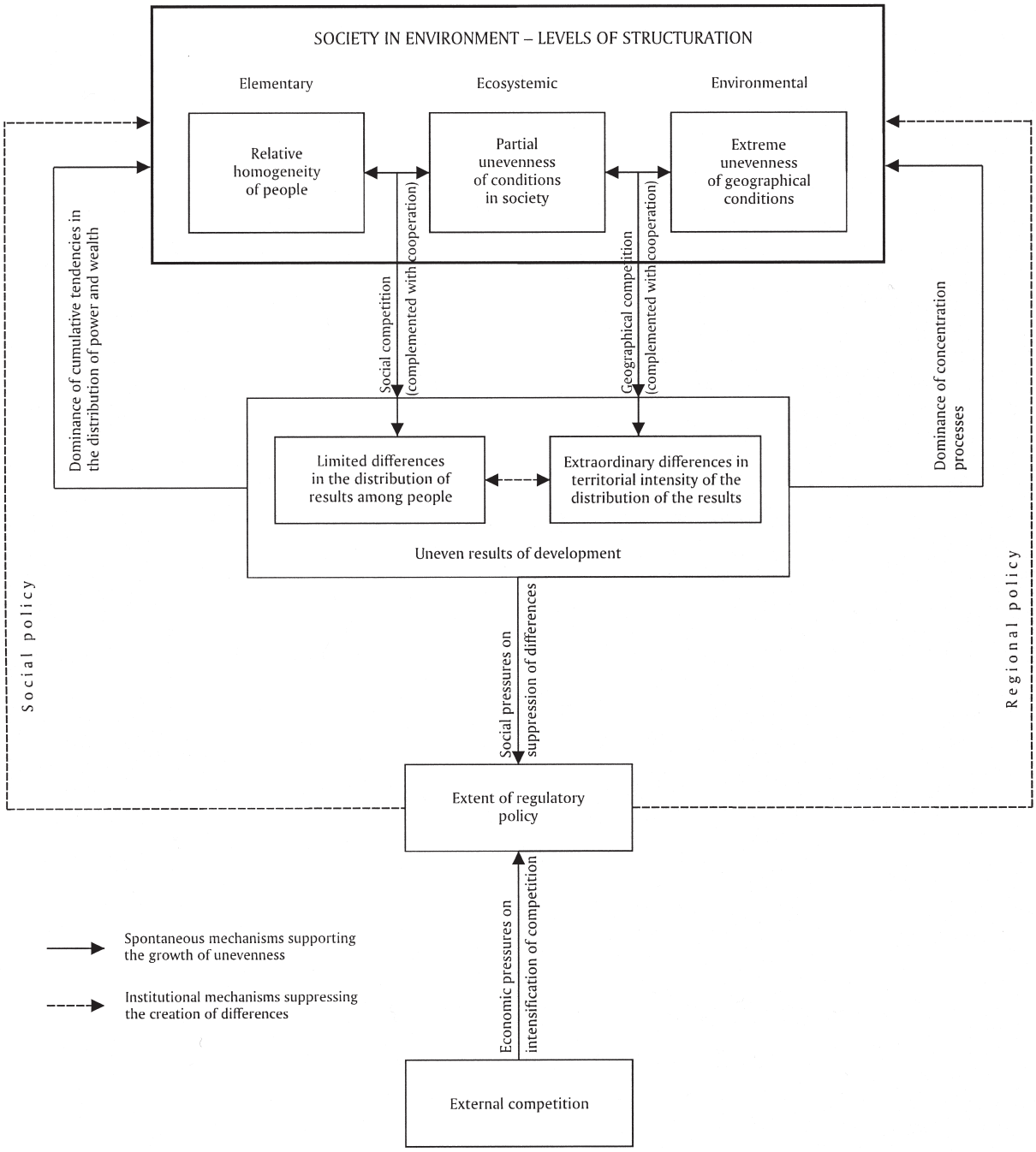

Fig. 1 Structuration of integrated societal system and development mechanisms (source: Hampl, 2000, page 67)

and development mechanisms (see also Dostál and Hampl, 1995; Hampl, 2000, 63–76) is obviously an attempt to incorporate geographical/environmental organisation into integral societal system. In other words, it is an attempt to elaborate further on internal structuration of the system. The model includes assessments of basic interactions, differentiation processes and regulatory mechanisms. It is necessary to note that a typical feature of modelling is a simplifying approach to reality that can only emphasise substantial forms of structuration, major types of differentiations and subsequent reaction on evolving differentiations.

There are three forms of structuration (organisation) in the integral societal system: (i) elementary form, corresponding with the relative homogeneity of humankind (human population) and also to the potential equality of human individuals as regards their role in society, basic interests, etc., (ii) semi-complex form corresponding to the hierarchisation (though often limited) in the distribution of wealth and power in society from the viewpoint of human individuals and their social group (internal structure of society), and (iii) complex form corresponding to the environmental/geographical (external) organisation of society that is differentiated in an exceptionally asymmetric (uneven) way and hierarchically organised in respect to both the size of units and development conditions. These three forms of structures are in mutual interaction, while the central mediating function is having the semi-complex structuration. Depending on the degree of structural complexity (Hampl, 2000, 29–32; Dostál and Hampl, 1995, 31–36) of these structurations the general nature of mutual interaction has a heterogenising or homogenising orientation. This conceptualisation claims that what basically matters is the creation of differences in the development of elements and partial systems and, simultaneously, an effort to suppress these differences (in other words a tendency towards a dynamic equilibrium). These interactions are realised by various mechanisms that can be grouped in two categories. In the case of differentiation processes at the level of parts within the whole, competitive mechanism dominate. Market mechanism is an example, but also any form of competition, whether political, cultural or other. A similar interpretation applies to the level of "spheres of competition" – among people just as among regions or entire countries. In this sense, Figure 1 conveys the notions of social and geographical competition. The second type is formed by co-operative mechanisms having the role in differentiating processes that is only secondary and indirect. Co-operative mechanisms are characteristically exemplified by a social as well as geographical division of labour, exert in some respects suppressing influences on competitive mechanism, because competition mechanisms have positive influence in raising the efficiency and integrity of the whole system, and also in its capabilities to compete with other systems.

The creation of social and territorial differences is the most fundamental result of the influences of the (dominantly competitive) mechanisms (see also Dostál and Hampl, 1995; 2004). The uneven outcomes are primarily caused through unevenness of external conditions for relatively even elements (people). It is obviously taken for granted that also the type homogeneity of elements has to be understood as relative and that there exist certain differences in individual efficiency. The "minor differences" are intensified by the impact of competitive mechanisms such as differences in education that are externally influencing potential of human individuals. Understandably, all of this provokes social tensions and efforts to redistribute the results of "competition". The differences that emerge are of a dual type, both as regards the extent of unevenness and the possibilities and especially needs to suppress them. The sources of social dissatisfaction are immediately linked up to the differentiation of relative levels of income, the share of the wealth and power of

people, their groups or even entire nations (differences according to GDP per capita is a typical indicator). In contrast, people may not much care about differences in the spatial intensity of results or in their absolute volume in towns, regions or states (the GDP per square kilometre is a typical indicator in this case). The differences of the former type are relatively limited because their conditioning factors are primarily connected with semi-complex differentiation. Since the differences of the second type are conditioned by environmental differentiation, they attain extreme values and their suppression is very difficult; from the viewpoint of economic efficiency of the whole, this is basically always disadvantageous. However, both types of differences cannot be approached in an isolated way because forms of differentiation in intensity of settlement or economic productivity, on the one hand, and differentiation in the relative wealth of population, on the other, are usually similar in terms of their geographical distribution and obviously not in terms of levels of differences as we explained above. As a result, advantages of geographical position or the geographical combination of natural and social conditions often support the creation of social differences. At the same time, geographical differentiation in the relative wealth of people and general prosperity is an necessary impetus for migration of population and capital, and subsequently also the concentration tendencies which further intensify existing considerable differences in the spatial intensity of settlement and economic production. These largely geographical concentration processes simultaneously tend to support increasing efficiency of an integrated societal system because they enhance the development of efficient forms of spatial organisation of labour (see agglomeration advantages). They also sustain the efficient exploitation of territorial potential by suitable forms of economic specialisation. Moreover, there are advantages of geographical agglomeration processes that basically tend to reduce risks and insecurity concerning functioning and decision-making of economic or other subjects. Because "when many activities are located close together this creates a common pool of resources, e.g. materials, skilled man power, transport and communication systems, service trades, specialists and consultants. The important point is that the proximity to these *common* resources reduces risks and insecurity for each company" (Törnqvist, 1970, 22).

The distinction between the two types of inequalities also indicates two sorts of spontaneous reactions of people and their groups on these inequalities and associated processes. The view of spontaneity is here narrow and focused on "immediate" auto-regulative processes and is not considering organised (i.e. institutionalised) influences based on political interest articulations that are orientated on suppressing of inequalities. Such a wider view of spontaneity will be considered below. According to the narrow view, the spontaneous processes are primarily conceptualised as accumulation or concentration processes, thus as relationships feeding back on increasing inequalities (see also the well-know conceptualisation of so-called backwash processes in Myrdal, 1957, 27–28). There is no doubt that this orientation of processes tends to be dominant. This is documented by long-term concentration of population and economic activities in cities and the most develo-

ped regions or by the capital accumulation and monopolising tendencies in market economies. It must be noted that we can only speak of a dominant character of the tendencies and not claim an inevitable tendency of these processes toward accumulation and concentration. From a general point of view, we can stress adaptive character of various processes of a re-specialising type that tend to allow poorer units to improve their positions in the whole system. Similarly, a deeper specialisation in division of labour tends to help weaker units to improve their position through their co-operation with leading units. There are to some extend in geographical reality also deconcentration tendencies that are conditioned by ecological circumstances, such deconcentration of activities and population from large cities and industrial concentrations. Such tendencies are taking place because it is recognised that "(b)asically, the mislocation and concentration of productive activities and the resulting congestion of urban communities is another illustration of circular causation in social affairs. The whole procedure is an undirected cumulative process in which every consecutive step tends to contribute to a costly over-intensive utilization of urban land regardless of human needs and human requirements" (Kapp, 1978, 262). The deconcentration tendencies usually imply a shift towards higher scales of concentration (see metropolitan regions; Hampl, 2005). Finally, there are special processes having different impacts on the development of societal inequalities, on the one hand, and territorial inequalities, on the other. Migration is an important process of this type. Migration is a basic process leading to increasing geographical concentration of population (i.e. urbanisation), but it also involves relocation of labour force from less progressive and lower wage professions to progressive and higher wage activities. From a social viewpoint, this tends to suppress inequalities.

The existence of inequalities intensified by spontaneous processes that cumulatively increase social and territorial inequalities obviously contributes to serious societal tensions and often tends to social destabilisation. In consequence, there emerge social pressures on political elites to accept various regulatory mechanisms and redistributive measures orientated on a mitigating of inequalities. It largely involves inequalities in social and economic standard of people and only exceptionally it involves also differences in their territorial intensity (see various attempts to regulate growth of large cities). The regulations are usually called social and regional policy, but they are in fact components of macro-economic or macro-social policies. It must be stressed that the function of such policies is in contradiction with the above-discussed spontaneous reactions. In brief, such mitigating policies have the character of negative feedback relationships. There are obviously long-lasting debates concerning these various mechanisms. At a first glance, the debates are dealing with contradictory issues, i.e. social stability and economic performance. Yet, it should be noted that an objective basis of a search for adequate (i.e. compromise-orientated) solutions there are political decisions on levels and types of regulations responding to "internal" social (political) pressures in the system concerned and "external" pressures of economic (eventually political) competition.

The synoptic qualitative model in Figure 1 is obviously an attempt to conceptualise the socio-geographical system of developed democratic states and their societal and territorial evolution in the long period of modernisation. In a sense, the model can be understood as a specification of final state of functioning of advanced societal systems in the framework of current socio-geographical systems (Dostál and Hampl, 1995). However, one can also make an attempt to indicate a possible further direction of elaborations on the model following the dimension of development and the structural dimension. Considering the former dimension there is the theme of specifications of development stages, for example inspired by theories of stages (see Hampl, 2005). It would be crucial to elaborate on changes in quality and forms of interactions (mechanisms) and on generally increasing role and variety of feedback relationships (especially regulatory mechanisms). Considering the latter dimension, there are the themes dealing with necessarily more detailed specifications of mentioned "aggregate" mechanisms indicating their partial components. Such detailed specifications would contribute to our deeper understanding of the development process of society in environment and allow more specific assessments of uncertainties and risks of the current development. Detailed specifications are necessary in order to disaggregate the integral model in a series of submodels that can make needed attempts at quantitative modelling easier. One can mention research themes concerned with migration processes or capital flows.

The conceptual and empirical research concerned with complexities of the development of socio-geographical systems has to consider also intensifying development tendencies that appear beset by considerable uncertainties and risks. This research orientation is obviously important with regard to issues of societal practice and in political and economic decision-making. It is therefore crucial to understand that given the limited insights into the development of complex systems there is increasing importance of subjective assessments and variable ways of behaviour and response to emerging uncertainties and risk situations at the levels of key decision-makers, i.e. individual nation-states, transnational companies or the European Union.

Conceptualisations of uncertainties and risk processes

Research considering uncertainties and risk processes in the development of socio-geographical systems is obviously a very complex matter. The conceptualisations of risk and uncertainty in the economic systems are traditionally focused on two issues (Gruchy, 1984). First, there are issues of uncertainties of information gathering and processing that appear far from being costless and never complete. It is clear that in circumstances of the current risk economy and society individual economic and other decision-makers are living in and operating in an informationally complex and imperfect world. In brief, there are uncertainties of making strategic decisions based on incomplete information. Second, there are uncertainties

arising from technological change and its effects on economic organisations and economic behaviour. Accordingly, there are needs in risk assessment to deal with the impact of scientific advance and applications of inventions in innovative processes of technological changes. Especially major technological shifts necessitate making long-term decisions on capital expenditures. Since firms usually tend to prefer remaining flexible in the short run in regard to investment decisions, they often refrain from making long-term commitments except in a general manner. These two issues indicate that the uncertainty is a key aspect of real economic systems. Furthermore, these considerations also indicate that there are considerable risks of emerging social costs that originate in the economic system and also usually result in adverse environmental impacts and risks (see Kapp, 1978).

Research on global environment indicates that many environmental problems are uncertain. Also, possible effects of various proposed solutions appear to be beset by uncertainties (DeSombre, 2005, 53–70). There is general tendency to confuse the notions of uncertainty and risk. Risk process relates to the probability of the occurrence of an undesirable effect. The reason for confusing risk and uncertainty stems from the circumstance that there are uncertainties about probabilities for political, economic or environmental events. The likelihood of these sorts of events is uncertain and, consequently, risk specifications are impossible. Research specifications of uncertainty and risk are thus separate but interrelated problems of scientific efforts. Examinations of risks situations demonstrate that people (whether politicians, entrepreneurs or general public) do not evaluate risk in the same way that risk assessors do. The role of science and scientific research within this field is very complicated, but also essential. Uncertainty is usually referred to as incomplete information or disagreement between information sources. Policy-makers wish to know what other actors will do in order to be able to decide what decisions they have to make. When one considers risk processes in the functioning of complex socio-geographical systems it is clear that political uncertainty is intersecting with scientific uncertainty. It appears that in decisions relating to regulatory processes in socio-geographical systems researchers are confronted with data which are weak in terms of accuracy and precision. For example, relevant actors require finding out how much they appear to contribute to environmental problems and tend to monitor their behaviour afterwards. There is obviously the precautionary principle suggesting that uncertainty should not prevent regulatory decisions to mitigate environmental problems. This principle suggests not using any new technologies until proven safe for environment and society and has become part of international environmental law and is also assumed in environmental law in the European Union Treaty (DeSombre, 2005, 57). Accordingly, one may draw the conclusion that the estimation of risk and associated decision-making processes about how best prioritize mitigations of risk processes appears essential in specifications how to respond to environmental issues locally, regionally, nationally or globally. It is clear that political perceptions and assessments of risk situations by key decision-makers contribute considerably to regulatory decisions to mitigate environ-

mental problems. It is also apparent that the multi-level character of institutional mechanisms in socio-geographical systems significantly constraints possibilities to specify risk processes and political responsibilities in exact ways.

Burgman, (2005, 1) defines risk as "the chance, within a time-frame, of an adverse event with specific consequences". He gives a definition that is assuming possibilities of calculations of occurrence of adverse events. He is also viewing the notion of risk according to two dimensions of probability. It is usually understood as the statistical frequency (or relative frequency) with which a certain event is expected to take place. But, it can also be viewed as the degree of belief warranted by evidence. This conception is also concerned with situations in which a probability of an event is unknown or unknowable. This relates to the idea of "subjective probability" (Burgman, 2005, 7). It has the meaning of a lack of knowledge about a process or it specifies personal degrees of belief of various actors. It is obvious that the concept of subjective probability seems to be most applicable when assessments of risks relate to the functioning of complex socio-geographical systems. There is also language problem of words clustering around the notion of probability and risk. The spectrum is wide and ranges from such words as change, belief or tendency to possibility or plausibility and further to more exact words such as confidence, likelihood and risk. Language permits borderline case and it results in vagueness. Also due this linguistic variation, there is a tendency to assess risks in inconsistent ways. It is obvious that risk assessments depend on relevant settings. These considerations show that risk assessment is inherently also a subjective affair which is significantly influenced by its societal context. The conclusion can be drawn that "(r)isk assessments are invariably subject to distorting influences, perhaps more so than other types of scientific analysis, because the public setting of many of the problems" (Burgman, 2005, 25). One can draw another conclusion saying that risks are largely social constructs and that there is no objective method indicating that one risk valuation is better or worse than another. However, it also must be added that better and more complete information about risk situations is important in giving decision-makers necessary insights to participate more effectively in the political process (DeSombre, 2005, 67).

Concluding considerations on risk and uncertainty in a socio-geographical system

The general point to take from these considerations is that the notions of risk and uncertainty are not simply objective numbers or concepts that can be specified in unequivocal terms by more scientific research. Some authors have argued earlier that risks cannot be defined objectively because what is considered as risk is depending upon social values held by groups and individuals (Douglas and Wildavsky, 1982). Societal priorities for what issues to value and what questions to ask influence how policy-makers think about risks under conditions of uncertainties of the development of geographical systems. The level of uncertainty about risk thus

remains high. It becomes clear in the exposition of the socio-geographical system sketched in this paper that geographical research does not provide exact results which enable to fully comprehend how different subsystems of socio-geographical systems function in their own and how they intersect with political or economic subsystems where major risks assessments are to be made.

It is therefore worthwhile to consider the concepts of uncertainty and risk also in the view of basic mechanisms that are distinguished in the postulated integral qualitative model in Figure 1. Of course, the concept of risk is inseparable from the notions of uncertainty and probability. But, risk is not the same as danger or hazard (Giddens, 2002, 20–35). Because risk refers to hazards which are assessed in terms of future probabilities and thus actively assessed. Assessments of risk are important in societal systems that are actively future-oriented. In brief, risk presumes a societal system that is trying to break away from its current state and this characterises the development orientation of modern industrial and post-industrial societies. "Redistribution can however also refer to the sharing of risk. It is here that the successes of the welfare state have been most marked" (Giddens, 1994, 149). This short quote indicates again the importance of institutionalised regulatory redistributive mechanisms indicated in Figure 1 and it also suggests in a Myrdalian way their causal connections with socially and spatially unequal consequences of the market driven mechanisms in the advanced socio-geographical system. Because in the market economy that is based on a diversified structure of economic property forms in which private sector performs the pivotal role of scarce resources allocation, it is risk which is energizing wealth creation in the subsystem of economic mechanisms. Advanced economic system is inevitably future-orientated, it is unthinkable without risk and based on calculations of future profit and loss, and thus upon risk assessment. The redistributive mechanisms of advanced welfare state system are designed to protect against hazards of social inequality and specifically against job loss, disablement, old age, etc. It is also useful to note that insurance against risks is actually redistributing risk in a large set of units (insured subjects). In the advanced post-industrial society and economy risk has assumed particular significance. Again in words of Giddens, "(o)ur very attempts to control future tend to rebound us, forcing us to look for different ways of relating to uncertainty" (2002, 26). He makes a crucial distinction between types of risk. First, there is external risk that is coming from the "fixities" of nature and tradition. Second, there is so-called manufactured risk created by impacts of advancing knowledge upon the entire world system including natural environment (Giddens, 1994, 152–153). In other words, the concept of manufactured risk refers to risk situations with which the mankind has little experience of confronting such as greenhouse effect or geopolitical uncertainties of international networks of supply of crude oil or natural gas. It also applies to world-wide capital markets (Bernstein, 1996). These various risks are influenced by intensive globalisation processes. Manufactured risks confront modern societies with new forms of risks that significantly differ from risks that existed in the past. Old risk situations had well-know causes and ex-

pectable effects. Manufactured risks appear to be still incalculable in terms of relevant factors and causal mechanisms and indeterminate in their societal and territorial impacts.

Considering these new risks the conclusion can be drawn that only wide ranges of competences of territorial governments at different levels can provide in the advance society sufficient decision-making capacity which is particularly important given the increasing uncertainty of future developments and spillover effects confronting local and regional government and also national governments in the globalisation era (see further Dostál, 2002). Because manufactured risks are usually diffuse in origin, it is not clear how they could be addressed, and who is responsible for taking decision to remedy them. These risks are often about what the societal developments have done to natural environment. There are almost no aspects of natural environment that are not affected by the societal development. The increasing importance of the notion of risk has been closely linked up with possibilities of calculation. This is illustrated by advanced forms of insurance, such as against car accidents, fluctuating capital rents or river floods. Real manufactured risks are even more risky, because their levels are not known until it is often too late. However, active taking of risks is a key element of a dynamic economic development and in a socio-geographical system necessarily orientated on production of innovations and experimentations. In consequence, in the globalisation era this means to live with a diversity of risk situations that necessitate continuous adaptations and innovations of both institutionalised regulatory and spontaneous mechanisms. Such regulatory mechanisms are needed, because they can contribute among other things to risk management (see also Beck, 1992). What postmodern social scientists usually call chaos lacking regularities, Beck conceptualises in terms of risks and uncertainties. Management of risks has become important characteristic of advanced socio-geographical systems at different geographical scales. Systematic research concerning development of socio-geographical systems at different scales can hopefully contribute to our better understanding and assessment of these uncertain phenomena.

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Résumé

Sociogeografické systémy, institucionální mechanismy a rizikové procesy

Příspěvek je zaměřen na studium charakteru sociálně-geografických systémů. Jsou zdůrazňovány komplexní vlastnosti sociálně-geografických systémů a základní typy institucionálních mechanismů. Je prezentován kvalitativní model sociálně-geografických systémů s různými mechanizmy, které se vztahují k vývoji sociálních nerovností a územních diferenciací. Jsou uvažovány různé zpětné vazby, jak ve smyslu spontánních vývojových mechanizmů, tak ve smyslu institucionálních regulačních mechanizmů, které umožňují přerozdělovací procesy v sociálně-geografických systémech. Kvalitativní modelování je hodnoceno jako podmínka kvantitativního modelování. V poslední části příspěvku je uvažován charakter nejistot a rizikových procesů v sociálně-geografických systémech s důrazem na vývoj ekonomického subsystému v kontextu tlaků globalizace, environmentálních problémů a „rizikové společnosti".